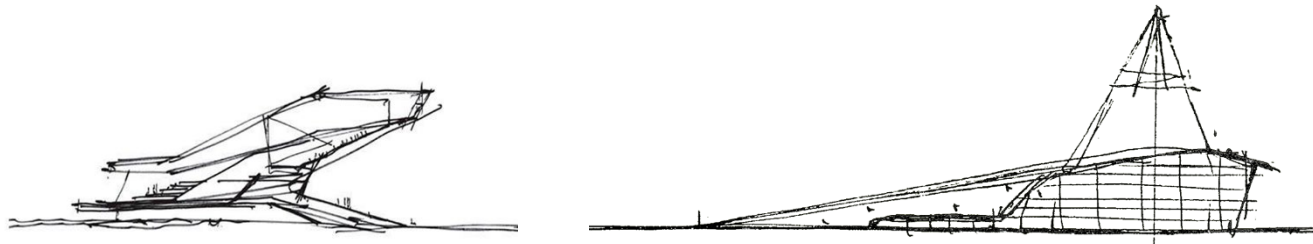# Eye Filmmuseum & TU Delft Library

Investigating design compositions of Dutch architecture at the turn of the millennium

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Abstract

This thesis aims to critically examine the design process of two cultural centres-landmarks, built in the Netherlands in the past decades. The examined projects include the EYE Filmmuseum (DMAA-2011) and the TU Delft Library (Mecanoo-1998). Despite the differences between the two buildings, they share similar starting points regarding the sites they are located in. The plots alone comprised a challenge for the architects who had to deal with the strong presence of natural elements, such as water and soil, as well as their adaptation to the historic built environment that they belong to.

In order to indulge in projects' architectural characteristics, it entails the understanding of the reasons that led to a specific design - the main factors that shaped the compositions. Therefore, this thesis questions how their syntheses were developed, what were the starting points of each design, as well as the differences between each architectural approach. It is significant to understand the main references of each project, as well as the ultimate aspiration of each building, meaning what the architects wanted to achieve apart from a functional building. Comprehending the theoretical framework of the architects, is an imperative step for answering the question of what can be learned from the design process in architecture.

The research topic requires the adoption of a mixed-methods approach. The sources used, consist of archival material, preliminary sketches, literature, and material of the design phase provided by the projects' architects upon request. Aiming to gain a better understanding of the physical buildings on a personal level, site visits are a mandatory prerequisite too. Besides, municipal documents give valuable insights into the development of these projects, in the context of their greater setting. Finally, conducting interviews with the principal architects of the projects, will give a new perspective on the design process of the projects. Moreover, the studied literature will be translated and visualized through personal illustrations, allowing for the development of a personal proposal of the

design process of the projects. Overall, the thesis uses and reflects on the most relevant sources of the subject, leading to a clear understanding of the design process and finally showcasing its impact on the architectural comprehension of a realized project.

Introduction

The economic welfare that appeared in numerous countries during the turn of the third millennium, brought the need of architecture as a means of visualizing their financial and cultural prosperity. Consequently, this led to an increasing demand for cultural centres, with the Netherlands being a country where various large-scale projects have been realized over the last decades.

On the same lines, architectural criticism and interest, focus mainly on these buildings as final edifices, neglecting the idea-conception behind them, which is an integral part of architecture. Additionally, preliminary design material is rarely published, and the design process is overshadowed by the architecture media, that confront architecture not as a sensory experience but through impressive imagery, falsely regarded as the representation of architectural values. Based on that, the thesis questions what the value of investigating the conceptualization of a project is, by examining two public buildings in the Netherlands, regarding their design process and synthesis conception.

These projects are the EYE Filmmuseum by DMAA (2011) and TU Delft Library by Mecanoo (1998). DMAA, found by Roman Delugan, is a Viennese architecture office, oriented towards public and cultural projects, predominantly in European Centres locations. On the other hand, Mecanoo studio was established by the Dutch architect F. Houben and two university colleagues of her, shortly after they graduated from TU Delft. Ever since, the architectural firm has been designing various architectural typologies, mainly in the Netherlands.

The two cultural centres challenged the architects not only in terms of brief-organization, but also for their urban implementation. The design principles, the form-giving, and the spatial configuration of the projects constitute the main themes that are to be investigated. To that end, the main factors that determined the composition of the project are examined, in parallel with the corresponding concept stage material of the projects.

Literature Review

The cultural character of the projects, along with their significant urban scale, have generated public interest with regards to their design conception. In the paper *Dutch architecture with landscape* methods (2009), Mayr et al. explain the relation of TUDL with the immediate context and describe the project's different compositional layers. Information is given also, regarding the influence of the landscape in the design of the various elements that compose the form. Mayr's (2009) analysis focuses on the same subject with this paper, but there is room for further elaboration so that a holistic opinion can be formulated. Wilma van Wezenbeek (2008) presents in the conference paper '*TU Delft Library: A clear view on knowledge and information'*, the historic background of the library, along with the challenges that the architects faced in the form-giving of the project. Additionally, written by the architect of the library, Francine Houben, the book *Biliotheek Technische Universiteit Delft* (1998), provided the most related to the subject information; a thorough overview is given about the most important aspect of the design phase, as well as the biggest ambitions of the project. Furthermore, *Mecanoo: Inspiration & Process in Architecture* (2017) reveals the methodology and the variety of media that the office uses in the creative process of designing.

Thematically, highly related to the present thesis, is Marcel's (1994) book, '*Architectuurarchief Technische Universiteit Delft.*', the only source describing and presenting in a detailed level, facts about the competition stage, the committee, and the three submitted proposals. Finally, Rood (1994) in his book '*Mecanoo architecten'*, includes the competition's orthographic drawings and sketches, that are necessary for comprehending the proposal's scheme of that phase.

On the other hand, the more recently built EYE Filmmuseum has stimulated architectural interest and provoked questioning regarding its sculptural form. The interview by Muhr (n.d.), titled: '*Nine questions for DMAA in relation to EYE'*, offers the most relevant and valuable source, regarding the theoretical framework of the architects and their references. The principal architect R. Delugan and his partners, answer to critical questions about the synthesis

development, and all the design parameters that were employed during the architectural configuration. Though, without the actual design material available, the arguments presented are barely substantiated. In addition, Klein et al. (2006), add on the tectonics of the building, and its urban positioning. Furthermore, in the architectural publication, *MARK: Another Architecture*, Wortmann (2012) reveals the two-phase competition of the project and its impact on the wider area. Lastly, on DMAA's website (n.d.), in the *Zooming in interview// Roman Delugan*, the architect describes his negative experiences during a cinema visit, as an inspiration and starting point for the new museum; also, the role of senses in architecture is underscored, in addition to the need of keeping the imagination free from external influences that are irrelevant to personal experiences.

Although the current literature provides sufficient information regarding the design process of projects individually, there is potential for a new perspective in the understanding of the design process and decision-making. This is feasible by searching for the correlation between the written documentation and the visual illustrations that the architects produced during the conceptualization of the projects.

Methodology

It becomes clear that the research topic required the use of a mixed-method approach. The most reliable source of information was that provided directly by the architects. Specifically, DMAA shared design material of EYE, from the conception of the idea, until its materialization, through presentation files, drawings, sketches, and written text. Mecanoo on the other hand, did not share unpublished documents, therefore the thorough examination of the existing literature played the most crucial role in this case. Additionally, the municipality of Amsterdam, along with the Het Nieuwe Instituut, the Real Estate and the Library department of TU Delft, shared material of the projects' design phases. Finally, as architecture is a sensory and spatial experience, personal observations through site visits,

strengthened my understanding of the case study. Thus, searching for specific information from a variety of sources was mandatory for the critical reflection on the topic.

Structure

The research paper is based on a three-part structure. Following the introduction, the first part analyses the EYE Filmmuseum, whereas the second, the TU Delft Library. Each part is subdivided into two chapters, where the idea-development and its materialization in each case study is examined. In the third part, based on personal reflection and observations, a comparison between the two projects is conducted, which is structured according to the relatable fields of their architectural approach.

Part 1: EYE Filmmuseum

DMAA, Amsterdam 2011

Baan, I. (n.d.). *Aerial View* [Photograph]. https://www.dmaa.at/work/eye-film-institute

Chapter 1: Idea conception

1.0. Amsterdam Noord Redevelopment

Holland entered the 2000s with a fast-paced development, marking a 3.9% GDP increase, over the past year (Statistics Netherlands, 2001), meaning that the nation's affluence enabled growth in the building and cultural sector. In centuries, architecture has been used for visualizing societal and cultural values on a global scale. Public architecture and urban design reflect these values and progress, and at the same time stimulate great interest in the architectural practice.

Figure 2, Urban plan

Due to the scarcity of these large-scale projects, expectations and demands vary, often leading to controversial criticism of their designs. The buildings that are most subject to such criticism, are those that deviate from conventional architectural approaches. Apparently, this is not explicitly applicable for Dutch buildings, such as Holland's pavilion (2000) by MVRD, but also internationally with architects like Frank Gehry, being either glorified or condemned for their designs, with a prime example being the Guggenheim Museum in Bilbao (1997). Rarely in such projects, is the criticism conducted non-superficially, with justified arguments derived from non-biased standpoints of view. Instead of taking finalized buildings as a given, the starting point of the research paper, is the conception of the ideas behind a major cultural centre in Amsterdam, the EYE Filmmuseum, built in 2011 by DMAA.

Figure 1, Aerial perspective

Amsterdam constitutes a unique topography, characterized by its distinctive canals that are connected to the IJ river, running through the city. IJ divides the overall urban tissue into several zones; this zoning has established different usages within the city, with the Southern Quarter being the historic center, while the Northern segment, remaining a relatively underdeveloped area, compared to the city center. The justification of this fact is that the IJ river becomes a physical barrier to the accessibility of the Northern Quarter, also known as Amsterdam Noord.

Concerning the EYE museum's history, according to Wortmann (2012), the excessive programmatic requirements of the first Institute in Vondelpark, Southern Amsterdam, led to the need for a new museum, which was to be located in Amsterdam Noord. Moreover, the EYE Filmmuseum would be the first cultural center to move to the Northern Quarter, as previous attempts to reconnect the city's segregated segments had been unsuccessful (Wortmann,2012). Furthermore, it was not until 2003, when Shell headquarters moved to the Northern Quarter, instigating a gradual change of the broader region, which has become an increasingly popular destination ever since. (Muhr, n.d.)

Figure 4, Site plan

The new site of the EYE Filmmuseum was decided to be in a unique location, opposite to the Central Station, at ''the bend of the river IJ'' (DMAA, n.d.). It is an integral part of the IJ promenade, situated in a prominent location, at the meeting point of water and land. (Eye Filmmuseum, n.d.) Though, the only means of accessing the site from the city centre, is by a ferry from the Central Station, as no bridge is close to the site.

Adjacent to the plot, the Shell Tower is the only building reminiscent of the site's former use (Fig. 4), (Muhr, n.d.). Owing to its vicinity to the site and its dominant presence, the relationship between the tower and new cultural centre, became a compositional challenge that could not be omitted by the architects. Additionally, the unique topography did not allow for a mere programmatic configuration of the building, but it called for a bigger underlying challenge– that of a strong vision and ambition of what more of a museum, the new Institute could represent (Muhr, n.d.).

Figure 5, Overhoeks Tower – 1966

Overall, these facts summarize the basic observations of the context and the site, which could be used as inspirational parameters for the new museum.

For the design of the museum, the committee organized a two-stage closed competition; the first stage dealt with the creation of a strong theoretical concept, redefining the film-architecture relationship (Wortmann 2012). DMAA architects managed to convince the jury with their abstract concept, reinterpreting the notion of film in architecture; in the classical sense, film is the illusion of space, movement, and light ''which becomes reality through projection'' (Designboom, 2012). In architecture, the parameters of space, movement, and light were used as tools for creating sequences of human motion and an intense spatial experience (Designboom, 2012). Once the committee approved the theoretical concept, the second phase of the competition required a concrete proposal, embodying this abstract idea.

