MASTER

Public art depot Prague
two contradictory functions in the context of the fringe Stvanice Island

van de Venne, L.

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Public Art Depot Prague

Two contradictory functions in the context of the fringe Stvanice Island
Graduation Thesis Lore van de Venne  
Eindhoven University of Technology  

Eindhoven, 23 January 2014  

Graduation Studio "Celebrating the Fringe, Designing the Exception"  

Graduation Committee:  
prof. ir. Juliette Bekkering  
ir. Sjef van Hoof  
dr. ir. Faas Moonen  

Faculty of the Built Environment  
Master Architecture, Building & Planning  
Department of Architecture and Structural Design
This graduation project terminates my studies at the Eindhoven University of Technology in the fields of Architecture and Structural Design. The project started within the graduation studio *Celebrating the Fringe: Designing the Exception* in February 2013, in continuation of a collectively conducted research into the phenomenon ‘fringe’ and an analysis of the location of Stvanice Island in Prague and its flood risk in particular. Literary works of Koolhaas, Rossi, and Sennett formed the theoretical basis for our designs. I would like to thank my graduation committee, consisting of prof. ir. Juliette Bekkering, ir. Sjef van Hoof, and dr. ir. Faas Moonen, for their sharp criticism, advice and support.
The graduation studio of Celebrating the Fringe: Designing the Exception focuses on combining two polarities: the architecture of the city, and the escape from the city. The location for this project is Stvanice Island in the riverbed of the Vltava river, which runs through the centre of Prague. The unbuilt area of the island is like an unintentionally preserved, undiscovered oasis of peace, disconnected from the surrounding urban tissue, and could be utilised as an escape from the hectic 21st century city life. The challenge of this project is to celebrate the fringe.

A theoretical basis in the form of a written essay on the relation between form and function in architecture, a research into the definition of the term 'fringe', an analysis of the assigned location and its periodical floodings, and the development of a masterplan for the entire island constituted the starting point for the design of a building. The strategy of the masterplan involves the amplification of the existing situation on Stvanice Island by increasing the contrast between city and nature and widening the gap between the two.

The function of art depot entails a 'contradictio in terminis', as art is created with the purpose to be perceived, not to be stored away. The aim of this project is to make visitors aware of the fact that the actual museum is only the tip of the iceberg, and to reveal what happens behind the scenes. This is done through the combination of art depot and gallery, focussing on the polarity of closed, private, introvert and secured versus open, public, and inviting spaces.

The design of the Public Art Depot is actually the expression of a statement, namely the fact that the art depot should be made publicly accessible; in that sense, the appearance of the building is indirectly related to its two functions. The building volumes of depot and gallery form a movement together, which is meant to facilitate the influx of visitors into the depot, to make the depot accessible to everyone. The routing through the building, designed as a linear, one-way route is used to express this conviction. The gallery lifts the visitor up to the upper level of the art depot, feeling as if he enters a hidden world. The second part of the route descends into the atrium and leads along many different depot spaces where the visitor is able to look inside.

Summary

The graduation studio of Celebrating the Fringe: Designing the Exception focuses on combining two polarities: the architecture of the city, and the escape from the city. The location for this project is Stvanice Island in the riverbed of the Vltava river, which runs through the centre of Prague. The unbuilt area of the island is like an unintentionally preserved, undiscovered oasis of peace, disconnected from the surrounding urban tissue, and could be utilised as an escape from the hectic 21st century city life. The challenge of this project is to celebrate the fringe.

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Introduction

The graduation studio of Celebrating the Fringe: Designing the Exception focuses on combining two polarities: the architecture of the city and the retreat into nature. The link between the two can be found by studying the forgotten places and the fringe zones in the heart of the contemporary metropolis. These peripheral sites offer specific qualities and exceptional conditions that should be explored and celebrated. The fringe offers a certain resistance towards known architectural solutions and demands new ideas and perspectives (Bekkering and van Hoof, 2013).

This innovative approach is reflected by the aspirations of the architect. Buildings have an ambiguous character by definition, representing solidity and permanence on the one hand and requiring adaptability to our constantly changing society on the other hand. Rem Koolhaas describes the ideal city as being composed of “permanent monoliths which celebrate metropolitan instability” (Koolhaas, 1976, p.296). Here, the architect’s ambition starts to play a key role and the expression of this ambition is essential to give a building its own strong identity. The ambition is determined by polarities as city versus nature, public versus private, extrovert versus introvert, the notion of urbanity and scale, and themes such as sustainability.

The location for this graduation project is Stvanice Island in the riverbed of the Vltava river, which runs through the city centre of Prague. Similar to a building, the river also incorporates the ambiguity of solidity and volatility. It forms a static and constant element, shaping the city in its actual form and splitting it into two halves. On the contrary, the unpredictable variations in water level and the ever-recurring floods, which threaten the city and its inhabitants, reveal the river’s dynamic character. The Vltava river entails another polarity of offering unique urban and architectural qualities versus threatening the inhabitants of Prague with the risk of flooding. Whereas the opportunities should be utilised, the contemporary city turns its back to the embankments with high quays protecting the inner city from flooding. In this graduation project, the design of the building should react to this dual attitude towards the water and employ the shores of the Vltava river as a source of opportunities (Bekkering and van Hoof, 2013).

Due to the regular inundations, Stvanice Island is designated as flood plain and hence remains nearly unbuilt. The unbuilt area is like an unintentionally preserved, undiscovered oasis of peace, disconnected from the surrounding urban tissue, and could be utilised as an escape from the hectic 21st century city life. Dealing with both a historic, monumental environment and a relatively empty island in the heart of Prague is a challenge of the studio. The task is to celebrate the fringe.
**Research question**
As the background of the graduation project is explained above, it may be clear that the architecture of the city, opposed to the escape from the city is central. The polarity, duality, ambiguity, or contradiction is taken as the main theme. Although the choice of function will be clarified later on, a leap in the process is necessary to introduce the research question.

*How can the contradictory functions of art depot and public gallery be combined into one building, in the context of another polarity: the retreat from the city within the city?*
The Fringe

As explained before in the introduction, it is believed that the fringe zones in a city can form the crucial link between the architecture of the city and the retreat into nature, as in the case of Svavice Island. Although fringe zones, forgotten places, peripheral sites, outcast areas, no man’s land, exceptions within the city fabric are all terms which describe the fringe to a certain degree, it is hard to state one clear definition. Nevertheless, understanding the meaning of the fringe is of profound importance in order to get a grip on the problem; therefore, several case studies of other apparent fringes have been carried out. This collective analysis has been used in the design of the masterplan and building and is thus concisely repeated in this chapter. The case studies give a better insight into the characteristics and qualities of different fringes and offer clues about the way to deal with the situation on Svavice Island.

Besides the properties of the fringe, the issue of the deliberately created fringe is addressed. In most of the references, negligence and oblivion caused the particular atmosphere, the development being uncontrolled and unconstrained. The label of fringe is already applicable to Svavice Island, now this needs to be utilised and exploited, to be amplified and intensified by an architectural intervention. It is difficult to preserve the island’s current outcast situation and to simultaneously attract people and turn it into a pleasant place. The main question remains how to celebrate the fringe without destroying it.

Case studies

Although thirteen case studies have been conducted in total, only a few of them will be described briefly below. The other cases can be found in the booklet that comprises the complete analyses, which resulted from teamwork.