Figure 6, Urban plan

1.0.1. Design material

The examined documents in these chapters were supplied after personally communicating with the partner of DMAA, Dietmar Feistel (2020, December 16) and the municipality of Amsterdam. (2021, February 4). The available design-process sources enabled the simultaneous examination of the written content with the architectural material. Overall, the documents are organized into a three-stage process that the design underwent, following a chronological order.

Concerning the design process, D. Feistel, reveals that the first phase of the design consisted of four steps: the idea development of the museum as a stage, the urban configuration, the spatial scheme design, and the final form. (Muhr, n.d.) Hence, these four topics provided the basis for the design development for the next stages. Consequently, the analysis of the EYE Filmmuseum is structured into three phases, on which the available design material corresponds to. Of course, designing is never a linear process, and the intertwining of the four steps is an essential sector for idea development.

1.1. Phase 1 – Defining the concept

Being the most fundamental of the project, the initial phase pointed out the direction and the principles that the design would follow. According to R. Delugan (DMAA, n.d.), the concept of the project was initiated as a reaction towards his personal negative cinematic experiences. Specifically, from the interview with R. Delugan (Muhr, n.d.), it appears that the architect identified as an issue that nowadays cinema's architecture, treats visitors as costumers, with the experience of a regular screening, lacking on an emotional level. So, what DMAA wanted to achieve instead, is the redefinition of this experience, through their building. In a broader concept, the flaw that the architects wanted to resolve with their design was that of an established public-architectural typology.

Figure 6, Concept Section

As discussed earlier, the theoretical approach of DMAA for the new museum, involved the translation of movement, light, and space as parameters of filmmaking, into architecture. Transforming this idea into concrete architecture, went through different layers of processing.

Roman Delugan started with an organizational diagram, exploring the arrangement of mono-functional spaces into a single coherent building. This scheme was further configured in section, which established the basis of the project. As D. Feistel explains (Muhr, n.d.), the main goal of that stage was the integration of the spatial scheme into the sectional sketch. That way, the architects could determine the effectiveness of the relationships taking place inside and outside of the building.

Figure 7, Negative volume diagram

Although the order that the provided material was produced is unknown, when combined with the written literature, it became feasible to conclude to valid assumptions regarding their chronological sequence. Figure 6 represents the initial idea of the spatial scheme in a section, which makes several observations possible.
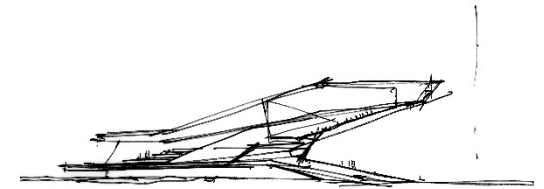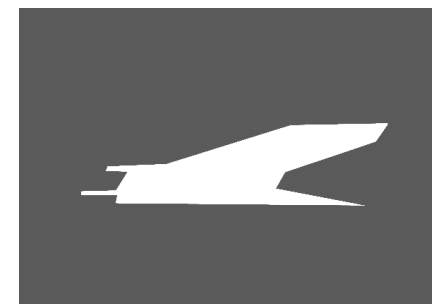
The sketch gives an impression of a monolithic, free-standing building, whose tectonics originate from the screening rooms. The form and positioning of the spaces in the section, generate potential visual connections, both inside and outside of the building.

In addition, there is a lack of an ordinary structural scheme, a grid of vertical columns and therefore, a system of trusses was required to realize the desired cantilevering volumes. As a final remark, a ramp serves as an extension of the building, connecting the public outdoor space, with the museum's indoor space.

Although simple, the hand-sketch communicates effectively the most important architectural features that were to be encompassed in the museum.

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1.1.1. Urban Approach

As the schematic section satisfied the architects' ambition, the building's urban configuration followed afterwards. From the topography, several key factors are observed that contributed to the museum's design. These are: the Central Station situated opposite to the site, the river IJ, and the Shell tower. Most importantly, DMAA aspired the connection of Amsterdam Noord, with the urban center in the South.

The urban plans from the competition stage (Fig. 8,9), can be translated as an overall attempt of transforming the museum into the new landmark of Amsterdam Noord. Linked with the conceptual idea of the relationship between film, architecture, and scenography, the footprint of EYE in the urban context, suggests that the new museum becomes the protagonist of the urban scenery. (Muhr, n.d.)

Figure 8, Orientation & visual contact

The scenery's protagonist role was accomplished by an explicit architectural approach. Specifically, the museum as a landscape element, stimulates one's vision, who unconsciously perceives EYE's architectural gesture as an invitation to overcome the physical barrier of water and proceed to the opposite side of the town (van Lier, 2016)

In Figures 8 and 9, the museum appears to be partially hovering over the water's edge. Oriented towards the city and the river, it establishes a direct visual dialogue. The urban plans inform about the role of the positioning of the building, which is such that it creates various thresholds from certain positions along one's journey towards the museum. (Fig. 9) This proves the architect's goal of making ''a suspenseful dramaturgy of different spatial and visual sequences'' (Klein et al., 2006, p.130) in one's path towards the Museum. Along with the manipulation of movement and light -subtly referencing filmmaking-, the dramaturgical effect was successively achieved.

Figure 9, Approach by the ferry

Consequently, it is evident that the architects considered the routes towards the site, the presence of water, and the views towards the city, as the guiding principles for the orientation and footprint of the building.
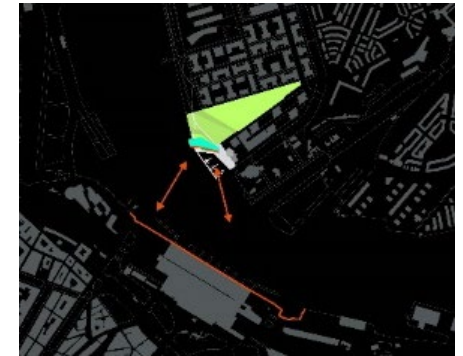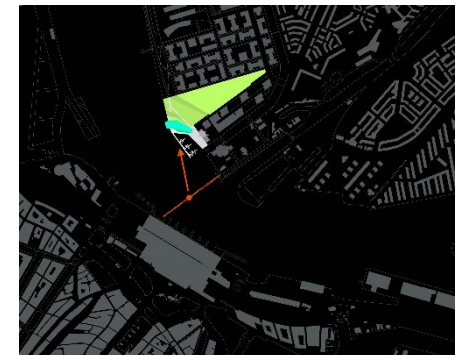
1.1.2. Spatial scheme & final shape

With the initial direction of the urban approach having been configured, the spatial scheme, as well as the form, had to be resolved in detail afterwards. The interior organization is strongly intertwined with the exterior of the building. The schematic, color-coded floor plans, supplied by the architects, incorporate specific information with regards to the decision-making of the design process.

The most distinguishable feature of this phase is that the building cantilevers partially above the water; this architectural approach deviated from the conventional set back that is present in most Dutch buildings, built on waterfronts. (Muhr, n.d.)

Figure 10, Ground level, Lobby & ramp

As stated earlier, the museum was oriented towards the city and the river. From the site plans, there is an apparent influence of the positioning of the building, stemming from the tower's presence. DMAA have alleged that the tower played a crucial role in the synthesis of the museum, without giving any additional details (Klein et al., 2006). The floor plans show the Museum following the orientation of the Shell Tower, as the prominent North façade, is aligned with the tower.

Concerning the floor plans, two key features are noted from Fig. 10. The first being the ground floor volume, placed literally on the edge of the promenade and the office spaces opening up to a panoramic view towards the city. The second feature of the ground level (Fig.10) is the ramp connecting the public ground level, with the 1st floor of the museum. It defines an *architectural -elevated- promenade* and it is an indication that the project attempted to merge with the landscape.

Figure 11, First level floor plan & Terrace

In addition, Figure 11 illustrates the café and terrace marked in blue. The exact purpose of that centrally placed space is unclear, but it confirms that the architects were aiming for a strong connection with the surroundings.
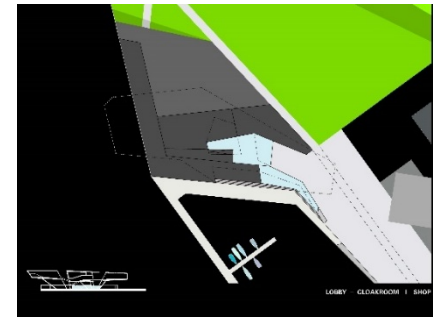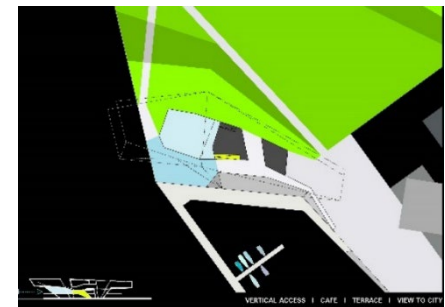
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Concerning the second level (Fig.12), having as design guideline the concept sketch, the architects overemphasized the building's function on the exterior, by placing the screening room and exhibition space on the east and west side, respectively. These observations comprise the key information that can be drawn from the spatial organization of the floor plans.

In terms of form-giving, the tectonics were derived from the persistent development of the 2D drawings, in relation to the form, through model-making. According to the architects, the building should represent filmmaking and a new landmark for its topography. (Muhr, n.d.) The section of Fig. 13, illustrates an almost horizontal building, stretching over two sides, and lacking the diagonal, long-distant views inside the space, that the first concept sketch featured. Moreover, the overall form remains monolithic, sitting on a raised landscape, which is in fact the ground floor level of the museum. Although solid, the structure appears lightweight at the same time.

Relating the building to local urban structures, it was a principal design choice for DMAA (Muhr, n.d.). Apart from the orientation of the building towards the city and the tower, DMAA linked the building to the Shell tower in other ways too. The tower's composition consists of the base, the main body, and the crown. The ground level of the museum is converted into a landscape, serving as the base of the museum, and the prominent top volume of the museum is elevated almost at the same level that the Tower's body begins. (Fig. 14) Compositionally, a strong relation had started being developed between the two buildings.

Most important though, is the role of the tower in the urban implementation of the museum. In Amsterdam's flat landscape, tall buildings facilitate navigation throughout the city. Exactly this contribution has the tower to the EYE, with the two buildings marking a specific urban synthesis. For that reason, EYE's form did not have to emphasize its height, since this role is carried out by the tower. Questionable though is for DMAA, who do not acknowledge and elaborate on the actual and important relationship formulated between the two buildings.
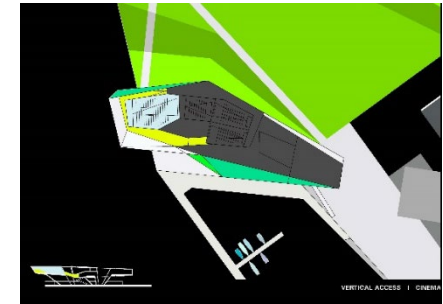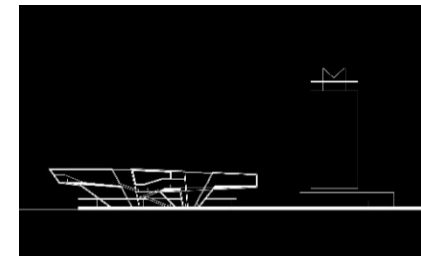

Figure 12, Second level floor plan
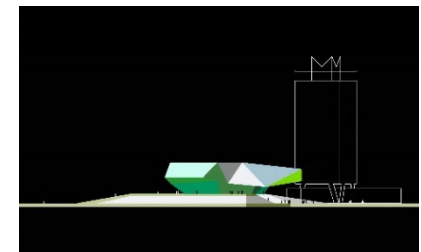

Figure 13, Section

Figure 14, West Elevation, View from station

The first phase of the design process was finalized with the submission of a physical model (Fig. 15,16). It can be seen how the abstract ideas of film and architecture were transformed into a bold building. The model particularly highlights the manipulation of light, which creates a constantly changing image of the museum, as intended by the architects who wanted to enrich the urban scenography through their design. (Muhr, n.d.)