• High Line - New York
• Coney Island - New York
• La Villette - Paris
• MuseumsQuarter - Vienna
• C-mine - Genk
• Monastery of Novy Dvur - Touzime
• Imperial City - Hue
• Pedregulho - Rio de Janeiro
• Kowloon - Hongkong
• San Michele - Venice
• Shiban - Yemen
• Christiania - Copenhagen
• Exodus Rem Koolhaas

High Line - New York

The abandoned railway structure of the High Line in Manhattan has been transformed into an elongated public park, which floats nine meters above ground level. This case can be seen as a neglected and dilapidated fringe before its renovation, and a designed fringe afterwards. The fact that the Highline is still considered a fringe, means that the transformation was successful and the fringe situation was celebrated. The park functions as an escape from crowded and noisy New York below; the difference in height emphasising the border between city and fringe. Also the unusual shift of function from railway to public park contributes to its unique character.
Coney Island - New York
In the 19th century, Coney Island became popular among the masses of Manhattan. It started as a natural oasis away from the rapidly growing urbanism of Manhattan. Initially, only few transportation connections bridged the gap between island and mainland, but the train connection from 1865 put Coney Island within the reach of the new metropolitan masses. As Manhattan grew and more people flocked to the island, it could no longer exist as a natural island and mutated to the opposite of extreme artificiality and urban intensification. Technology, synthetic reality and the abnormal and absurd were exploited as consumer goods. The island became populated with resort hotels and criminals; Rem Koolhaas describes them both as fugitives of urban prison in Delirious New York (Koolhaas, 1976, p.32). Although this fringe altered during the 19th century from quiet to crowded and from poorly connected to easily accessible, the ‘fringy’ character was strengthened because of its exclusivity and eccentricity. Coney Island is an intriguing instance of an artificial, man-made fringe.
Figure 3
Tschumi, Parc de la Villette, Paris, 1986

Figure 4
Museums Quarter, Vienna, 2001
La Villette - Paris

Tschumi’s masterplan for Parc de la Villette contains the transformation of a former slaughterhouse area into a place of culture, where natural and artificial are forced together. The park, with its own rules, does not take the history of the site or the surrounding context into consideration in any way; it can be seen as a void within the dense urban tissue. The masterplan is imposed on the site in the form of a threefold intervention, also known as the principle of superposition: a system of objects represented in point, a system of movement represented in lines and a system of spaces represented in surfaces. A highway, a canal and train tracks constitute barriers around the park; the introvert character is enhanced further by the strategic use of buildings, height differences, and trees. However, the park opens up towards the city at a certain point, and the framed view arouses the feeling of looking back at the city from a distance. The introvert character, but mainly the distinctive system of rules make Parc de la Villette a fringe.

Museums Quarter - Vienna

The baroque facades of the former imperial horse stables conceal a cultural oasis in the heart of Vienna. Because the preservation of existing, historical architecture is valued high in Austria, one choose for camouflaged modernisation of this building block instead of a clearly visible transformation. The result is visible in Figure 4: an enormous courtyard, divided into several squares by three newly built art museums, accessible to pedestrians only. The Museums Quarter is definitely a fringe, as the carefully constructed inner world surprises visitors, exceeding all expectations. Its introvert character has made the square the most beloved hangout place in the city of Vienna since the opening in 2001, attracting many visitors but preserving its unique atmosphere.

Despite the fact that the other cases are equally interesting places, the four fringes mentioned here are most relevant to this project. An overview of the studied locations has been made visible in the matrix below, showing the main features with regard to their fringe character. The High Line, Coney Island, Parc de la Villette and the Museums Quarter are all projects that are either related to recreation, culture, or transformation, or that have one very specific function. These characteristics are used in the strategy for the development of Sváňice Island, as will become apparent later on. The other case studies are typified by a reversed situation compared to their surroundings, a fringe condition cause by the state of power or different laws and rules, a peculiar social structure or historical background, or a strong relation to water. Exodus from Rem Koolhaas is an exception in the list, as this is not an existing fringe but a fictitious, theoretical example.

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<th>Coney Island New York</th>
<th>Parc de la Villette Paris</th>
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Figure 5
Matrix analysed fringes
Location

The location of this graduation project is Stvanice Island, one of the islands in the Vltava river which runs through Prague, the capital city of Czech Republic. A short introduction of the historical and morphological development and current situation of both the city of Prague and Stvanice Island is essential as a background to this project. In addition, the threat of flooding has been of profound influence on the urban development.

Historical context

The city of Prague is strategically located in the centre of the Bohemian basin, next to the Vltava river and bordered on all sides by mountain ranges. In medieval times, the river was only shallow enough at two points be crossed on foot: near the current Charles bridge and at Stvanice Island, as can be seen in Figure 9 (Maier, 2013). The city of Prague grew around this central position along the river, which provided many military benefits. The famous Prague castle was founded in the ninth century on the left bank of the Vltava, while the Old Town and Jewish Ghetto developed on the right bank, connected by a bridge (UNESCO, 2013). The city was at its (medieval) climax in the fourteenth century, only surpassed in size by Rome and Constantinople.

The Gothic style dominated the artistic scene in the Kingdom of Bohemia from the end of the thirteenth century until the beginning of the sixteenth century. The Thirty Years’ War caused economic exhaustion and depopulation of the city in the beginning of the seventeenth century, turning Prague into a provincial town. At the end of this century, Renaissance reached its apex in Prague with the construction of a number of palaces and gardens for the aristocracy, houses for citizens, town gates, town halls and other structures. In spite of all this building activity, Prague retained its original Gothic character and scale. Baroque construction and reconstruction in the eighteenth century was of more influence, adapting Prague’s image as we know it today (Kohout, Slapeta, and Templ, 1999).

The nineteenth century was marked by industrialisation, leading to the foundation of industrial suburbs. The Old Town was demolished and reconstructed in the first half of this century, building up the city’s infrastructure. At the end of the nineteenth century, Prague started to become an agglomeration with suburbs surrounding the historical core, containing more than half a million residents (Kohout, Slapeta, and Templ, 1999).

In 1918, Prague became the capital of the newly created Czechoslovak Republic; the Prague Castle was declared the seat of the president. From 1940 till 1945, city construction was halted because of the war, but Prague’s historical core fortunately escaped military destruction. The communist government was installed in 1948, which basically influenced the entire further political, social, economic and cultural development. The emphasis shifted to the extensive construction and the industrialisation of building technology through prefabrication (Kohout, Slapeta, and Templ, 1999). The past twenty-five years, Prague has slowly recovered from its communistic period; the 1990s were marked by optimism and the search for quality, the previous decade characterised by globalisation (Maier, 2013).

Figure 6
Hotel Crowne Plaza as the best instance of Stalinist architecture in Prague
Figure 7
Location in Europe

Figure 8
Location in Prague

Figure 9
Prague as the only location where the Vltava river could be crossed
Flooding

Prague and other areas that border the Vltava river suffer from severe problems with floods on a regular basis. This is a consequence of changes that were made in the twentieth century, when the course of the river was altered and regulated, not taking the natural flow of the water into account sufficiently. The highest recorded flood occurred in August 2002 when the water level rose up to ten meters and damaged dozens of buildings. A strategy concerning the water management of the city of Prague was developed after this devastating flood. Proposed and already partly realised protection measures include the restoration of old channels to provide more space for the river flow and flood-walls to protect the historical city centre (Portál Územního Plánování, 2012).

The flooding frequency and altitude lines of the island are shown in the map below. The heavier the flooding, the less often it occurs. Moderate floods with a rise of water level of one meter occur regularly and affect only a small zone on the outer edge of Stvanice island, whereas extreme floods with a rise of six meters occur only once in hundred years (Tüv TGM, 2011). Obviously, the relief and altitude lines of the island determine the areas which are most vulnerable to flooding.
Figure 11
Stvanice Island during the flood of June 2013
Stvanice Island

The name ‘Stvanice’ means ‘hunt’, which originates from the island's former function of shooting range. After a ban on shooting, the island transformed in the late nineteenth century into a place of entertainment: three restaurants were established and theatrical performances, concerts, balls and firework shows were organised. In the end of the nineteenth century, the only access was by bridge from the south river bank. The city of Prague bought Stvanice Island in 1898 and replaced the existing bridge by the new Hlavkuv bridge, named after the architect. In 1912, a hydropower plant was installed in the western part of the island which is still operable today. The neoclassical building was renovated in 1984 (Info Globe, 2011).