Overall, the maquette encompasses in a highly informative way, the main design principles of the initial stage which were: the relationship with the existing buildings, the spatial configuration, and the manipulation of light for the establishment of a new landmark of Amsterdam Noord.
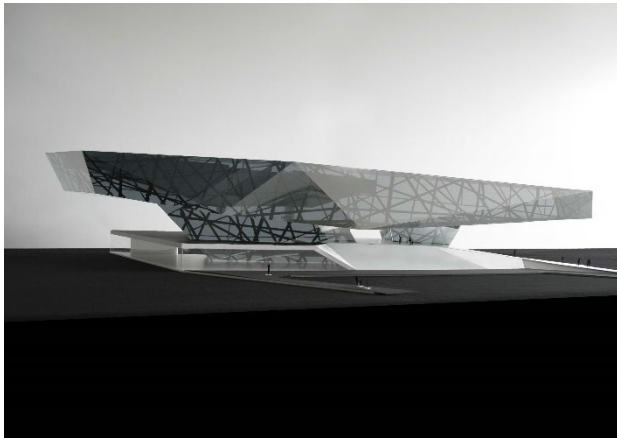
Figure 15, Physical model, Transparency

Figure 16, Light reflection

Chapter 2: Intermediary & completion stage

2.1. Phase 2 – Intermediary stage

The second phase defines the intermediary design stage, between the initial schematic proposal and the final detailed phase. It is particularly important as it is an exemplified paradigm, of how architects can deal and manage potential changes during the design process, and how design principles can remain constant, throughout the process.

With the first proposal, DMAA conveyed their architectural aspirations through a solid building. The ambitious proposal with the partially cantilevering volume above the river IJ, oriented towards the city, was not permitted by the harbour authorities, as the building could not be extended outside the plot's strict boundaries (Muhr, n.d.). Apparently, a solution had to be found, that should not sacrifice the existing scheme, and maintain the architect's clear position about the introduction of a dialogue between the museum and the surroundings.

As an alternative, the volume was mirrored along the diagonal South façade, therefore following the terrain of the waterfront. Not only did this solution save the proposal from drastic changes, but it kept the strong relation with the Shell tower and its orientation, proving that the optical dialogue was a catalytic aspect of the design.

Regarding the floor plan configuration, this served as a tool for diversifying the design's possibilities. A fundamental idea of the project is thoroughly substantiated through the floor plans in Figures 18, 19. The architects intended to redefine the experience of cinema building, by prioritizing the event of going to the movies. This was accomplished with the creation of a unique space, uncommon for such a building typology, that intended to serve as the heart of the building, being a space for discourse, prior to and after a screening. (Muhr, n.d.)
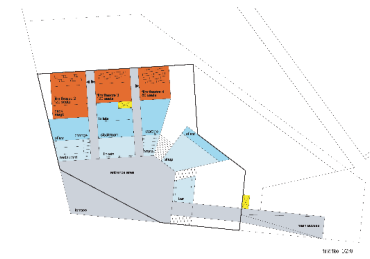

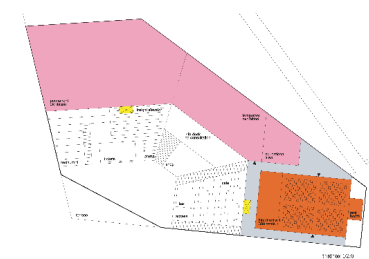*Figure 17, Site plan*

Figure 18, First floor - ARENA

Figure 19, Third floor

This centrally positioned space is called the ''Arena''; it is a transitional space, designed for social interaction, through its distinctive atmosphere, as claimed by the architects. (Muhr, n.d.). Entering the building, one is naturally guided to the Arena through daylight, perspective, and view lines. The terraced staircase of the Arena creates an intensified concentration inside the space, directing one's vision towards the horizon and the city center. (*EYE Film Institute Netherland*, n.d.)

As the new plans served the organization of space, the two- dimensional alternations had to be incorporated three-dimensionally. The illustration of Figure 21, depicts the internal function of the program inside the building, reflected on its form. Additionally, the rendering (Fig. 21) showcases the pronounced form of a dynamic geometric solid, that resembles the building as it is known today (DMAA, n.d.).

Remarkable to notice is the overall sculptural form, contributing to the dramatization of the setting (Klein et al., 2006). The folding surfaces of the exterior and interior, constantly reflect light in different directions. As a result, the perception of the user changes according to his position either in the urban setting or inside the building. Thus, the museum becomes metaphorically a moving image, subtly implying its theoretical connection to filmmaking (D. Feistel, personal communication, December 16, 2020).

As a conclusion of the second phase, the preliminary schematic diagrams of the initial stage, provided the design core that the second phase relied on and developed further. Emphasis on both the interior and exterior and the uncommon approach of improving a typical entertainment activity, through a unique space, the Arena, strengthened the concept and the architectural purpose of the EYE.
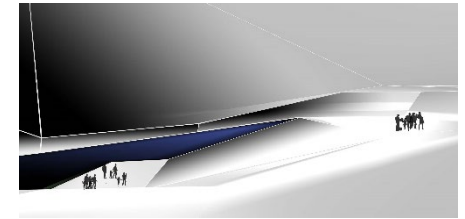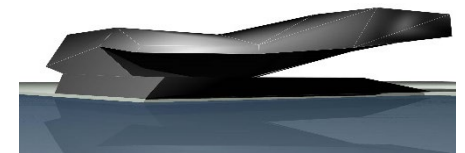

Figure 20 - Arena - Render

Figure 21 -, Form - Render

Figure 22 -, Form - Render

2.2. Phase 3 - Completion

The third phase marks the completion of the proposal in a detailed level. The architects developed their ideas of the two previous stages while making the appropriate alternations on the scheme for the programmatic realization. Through sketches, computer-aided drawings, digital and physical modelling in various scales, DMAA managed to deliver a functional building.

Figure 23, Hand sketch

The importance of this phase lies in the fact that it is representative of how ideas are implemented, developed, and finally materialized throughout the project. Certainly, the last phase determines the relevance of the final product with the principal ideas, therefore it becomes a rather significant time frame to focus on.

Two were the main design areas of this stage: on the one hand the urban adaptation of the building and on the other, the tectonic, structural, and spatial elaboration of the museum. By examining selected design material, it became feasible to draw valid conclusions about the project.

Figure 24, Steel trusses - model

As already discussed, on the urban level, the museum attempts to become the new landmark of Amsterdam Noord. The hand-sketch in Fig.23 depicts the building in its context, as an elaborated version of the previous phase. On a larger scale, the architects used the positioning, geometry and the scale of the structure, to stimulate vision, making the museum a focal point in the urban composition. While the architectural language used is contrasting and therefore controversial, the intention of the building remains a clearly defined aspect.

Worth noting from the firm's documents is the notion of landscape as a design principle. More analytically, it is described that landscape is a catalytic factor of the firm's approach, which is translated as the manipulation of space by human intervention, to introduce new values and elevate the existing qualities of a topography. (D. Feistel, personal communication, December 16,2020). Although this is not a unique architectural theory, DMAA's
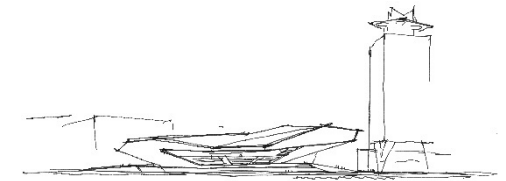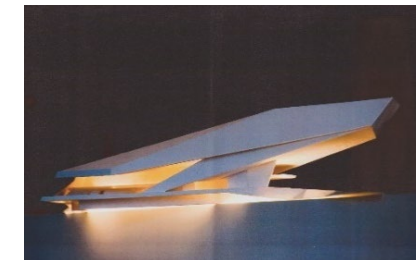
Figure 25, Physical Model

documents present that the office approaches landscape by analysing it into zones and marking the transition between those zones by thresholds (D. Feistel, personal communication, December 16, 2020). For the extensive use of thresholds, both inside and outside of the museum, it is argued that they create specific conditions, triggering human senses, and leading to memorable spatial experiences. (Muhr, n.d.)

Regarding the final composition of the building, certain conclusions are drawn from the physical models of the municipal's archive (Fig.25). The illustrations alone, are inadequate to precisely communicate the architecture of EYE. Tectonic irregularities, which were present from the beginning, create constantly altering impressions of the building. Additionally, Roman Delugan claims that only through physical experience, the architectural qualities of the spaces can be conveyed (Muhr, n.d.). Therefore, the composition is centred around this particular philosophy.

The numerous drawings of this stage prove that no space was explored more extensively than the Arena, which is regarded at the most distinctive area of the museum. Physical models, renderings, and even 1:1 mock-ups, contributed to the optimum outcome (Fig.28). In parallel with the section of Fig.27, one can perceive the various introvert and extrovert atmospheric conditions that stem from the spatial relations within the Arena. (DMAA, n.d.) Delugan claims that the use of the geometry of the space, with obtuse angles, intensifies and creates fluidity within the Arena, while the lowering of the ceiling directs the visitor's eye to the framed view of the city centre (*Zooming in Interview // Roman Delugan,* n.d.). Finally, this directly links to the broader concept of celebrating the view of the city, prior and after the screening.

As a deduction, the Arena is the space that summarizes and encapsulates the design approach behind the EYE. Based on DMAA allegations (Muhr, n.d.), the Arena is the transitional space, where one experiences most intensively the architectural values of the EYE; it is the space that promotes social interaction and highlights the architectural purpose of the museum.
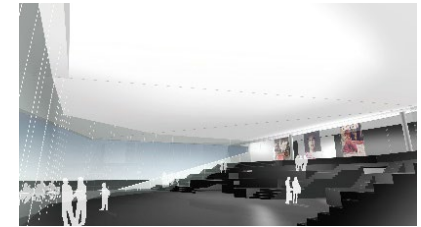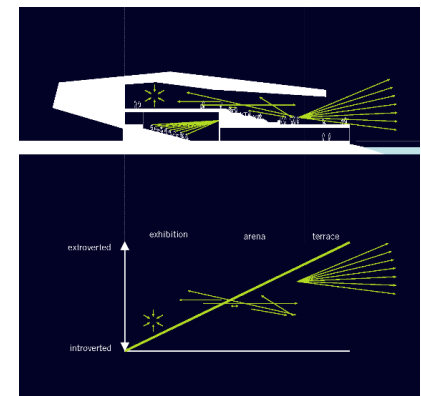

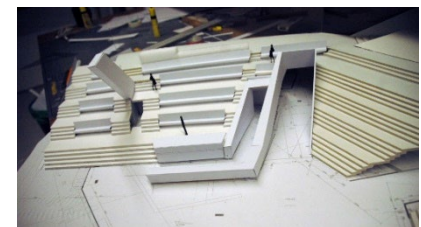*Figure 26, Arena, interior perspective*

Figure 27, Visual connections

Figure 28, Physical model 1:50 – Arena

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2.3. Conclusion – EYE Filmmuseum

In summary, the examination of the design-process material in the course of three phases revealed how the architects configured and dealt with a variety of architectural parameters, aiming to redefine an established architectural typology, as well as to revitalize the broader context through their project. The analysis demonstrated the ways that public buildings can metaphorically act as bridges, overcoming physical barriers, and reconnecting segregated regions within a given context.

From different lenses, the exploration of the design phases serves as a source of inspiration of an unconventional approach towards a standard public building typology, that offer various directions of architectural thinking. Moreover, the overall process of EYE is an example of a single idea, which became the starting point of a series of design parameters that enriched the concept.

Equally significant is to consider the traits of the topography and the existing context, that influenced the design process. Together with the architect's personal experience, a new concept was derived in the form of a reaction towards the limitations of the nowadays cinemas' architecture. (*Zooming in Interview // Roman Delugan,* n.d.) DMAA managed to justify with their final design, the relation between filmmaking and architecture, through their initial abstract idea.