In the twentieth century, the image of Stvanice Island altered from entertainment to sports. The country’s first ice rink was built in 1931, which was later covered with a roof to be able to accommodate other sports. The Zimni ice stadium, designed by architect Josef Fuchs, was torn down in 2011 after it was damaged by the notorious flood of 2002. Besides the ice rink, there used to be a swimming pool in the eastern part of the island, also destroyed by the 2002 flood and demolished afterwards. A tennis club with many outdoor courts is located on the island as well. In 1986, a new central tennis court was erected to perform at international level. The stadium accommodates seats for 8.000 spectators and is the annual place of ATP and WTA tennis tournaments. Furthermore, a water slalom course was built after a renovation of the locks between the island and the south river bank. Finally, a skate park has been situated in the eastern part of Stvanice Island since 1993, enabling year round skateboarding, in-line skating and BMX and hosting national and international competitions (Info Globe, 2011). Figure 12 shows a map of all currently existing functions on the island.
Stvanice Island is a forgotten place, a couple of steps away from the centre of the third most popular city of Europe. While the Old and New Towns, the Charles bridge and the area around the Prague castle are crowded with tourists, just a few people are walking their dog on Stvanice Island. The only liveliness takes place behind the closed fences of the tennis club and inside the skate park. The calmness on the rest of the island is almost overwhelming, ideal for an escape from the hectic city. The risk of flooding is one of the major causes for the emptiness, as the island is situated in the middle of the Vltava river and designated as a flood plain. Moreover, the 2002 flood led to the cancellation of all future building plans for Stvanice Island. Another reason for the fringe character is the weak linkage between island and city centre. Driving over the Hlavkuv bridge in north-south direction, one hardly realises that one crosses an island. Because entering the island demands an enormous effort from pedestrians, Stvanice Island is completely disconnected from the surrounding urban tissue. The lack of public transport on the island and the heavy traffic on the Hlavkuv bridge (80.000-100.000 cars a day), visible in the map below, even enhance the barrier (Maier, 2013). In conclusion, the unintentionally arisen quietness in combination with the proximity to the centre of Prague forms a great potential for Stvanice Island.
Figure 15
Concept masterplan
Masterplan

Mainly due to the study trip to Prague, the conviction got strengthened that a fundamental intervention on a larger scale was necessary to change the island’s image. A single building would not be sufficient to have an effect on the complete island, which is 1.2 kilometres long. Stvanice Island needs an overall vision, a clear strategy to adopt in future plans for developments on the island. Because of this, an urban plan is designed in team work, which will function as a framework for the individual projects later on. As stated before, the aims for this masterplan include the preservation of the character of the fringe, the transformation from a shady area into a pleasant place, the improvement of the accessibility to the island and consequently the attraction of visitors.

Maps of Stvanice Island suggest that the island is currently cut into three parts by the two bridges which cross the island in north-south direction. Wandering around the island, it struck us that the island is actually divided in two along its east-west axis: an urban south side and a more natural north side. The city-like character in the south is caused by the hydropower plant, the former Fuch’s Cafe of the ice skating stadium, the locks, the former lock-house, the tennis club, and the skate park. All these buildings are situated on the southern half of the island with the stadium as exception, resulting in a shift of the boundary between urban and natural character in this area. These observations are represented in a ‘mind map’, drawn on location and shown on the left page.

The chosen approach is based on the enhancement of the existing situation, so the built area is going to be densified further, resulting in a single row of buildings on the south side, while the tennis stadium will be removed to make way for nature on the north side. The created dichotomy corresponds to the theme of the graduation studio: the polarity of the architecture of the city and the retreat into nature. This strategy is supported by the infliction of one clear intervention, namely a cut through the island in east-west direction to emphasise the boundary between natural and artificial. River water will flow through this cut as a small tributary of the Vltava, shallow enough to wade through, as an allusion to history since Stvanice used to be a location where the river could be crossed on foot. This little stream is surrounded by a broad beach on two sides, and a boulevard between beach and buildings. The inspiration for this intervention was given by the linear alignment of the proposed buildings, which will have a splendid view over the island towards the north, similar to coastal towns.