Overall, reflecting on a project should always take into consideration the principal ideas that structure it. The outcome of the design-process analysis is the provision of the basis and fundamental knowledge upon which, valid criticism can take place.

Part 2: TU Delft Library

Mecanoo, Delft, 1998

Swart, S. (2013). *Aerial photo* [Photograph]. https://www.architectmagazine.com/project-gallery/mekel-park-campus-delft-university-of-technology-6330

Chapter 3: Preliminary phase

3.1. Towards a library of the future

Universities' influential role in a societal and cultural level, is a diachronic and indisputable fact. Apart from educational institutions, universities are small temporary academic communities, sharing mutual interests, all taking place in a learning environment. To that end, the quality of the education is strongly intertwined with the learning environment that universities offer. In these environments, academics compose the temporary factor that contributes to education, whereas the faculties are the permanent spaces that facilitate education. Physical spaces in that sense, give the specific identities to each university. Of all the buildings that can be found on a campus, a space of seminal importance is that of the library; a space associated with knowledge in the form of books, which serves both students and academics. Libraries form an integral part of the academic environment and affect both, directly and indirectly, the quality of education.

Figure 29, Mekelweg in the 60s

One of the most prestigious universities worldwide, Delft University of Technology, or TU Delft, was established in 1864, in South Holland. Ever since, the engineering-oriented University has been gradually expanding and the need for a new library was first brought into discussion in 1958, by the librarian Dr. van der Wolk (Houben et al., 1998). In 1971 and 1986 two additional briefs made their appearance, authored by the librarians Dr. Zndvliet and Dr. van der Meer respectively, calling for a new library, as the existing one, located in Delft's city center could not respond adequately to the university's demands (Beuren, 2001). In the 60s, TU Delft moved outside the city centre, and the university's faculties were positioned along Mekelweg's axis, as shown in Fig.29 (Houben, 2015).

Due to the nature of the project, along with financial matters, the realization of the new library seemed almost utopian (Houben et al., 1998). It was not until April 1992, when a final brief called for the design of a new modern,

high-performance library, inviting three modern and well-known Dutch architectural firms; these include: Benthem Crouwel, Jo Coenen, and Mecanoo. (Marcel, 1994)

3.2 Analysis' structure

The acquired design material of the TU Delft Library (TUDL) is categorized in chronological order, as there is no specific indication of when the drawings were produced. The available material which is divided into concept, competition, and final stage, are analysed based on how the general theoretical parameters, turned into design principles.

3.3. Competition Brief, 1992

The brief for the new library addressed two challenges: firstly, the configuration of a rather demanding program and secondly, the architectural integration of it, both in the urban tissue and in the selected site. What made the program particularly challenging was the time frame of the 90s. This rapid transition to a digitalized daily life was a critical moment in history, marking that decade. Consequently, the jury of the competition anticipated the imminent changes that technology would bring, hence it decided that the new library had to respond to the upcoming digitalized era (Mecanoo, n.d.). Specifically, the brief highlighted ''the regulating of information flows with the aid of electronic media'' (Houben et al., 1998, p. 22). In addition, the efficiency requirements of the library were compared by the librarian J. Waaijers, to that of an airport terminal. (Houben et.al., 1998)

The contribution of computers was regarded as a potential for more flexibility and efficiency. According to Kievit (2008), the brief prioritized technology, instead of books, as the main display-theme of the TUDL, which aspired the portrayal of the library of the future. Unlike typical libraries, all books had to be kept in store, and only upon request, a book could be taken (Houben, 2015). In a general context, no specific reference of such a building existed, whose future resilience was guaranteed. Also, the user's shifting demands had to be considered too; the library had to be a dynamic and active learning environment, where people would work both collectively and individually, while keeping the characteristic silence of such a space. (Wezenbeek, 2008)

As a final remark, the committee stressed the urgency for the reconsideration of the library's role in the TU Delft community. Limited use of the building was noticed, except for the 14-week exam period per year (Wezenbeek, 2008). Kievit (2008) argues, that this resulted from the campus-atmosphere absence; TU Delft was missing a critical public space, promoting social interaction and informal meetings between students and professors. Thus, the architects had to envision the most optimal solution for a functional, yet welcoming and appealing building.

3.3.1. Site Analysis – Assembly Hall

The Executive Board of TU Delft decided for the site of the new library between two options (Marcel, 1994). As indicated in Fig.30, the faculty buildings are located along a formerly two-lane road, the Mekelweg, which was transformed in 2007 into a car-free zone. (Houben,2015) On the far left, the location of the selected plot is indicated, exactly behind a building of significant footprint; that is the General Assembly Hall, or AULA.

Built in 1966 by Van den Broek and Bakema, the brutalist building was claimed to have constituted a major compositional problem for Mecanoo architects (Houben et al., 1998). They add that on the urban scale, the faculties along Mekelweg are an ensemble of free-standing buildings which are not communicating, but regardless of them, AULA manages to form an exception. But Mecanoo do not explain how the uninviting, detached, and egocentric building becomes an exception of the rest of the faculties. Its elaborated concrete sculptural form is even associated with that of a spaceship or a giant frog. (Houben, 2015)

As a result, the eccentric auditorium overshadowed the plot behind it and created a 'backside situation' that urged for a non-conventional approach for the new design (LeCuyer, 1999). As Houben et al. describe (1998), the new library was facing two challenges: firstly, it had to respond to the monumental adjacent building, whose form did not tolerate another building next to it, and secondly, provide a public space for informal activity, like a square, which was reportedly missing from the TU Delft campus. (Rood, 1994)

Though instead of considering the AULA as a mere burden of the site, its distinctive and recognizable form could be used to signalize the public square on the backside, that the architects envisioned. But no such potential is acknowledged in the TUDL's existing literature.
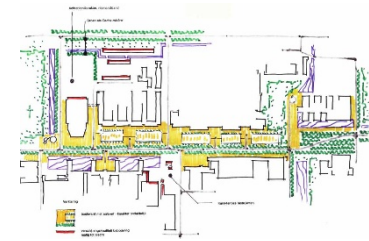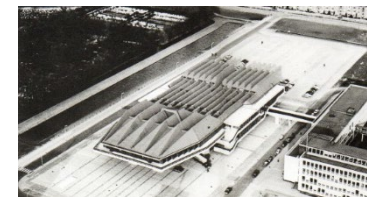

Figure 30, TU Delft campus

Figure 31, Aerial view of AULA

Figure 32, Backside situation

3.4. Concept & Design Principles

With the most vital aspects of the context having been clarified, the analysis of Mecanoo's interpretation follows next. According to Kievit (2008), the synopsis of the brief's main objectives that the competition participants were called to respond to, was the preliminary design of the new library, in addition to a structural sketch that specifies the layout of the library and the adjacent terrain.

Mecanoo approached the project by analysing the given situation and identifying the architectural opportunities for the new library. This allowed the interpretation of their theoretical ideas, into design concepts. The initial ambition was the transformation of TU Delft into a campus social area; the architects aspired that the locus of the university would become the new library and the AULA, with the two buildings being welded together (Meyer, 2009). Besides, their primary idea about a campus as a romantic hill, with solitary trees and the overall reinforcement of the social interaction, these had to be proven in the form of a design proposal. (Wezenbeek, 2008)

Houben (2017) explains that three fundamental concepts are applied in every Mecanoo-project. Firstly, the sense of place, secondly designing for local people, and thirdly the purpose of the project that should respond to future program changes. The analysis of the TUDL design process determines how fundamental these principles have been for the project.

As already mentioned, the architects alleged the influence and inspiration by AULA in the new design. Though, the underlying challenge was the appropriate architectural response to the rather specific site condition. Mecanoo, instead of filling the plot with an additional volume that would unavoidably compete with the extant, they chose the opposite approach. (Houben, 2015)
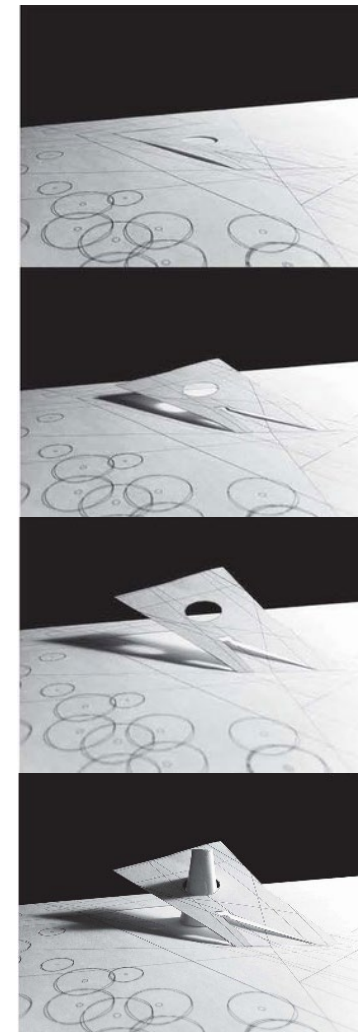
Figure 33, Lifting the landscape

The coexistence of the two structures could be achieved, provided that the new building would not resemble a typical building form. Paradoxical as it may sound, the proposal was to raise the existing topography, like a sheet of paper (Fig.33), under which the program could fit and operate. That way, the conflict between the two buildings could be avoided. Nevertheless, it is claimed that the topographic composition of the Assembly hall with the sloped and soft landscape, required an additional contrasting volume (Houben, 2015). After a thorough consideration, the architects decided to use a massive cone embedded in the landscape, as the contrasting compositional element (Beuren, 2001). Along these lines, the space inside the large volume could remain hollow and column-free. (Houben et al., 1998)

However, statements such as ''the frog (AULA) needs grass'' (Houben et al. 1998, p. 28), aiming to justify Mecanoo's approach of a raked landscape, present an arbitrary perspective that lacks objective architectural reasoning.

A set of preliminary sketches showcases the spatial qualities that Mecanoo aimed for (Fig.34-36). The section drawing in Fig.34, communicates the concept in a rather concise and effective way. Although the relation to AULA is not shown, it is deducted that TUDL resembles a raised landscape, rather than a building on the side opposite the Assembly Hall. A gradual inclination of the ground merges the roof of the library with the topography. The roof becomes accessible and serves as an invitation to ascend the hill and appreciate the elevated view towards the city.

In combination with Fig.35, it is shown that the architects opted for a centrally positioned element that pierces the landscape, becoming a defining feature of the synthesis. Additionally, the plan features a reuleaux triangular shape with rounded edges that later became a circle. Lastly, worth noting is that the cone is not designed entirely as a solid, since the area closer to the apex, decreases in plan. Again, the section in Fig.34 illustrates the cone being constructed by two different elements.
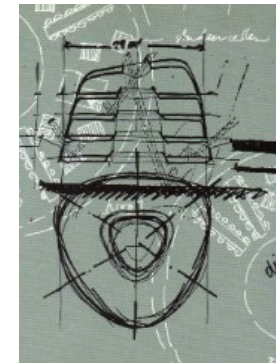

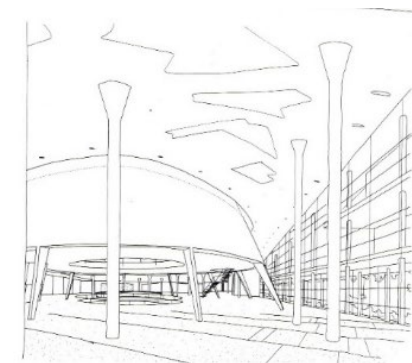*Figure 34, Sectional sketch*

Figure 35, Cone sketch

Figure 36, Sketch - Ground floor

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Certainly, the architects were not only called to show awareness of the topography through their design, but a demanding program had to be solved at the same time. Mecanoo used hand sketches as a method to quickly assess architectural ideas about the interior space of the TUDL. The hand-drawings in Fig. 36 are representative of the architects' ideas about the interior's spatial quality.

Most importantly, the sketches indicate the way that Mecanoo converted their initial ideas into spatial concepts. In Fig. 36, the spaciousness of the ground floor is noted; a triple-height space, with slender columns that emphasize scale and give rhythm and order to the undefined space. Finally, the integration of the cone inside the building is shown, as a space within a space concept. (Ching, 2014) Overall, the influence of the airport terminal efficiency principle that was initially discussed, it is visible through this sketch.

Houben (2015) also expressed the inspiration drawn from the spatial arrangement of the Bibliotheque Nationale in Paris and particularly from the Nouvelle Salle or 'Oval room' (Fig.37). Designed by Jean-Louis Pascal in 1936, the oval form creates an intense central concentration and enclosure, shaping the atmospheric quality of the space. (BnF, n.d.) Worth-noting in the plan, are the reading rooms as structure-free and spacious areas inside a bigger, regular-shaped building volume.

The relation to the reading rooms inside the cone is illustrated in the sketch of Fig.39. Books embedded into the curved walls, and natural daylight streaming through a large atrium, are the traits defining the atmosphere of that space. Moreover, the circular spaces unconsciously create a sense of wholeness and collectivity that Mecanoo wanted to achieve, as the new library had to be a dynamic learning environment for both individual and group work. However, statements supporting that the cone of books is a reference to the knowledge that TUDL stores (Mayr, 2009), remain practically unsubstantiated through the actual design.

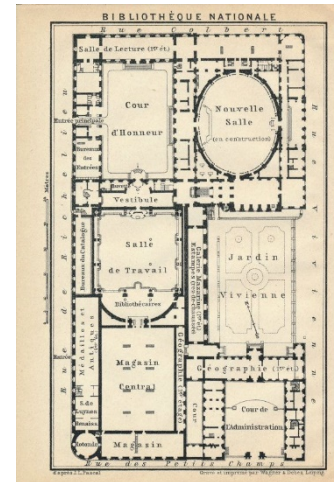*Figure 37, Bibliotheque Nationale, de France,Oval Room, 1936*

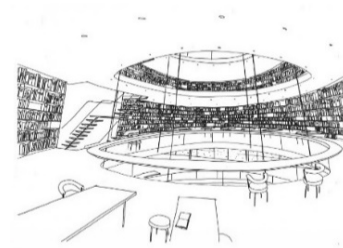*Figure 38, Bibliothque Nationale, Plan*

Figure 39, Sketch -Reading area

At the same time, the idea of displaying and sensing books, as Houben (2015) envisioned, contradicts the Executive Board's suggestion for the display of technology instead of books, as the main theme of the new TUDL. This is justified, since in the realized building, there are no books as shown in the sketch, but the concrete surface of the cone is exposed, which facilitates the undesired sound reflection inside the reading area. Other reasons for not incorporating books inside the cone, include their excessive weight, practical and security concerns, as well as fire-safety matters.

Nevertheless, these simple hand drawings, convey the spatial and atmospheric values aspired by the architects. From a wider perspective, the idea of the relation between the exterior form and the interior spaces is expressed coherently.

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Chapter 4: Competition & final synthesis

4.1. Competition design proposal

The preliminary sketch-concepts were transformed into the design proposal that Mecanoo submitted for the competition in 1992. Key architectural features are identified by observing the design material together. The proposal depicts the new library in a triangular building form, not being situated directly opposite the AULA, but extended across the site, becoming directly visible and accessible from Mekelweg. The TUDL breaks the symmetry of the AULA, while it allows more free space in front of the auditorium, through its triangular footprint.

The architect's idea of a library that resembles a green field, rather than a building, is conveyed through the drawings, as well as it is proved that the landscape links the two buildings together (Houben et al., 1998). Moreover, the cone becomes a noticeably contrasting part of the composition, which establishes a landmark in the campus.

The plans (Fig.40-41) illustrate the cone and the two landscape cut-outs, as the three differential elements of the green wedge. The entrance path brings the visitor directly to the heart of the library. The centrally positioned cone is detached from the rest of the enclosed spaces, which are located perimetrically, receiving daylight and having views towards the surroundings. Moreover, the smaller rooms were essential for the program, which required collective and individual work taking place simultaneously; such goal would be unachievable solely through an open plan.

The last critical observation can be made from the diagrammatic section in Figure 42. Beuren (2001), points out that the Executive Board opted for a 'green approach', commissioning BOOM, an environmental specialist company. Houben et al.(1998) add that the sustainability concept was a departure point of the design. For the improvement
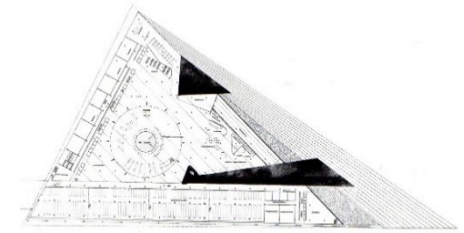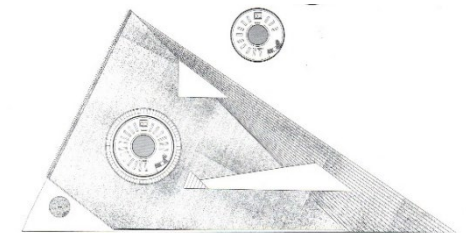

Figure 40 - Ground Floor Plan
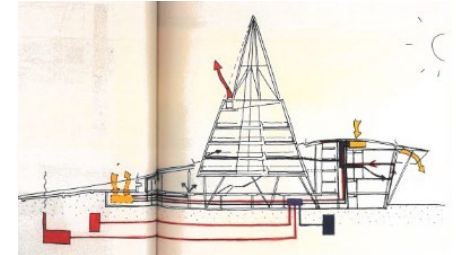

Figure 41 - Roof plan

Figure 42 - Sustainability Concept

Figure 43 - Site Model - TUDL & AULA

of the climate conditions, the section illustrates the use of double skin facades, a green roof and a 'cold storage', which is an open loop geothermal system, taking advantage of the stable ground-water temperature, and using it either for cooling or heating, in an energy efficient manner. (LeCuyer, 1999) On top of that, the green roof which insulates thermally and acoustically the largest and most exposed surface of the building envelope to direct sunlight, it has an undeniably positive impact on the building's performance. Apart from thermal insulator and sound barrier, the green roof provides natural cooling during the summer. Overall, these observations summarize the most important aspect of the competition's proposal.

As a final remark, with a closer observation on realized projects, the resemblance of Mecanno's proposal is revealed, with that of OMA's, 1988 competition entry for the Netherlands Architecture Institute (Fig. 44). Briefly, their building is described as a ''confrontation of a quadrangular podium in a triangular form in such a way that this generates the other elements of the program: exhibitions and library''. (OMA, n.d.) As seen from the section in Fig. 45, a tower penetrates the inclined roof and generates space for the various programmatic needs. TUDL'S compositional scheme of the triangular building, with an inclined roof, pinned down by a volume-tower, evokes clear associations with OMA's design. For evident reasons, Mecanoo never confirmed any influence by OMA's scheme, which affirms that not all allegations are valid, as they initially appear.

Figure 44, OMA 1988 – NAI proposal
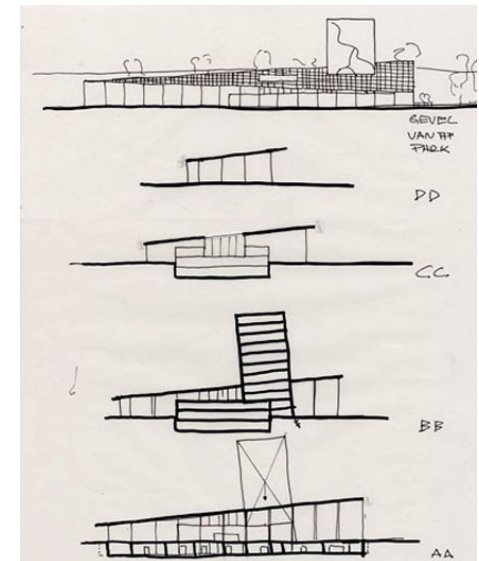
Figure 45, OMA - orthographic sketches

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4.1.1. Three competition entries

In August 1992, the Executive Board revealed its final choice among the three entries by Jo Coenen, Benthem Crouwel, and Mecanoo architects. Four members constituted the committee; these are: K. Rijnboutt, architect and chairman of the committee, the librarian J. Waaijers, the architect G. Daan, the urban planner D. Lambert and the civil engineer H. van Lindonl. (Marcel, 1994). Specifically, the jury had pointed out specific concerns that the designs had to address, such as the backside situation of the plot, the programmatic coherence of the Library with the AULA, and the high degree of functionality for the new TUDL (Marcel, 1994).

The site models (Fig.46-48) being the only evidence of the three proposals, yet informative, show the proposals in their context. Jo Coenen used a labyrinth layout and linked the library with Mekelweg via a tree-path; although it was the only project that connected directly to the auditorium, the jury found the overall approach too complicated (Marcel, 1994). On the other hand, Benthem & Crowel approached the project from an urban point of view and used a wedge-shaped form. The proposal shares similarities with Mecanoo's design, but the committee regarded that the strictly symmetrical library, would compete with the AULA, leading to its rejection (Marcel, 1994).

Mecanoo's proposal was given credit by the Executive Board for the urban scale consideration that shaped the synthesis of the library (Marcel, 1994). Qualities of light, spatiality, and routing were admired by the committee, which found the idea of the contrasting cone and the relation to the AULA, positive aspects that distinguished Mecanoo's scheme (Houben et al., 1998). Regarding the areas of improvement, the jury expressed doubts about the fire-safety of the cone and suggested the extension of the diagonal between the TUDL and the AULA, up to Mekelweg.
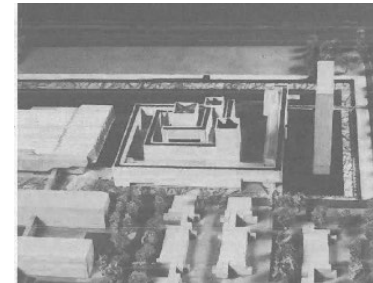
Figure 46 - Jo Coenen
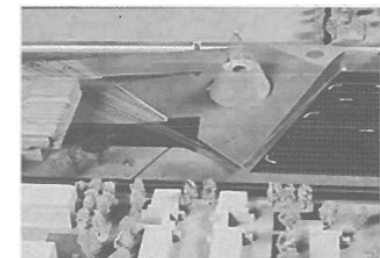

Figure 47 - Benthem Crouwel

Figure 48 - Mecanoo

Figure 49 – Competition model

Comparing to the other two projects that followed a rather challenging approach when dealing with the AULA through their 'exposed' architecture, Mecanoo avoided this condition by designing a hill rather than a building. Clearly, the use of the cone made their design a bold proposal, rather than a compromised solution of a hidden and camouflaged building. As a concluding point, the jury was convinced that the chosen design could become the new public space for TUD.

4.2. Final Composition

Between the chronological period of the competition and the final stage, there is no design material available that was produced in the interim. However, a new brief published in 1993, informs about the reduction of the book storage by 40%, accompanied by a 400-seat decrease, from the initial 1400; also, the updated brief rejected the initial idea of expanding the library staff spaces. (Houben et al., 1998) Thus, the selected scheme had to be converted into a smaller and less expensive library, whose realization required inevitable alternations from the competition stage.

In terms of site plan, it is apparent that the triangle was converted into an irregular trapezoid, paradoxically reminding of Benthem & Crowel's proposal, which was rejected owing to its trapezoidal footprint. Still, the layout shows that it is derived from the viewing axes rather than site lines (Mayr, 2009). The oblique-line geometry breaks the rigid cartesian grid, while it creates a sense of forced perspective that reinforces movement. Therefore, the form-giving process was influenced by the various ways of approaching the building.

While the plan depicts the new library being situated opposite the AULA and as close as 10 meters to it, the examination of the section should be considered. The section of the AULA was an area that the architects focused on from the beginning (Houben, 2018). The exact relationship between the new and the extant is clearly depicted through the site section. As a result, the perception of the dominant AULA changes, which becomes less prominent once it is viewed from the library's roof, creating a more harmonious connection between the two.

An important architectural aspect that had to be configured was that of the elaboration of the rest of the elevations. Although on the main South-East façade, the library is hidden beneath a green slope, the three other sides had to be designed. Beuren (2001) supports that the use of glass for the exterior walls creates the illusion of an extruded
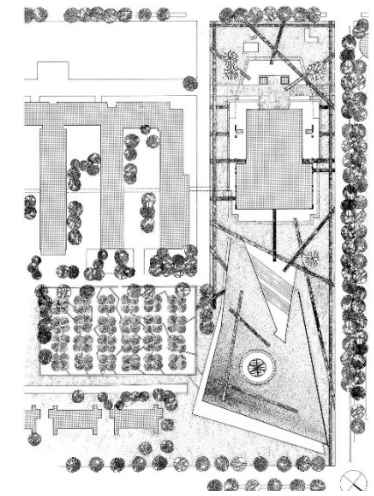

Figure 50 - Site Plan

Figure 51, Site Section

Figure 52, 'Technical' facades

landscape. Therefore, the slope becomes the camouflaged and well-integrated part of the building, while the sides facing the road, display the technically advanced and detailed design of the library.

In spite of the architects supporting that the TUDL was intended to become a landmark only in TUD, in reality, it shapes the cityscape of the rather flat urban context of Delft as well. Certainly, the cone designed to symbolize technology, tranquillity, and contemplation, establishes a focal point of the TUD. (Wezenbeek, 2008) Still, the literature verifies that the architects only focused on the impact of TUDL on the campus and not on the broader context.

All things considered, it is definitive to say that the final composition resulted from concepts, instigated by the context.

4.2.1. Interior – Spatial Organization

Due to the intertwined relationship between exterior and interior, it is vital to regard those themes as a single architectural composition, where one theme influences the other and vice versa. The spatial organization is the essence of a building, especially of such a typology, which is confirmed by Houben (2015), who emphasized the prioritization of space, light, and acoustics in the library's design.

According to Fig. 53, on the perimeter of the TUDL, secondary smaller spaces are located, leaving the central area open. One should consider how the wedge shape affected the arrangement of the interior spaces. With the backside of the building having the maximum height, Mecanoo used this horizontal strip to host the office spaces. While the perimetrical spaces feature internal glazing surfaces overlooking the central void, the offices are concealed by a substantially long, floor-to-ceiling library wall that possesses 80.000 books and journals. To control humidity and temperature fluctuation, Mecanoo concealed the book depot from the public view and located it on the basement, where 'Tresor' is found too – the storage of the most rare and vulnerable volumes. (LeCuyer, 1999)

The most significant space-defining elements on the ground floor are the library wall and the cone. The supporting spaces are centred around the cone, and together with the book-wall, they divide the space into solid and void. Furthermore, natural daylight, as an important design parameter, illuminates the reading rooms and the supporting spaces, while the ground floor is more artificially lit dependent. Finally, the desired acoustic levels inside the building are achieved by the green roof, which confirms its essential purpose, but on the other hand, the bare sound-reflecting concrete walls of the reading rooms inside the cone, are not beneficial for the calming acoustics that the architects were aiming for. (Houben,2015)

Nevertheless, the atmosphere together with the spatial organization inside the TUDL is representative and clearly related to the concepts that Mecanoo envisioned from the project's commencement.
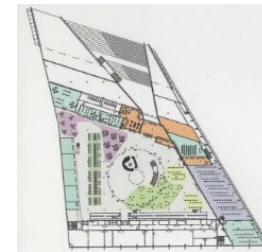
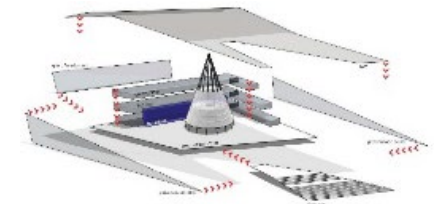*Figure 53, Ground Floor Plan*

Figure 54, Basement level - Book depot

Figure 55, Exploded View

Figure 56, Library wall

4.3. Findings – TU Delft Library

The analysis of TUDL's design process revealed the rationality behind its finalized design. Initially discussing the historical background of the library, and key context elements, enabled a broader comprehension of how the architects translated the competition's brief into an architectural potential for the new library.

The logical sequence of the topic was significant for understanding the conversion of the theoretical framework of Mecanoo into a concept proposal, composed of specific design principles. In addition, the examination of the competition brief clarified that the aesthetic expression of the library was only one aspect of the project, since numerous underlying requirements had to be addressed with the new building.

Certainly, the turning point that technology marked in the 90s, directly affected the entire design approach, as the architects were called to take into account the forthcoming changes that technology would bring in the long term. Aside from that, efficiency and functionality proved to be of high priority for the program.

Most importantly, from a broader perspective, TUDL serves as an example of a building that is anything but monofunctional. Through its design, Mecanoo aimed to fulfil the programmatic requirements, in conjunction with the establishment of the new public space, that was missing from the campus. The solution was found through the analysis of the limitations of the site, such as the Assembly Hall, which shaped the composition both internally and externally. The simple geometry of the library was the response to the Assembly Hall's complexity.

Overall, Mecanoo used as a design principle the decoding of the factors affecting the perception of the building from an urban scale to a building scale level. Such factors are view lines, natural daylight, and routing. Thus, exploration of external stimuli, instigated the design process, and through the gradual concept development, nowadays TU Delt Library is certainly both a hybrid educational center and an informal public space.

Part 3: Comparison

Eye Filmmuseum & TU Delft Library

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Chapter 5: Design comparison & conclusion

Two public buildings of significant cultural impact, belonging to the same geographical but different urban context, have been the main theme of this paper. The focus laid on their designs as idea-development, from the commencement of the projects until their realization. The chronologically ordered examination of the design material, had a structural role in the paper, considering it as the most appropriate approach for comprehending the conditions, under which the two compositions were shaped. Although the EYE Filmmuseum and the TU Delft Library serve specific and different purposes, after analysing the concepts behind both buildings, it is valid to state that similarities in their design principles can be found.

5.1. Starting points

In the case of the EYE, Roman Delugan's negative experience of a standard cinema visit, which was lacking on an emotional level, became the point of departure of the project. With a thorough examination of the topography, the building was designed as a landmark, aiming to revitalize the broader area. In compositional terms, the EYE Filmmuseum was designed as the focal point in the urban tissue, that juxtaposes intentionally and boldly the existing architecture. Moreover, DMAA translated the three components of filmmaking -light, space, movement – into design parameters for the new museum. As a result, the EYE becomes an example of how a single building can use its topography to achieve bigger ambitions; the museum represents the potential of a rapid change of an underdeveloped area that can be accomplished through architectural composition. Furthermore, as a landmark, the building bridges the gap created by the river IJ and reunites the city. Certainly, a distinct architectural language was a necessary tool for the fulfilment of such a purpose.

On the other hand, TUDL was designed as a hybrid building, aiming for versatility and being capable of undergoing transformations over time to accommodate different functions. The analysis of the topography and existing conditions in TU Delft became an area that Mecanoo focused too from the start. Dealing with the Assembly Hall was a synthesis problem that the architects had to solve. Mecanoo managed to create a harmonic relationship with the adjacent massive building but contrast it too, through the cone that makes the library a landmark of the city. Furthermore, having studied in TU Delft, the principal architect, Francine Houben, was aware on a personal level of the lack of public spaces that promote social interaction in Delft's campus. In addition, the competition brief motivated the architects to deviate from the mono-functional library, and together with the technological boost during the 90s, Mecanoo proposed a library of the future. So, in both cases, the architects aimed to redefine the architectural typologies and combined them with strategies of place-making.

5.2. Sustainability as a design principle

In terms of design principles and approach, one substantial difference between the two projects distinguishes the two architectural approaches and it is regardless of their typological disparity. Specifically, although TUDL was designed in 1992, it is presented as a visionary sustainable building. (LeCuyer, n.d.). In reality, literature sources prove that this approach was not Mecanoo's initiative but the Executive Board's, which involved in the design process environmental design specialists (Houben et al., 1998). Hence, TUDL features three basic tools: double-skin facades, a geothermal energy system – '*cold storage*', and a green roof, which significantly enhance the building's energy performance. (Beuren, 2001) Meanwhile, the EYE was constructed one decade later, when concerns about architecture and climate constituted an increasingly important topic. But the existing literature of the museum, includes no evidence of any sustainability approach adaptation, which raises questions regarding the value of the

building in the long term. Especially in the rare occasions, when budget restrictions do not confine architects from using sustainability strategies, one should inquire whether the climate consideration in architecture is as an essential or supplementary part of design. The environmental status of today and the future, does not ask, but demands the incorporation of 'green' design in the built environment, which is present in TU Delft Library, but absent from the EYE museum.

5.3. Concept vs construction

Furthermore, despite of how innovative or inspirational these architectural concepts are, they should never be considered adequate without their correct execution by means of construction. Both buildings required advanced construction solutions; on the one hand TUDL features a massive steel, self-supporting cone, and a heavy green roof. On the other hand, the cantilevering volumes of the EYE, that determine its form, required steel trusses that are uncommon in typical buildings. The knowledge of building technology and construction-technique is an integral part of architecture, which is imperative for the transformation of abstract ideas into elaborated buildings. Additionally, technological and material development enable spatial possibilities and experimentation, leading to the involvement of numerous specialists during the project development. For that reason, it is vital to highlight that an intriguing spatial proposal cannot compensate for construction knowledge, as these are two interrelated fields in architecture. Thus, for a deeper understanding on these projects, it is important to reflect on the execution and materialization of the concepts in the realized buildings.

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5.4. Paradigm for future buildings

How realistic it is to presume both buildings as valid examples for future libraries and cinema halls, becomes a reasonable inquiry. Undoubtedly, given the budget limitations, the strict building regulations and the multiple restrictions of the construction industry, these projects do not portray examples for ubiquitous applicability, but they provide new insights of changing spatial experience through architecture.

The case studies constitute a paradigm for limited projects, firstly due to their high cost and secondly owing to the ample empty space around them, in dense urban environments, required for the appreciation of their architectural features. Especially, the bespoke form of the EYE makes it hardly adaptable for future programmatic changes, but DMAA followed this approach to attain different goals, exceeding the programmatic configuration. On the contrary, Mecanoo presented the library's design as a transformable learning environment (Beuren, 2001); the reality confirms the library's tolerance towards future changes, owing to its open plan and the division of spaces, which follow a more conventional approach compared to DMAA's.

Lastly, the extensive time dedicated to the configuration of the concept during the competition stage and afterwards, finds limited relevance to the construction industry. Not only competitions are organized for limited projects, but also the concept stage of a project is regarded as the shortest stage during a project.

Determining the applicability of EYE's and TUDL's concepts for future building, involved the analysis of their design principles. Once these principles are decoded from the concept, similar architectural thinking can be applied to various architectural projects. Especially in a world, where the relationship between contemporary and existing architecture becomes increasingly relevant, the extant should be viewed as a source of inspiration and departure point for new ideas.

5.5. Synopsis

Although rather different as finalized buildings, the two projects proved to be relatable in certain fields. Particularly important to highlight, is that both buildings were constructed during an era when architecture was focused on diversifying public buildings typologically, with the transition of mono-functionality to multifunctionality. For DMMA and Mecanoo the occupation with the program was an area of experimentation and nonetheless great interest. Likewise, both studios were interested neither in following particular styles, nor in encompassing national, or historical reference in their designs. Creating landmarks and iconic buildings, that are perceived through sensory experience, was the principal guideline throughout the process of DMAA and Mecanoo.

The design process analysis depicted that these iconic buildings were the product of a concept-development, highly driven by diagrammatic architecture. The extensive design-material collection, showcased the rationale behind the architectural decisions made by the architects, which did not always come into agreement with certain rhetorical statements found in the existing literature. Additionally, regardless of the substantial scale of the projects which was necessary given their programmatic needs, the two projects were developed according to their urban context. To that end, landscape was confronted as a means of integrating the buildings into their urban context, as well as an escape from conventional architecture.

In conclusion, the analysis of the case studies as architectural-idea processes and not as final products, demonstrated a thorough understanding of the projects. Not taking facts for granted, but questioning what the purpose of each decision was, proved to be the missing piece of the puzzle that nowadays' architectural criticism has lost. Hence, objectively examining the entire spectrum of the design development, propels architectural thinking and lays the foundations for different approaches in future projects.

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Appendices

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<u>Phase 1 – Competition stage</u>
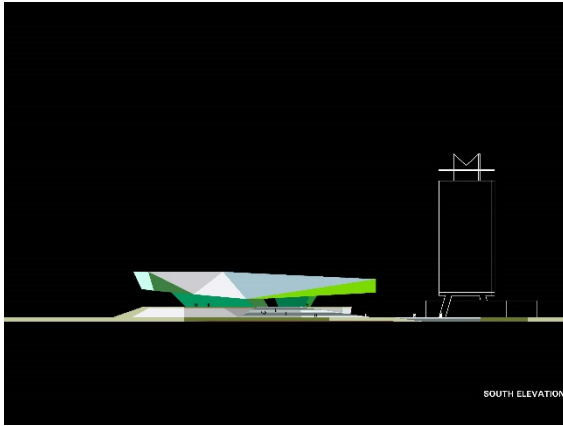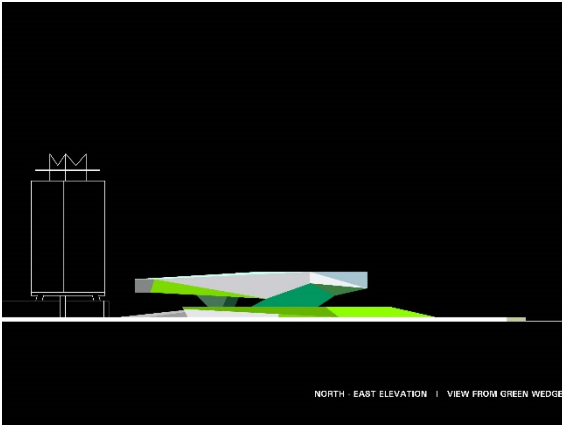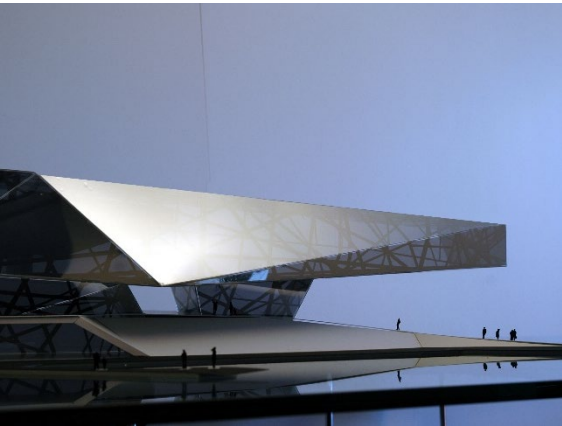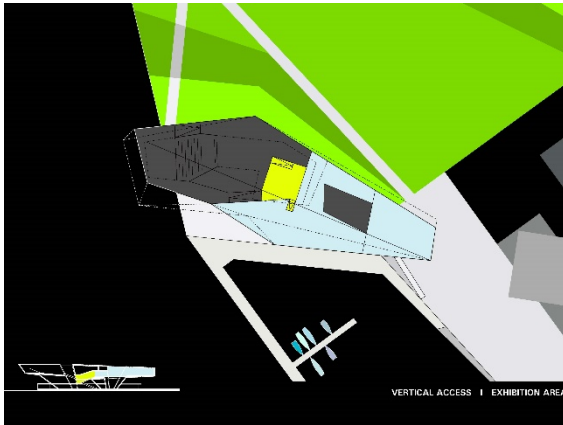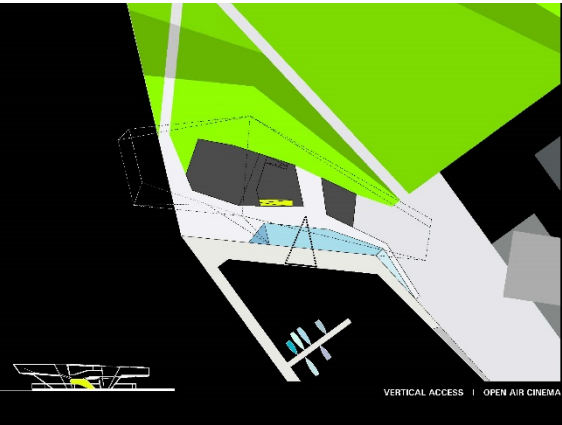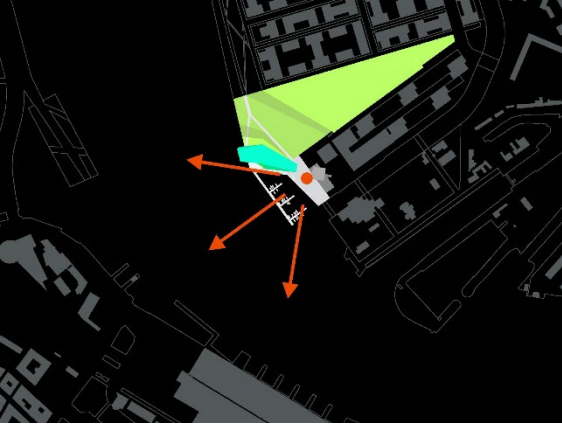
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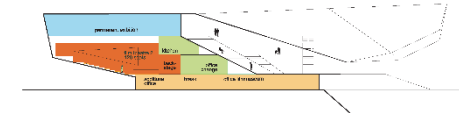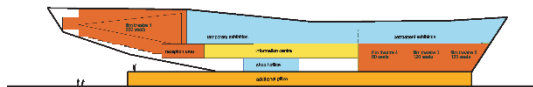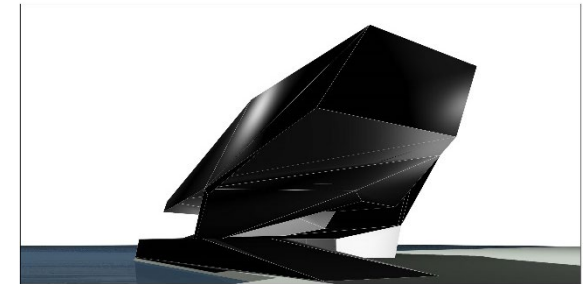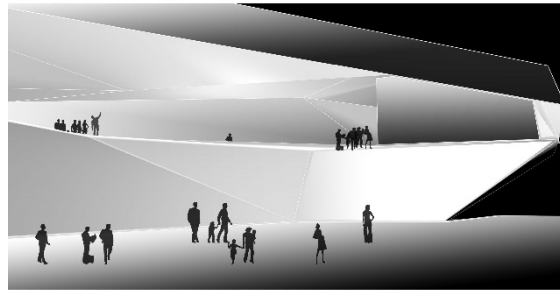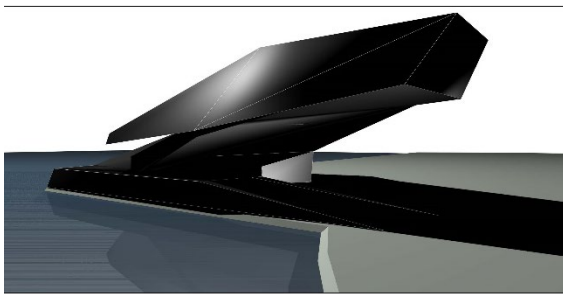
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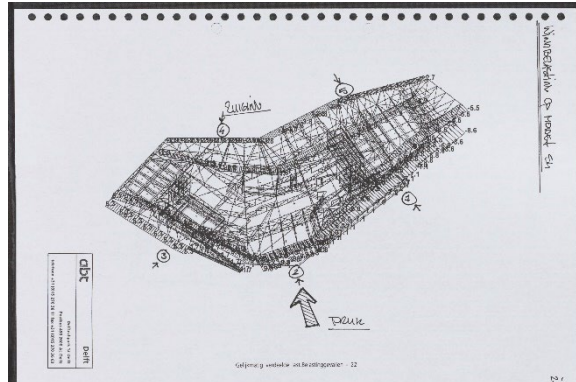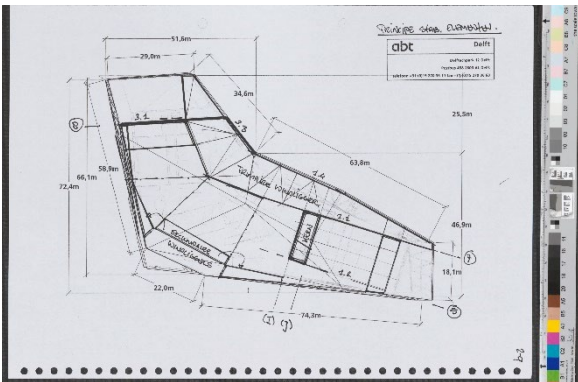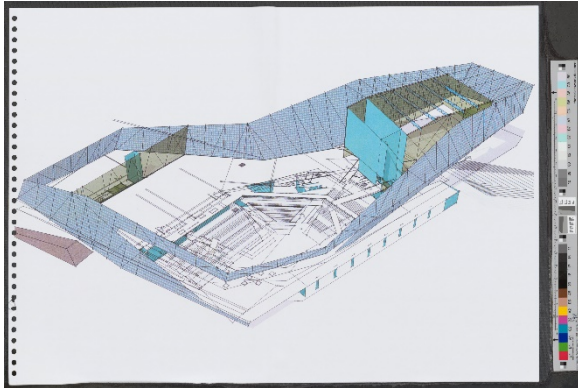
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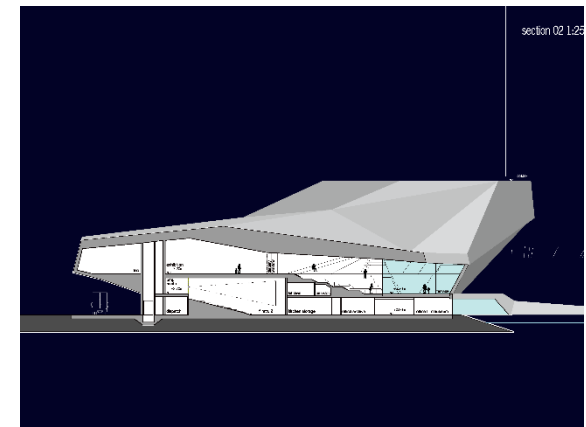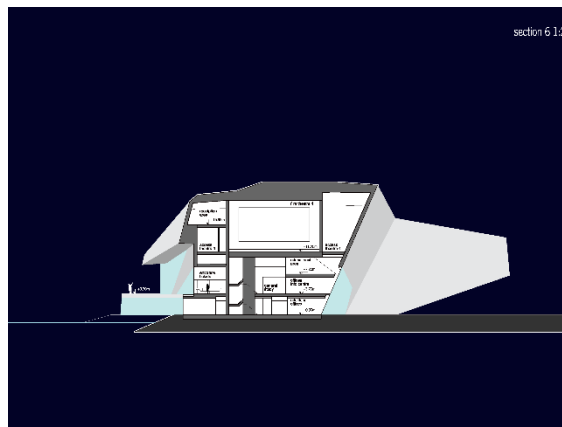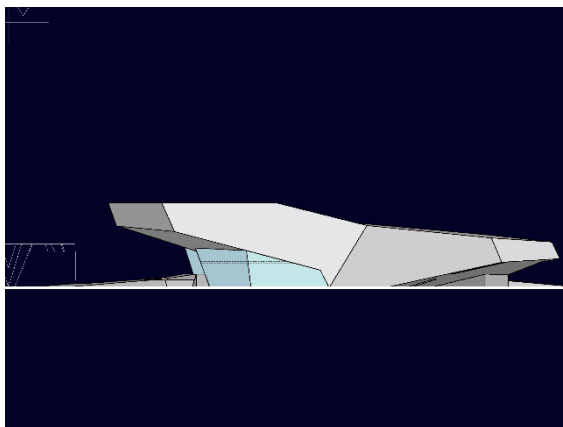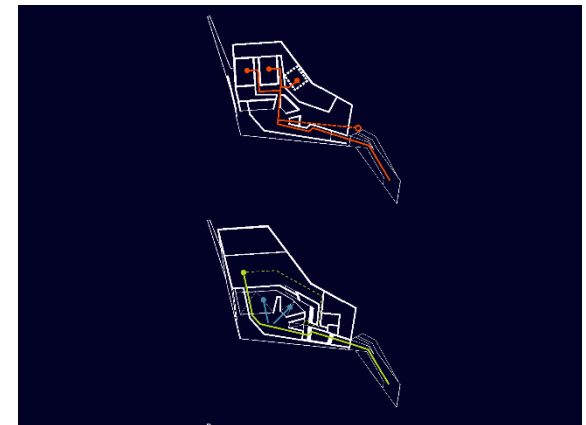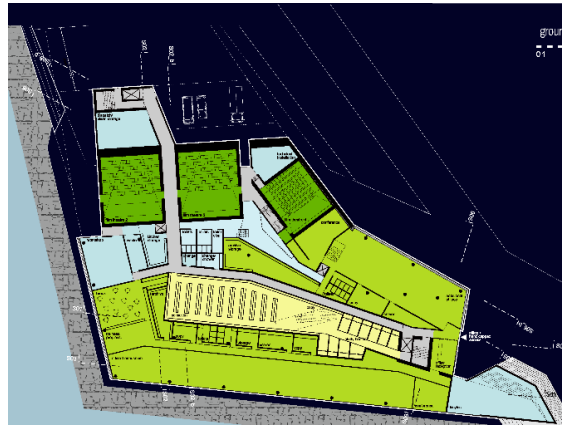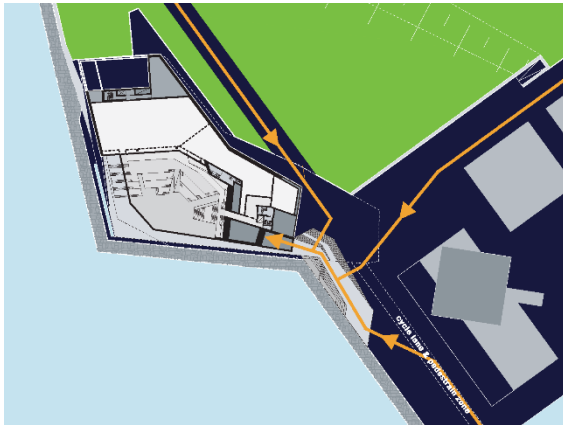
Design material provided by DMAA architects upon request. (D. Feistel, personal communication, December 16, 2020).

Phase 3 – Final Design stage: Physical & Digital Modelling – Arena Design
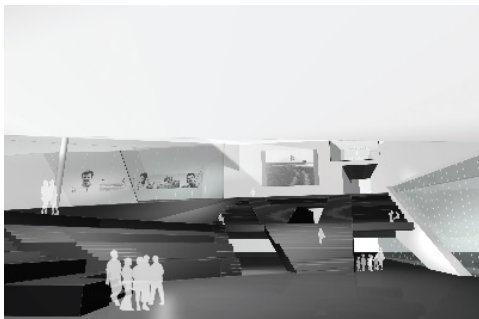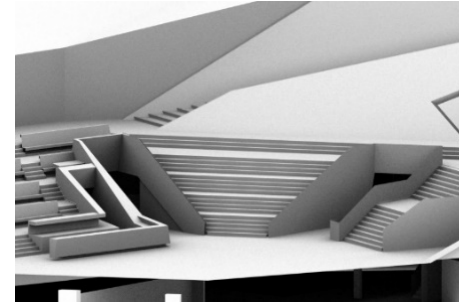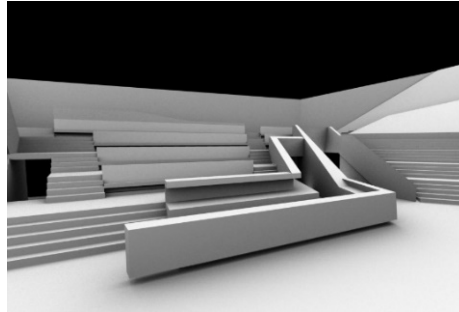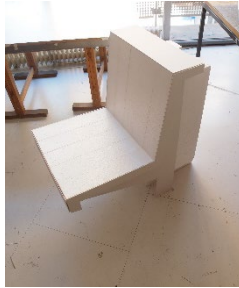
Design material provided by the municipality of Amsterdam upon request. (Gementee Amsterdam, Personal communication, February 4, 2021).
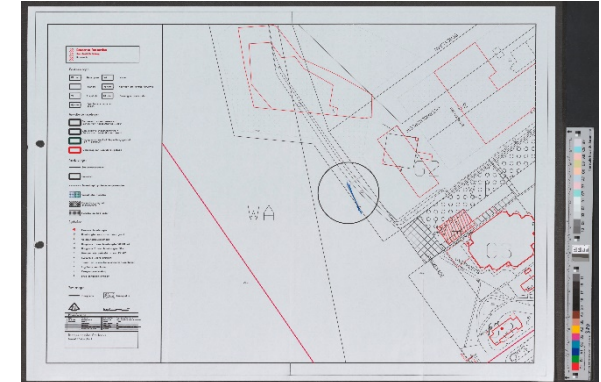
TU Delft Library

Construction phase Diagrams
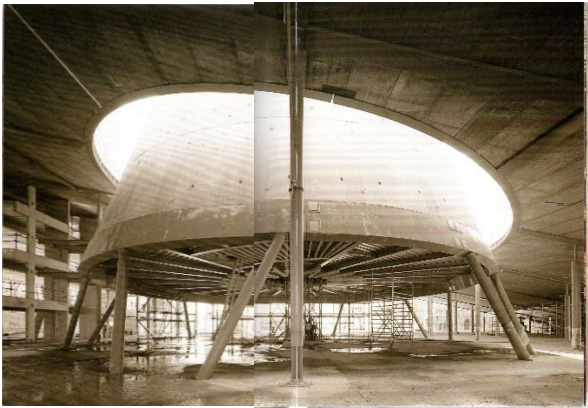
Figure 57, Structure

Figure 58, Cone construction
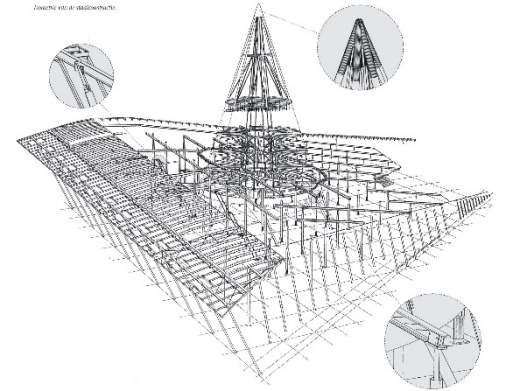
Figure 59, Structural components

Masterplan 2007 – Mekelweg transfromation, (Houben, 2015)
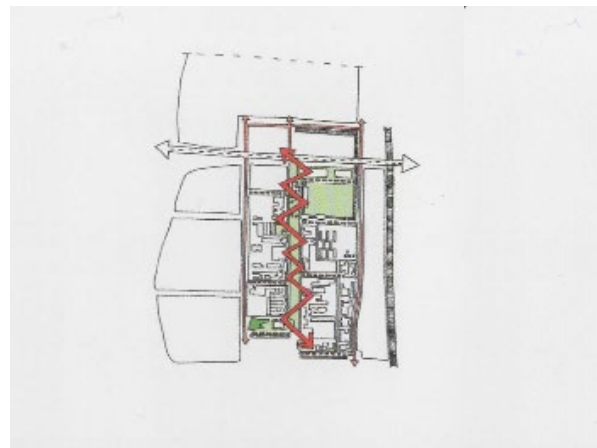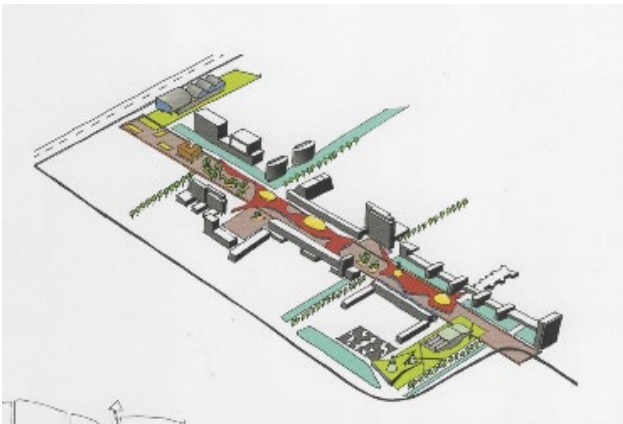
Schematic diagrams explaining idea-development. (Zibae, n.d.)
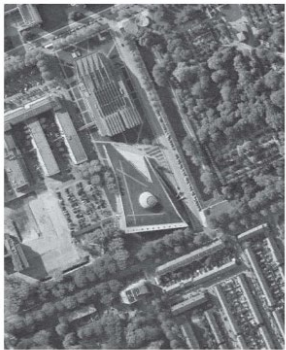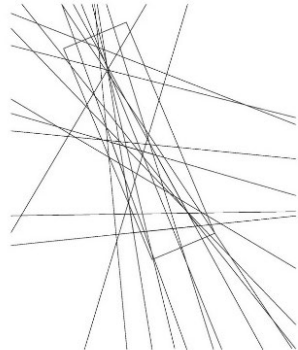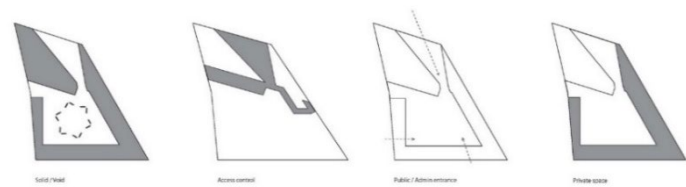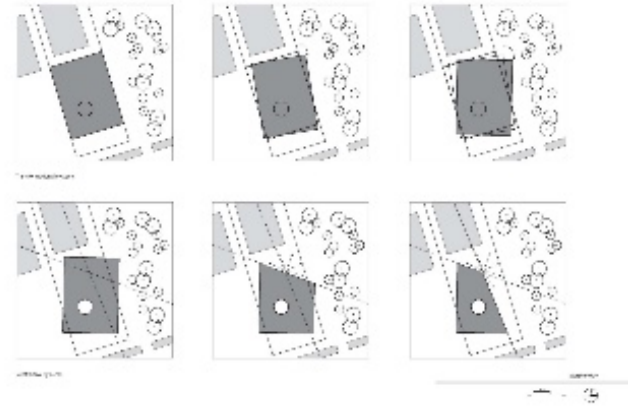
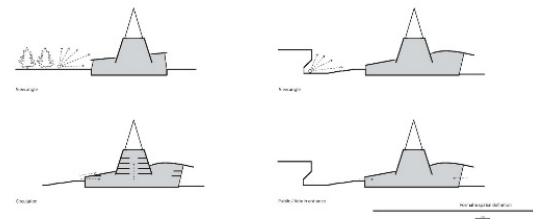**Competition documents – Orthographic drawings, (Rood, 1994)**

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