Stvanice Island will become the perfect escape from everyday life of working, suitable for having a short break or to spend a day off. A pleasant place within short distance from the city centre and therefore easy to reach, similar to the High Line in New York. The area will breathe the atmosphere of weekend, holiday and spare time. Amusement, sports and culture constitute the main functions of the island: entertainment refers to nineteenth century Stvanice, sports to the twentieth century, and culture is added as Prague is a city of culture nowadays. These functions can be retraced in the analysed fringes of Coney Island and the Museums Quarter in Vienna. The enormous public space in the northern part of Stvanice Island lends itself perfectly for outdoor activities: a climbing track, tennis courts, an outdoor pool, a playground for children, or a sculpture garden could be placed in the park; the beach is suitable for kite flying, beach volleyball, or jogging; and the boulevard can be used for biking, skating, strolling, or relaxing on a terrace of a restaurant or bar. The buildings are going to have public and residential functions. Public functions are in keeping with the desired atmosphere and will attract visitors to the island. Apartment buildings ensure social security twenty-four hours a day and their residents will enjoy the beautiful view and public space in front of their homes.
The alien beach in the middle of the island diverts the attention away from the unattractive embankments across the river, and hence reinforces the introvert character of fringe Stvanice. The row of buildings and the park are orientated inwards, height differences enhance this effect, turning the beach into a concealed space that is hardly visible without entering the island. In this way, the buildings and trees accentuate the border between fringe and surrounding context, which is currently formed by the river. The introvert, hidden fringe has been studied in the cases of San Michele Island in Venice and the Museums Quarter in Vienna, and water that functions as boundary has been applied in the Imperial city of Hue.

Whereas the threshold to the island is raised visually, it is desired to lower it functionally, meaning that the connection between Stvanice Island and the centre of Prague should be improved. A tram stop on Hlavkuv bridge, a boat stop on the south bank, and four pedestrian and bicycle bridges result in better accessibility to the island. The added bridges pass into existing paths, creating extra connections between the north and south bank of the Vltava river and between east and west. Stvanice Boulevard will be used by slow traffic as a shortcut between the districts of Holesovice and Karlin. Since cars are not allowed on the pedestrian boulevard, a road on the backside of the strip of buildings leads to the car park below. The improved infrastructure is shown in the map below.
In case of a flooding, the access to and routing on the island change: a second, higher route passes through all buildings and links them with the three southern bridges. Moreover, a flood will emphasise the concept of the masterplan by strengthening the polarity between nature and city. During a flood, the ‘cut’ in the island will literally become deeper, separating and distancing the two halves of Stvanice Island and putting the park out of reach. A moderate flood (up to three meters) affects only the connection to the park; the buildings, boulevard and underground parking are still accessible. A heavier flood (up to six meters) makes the car park temporarily unusable and only an extreme flood (between six and twelve meters) activates the utilisation of the higher route.
Figure 18
Masterplan
1:4,000
Figure 19
Masterplan Model 1:2.500
The relation between form and function in architecture

The famous phrase ‘form follows function’ is commonly known among architects. Yet, in current times of economic recession, comprehensive structural vacancy, growing environmental consciousness, and increasing awareness of the necessity to build sustainably, buildings have to be flexible to satisfy changing demands. Requirements of users change rapidly due to improved welfare, often resulting in premature demolition. Flexibility and adaptability of buildings become increasingly significant to respond to the alteration of demands, with the inseparable connection between form and program as a major difficulty. Therefore, the main question of this essay is whether form needs to follow function. This topic will be discussed on the basis of several pieces of literature.

Sullivan's 'form follows function'

Louis H. Sullivan published in 1896 his essay “The tall office building artistically considered” (Sullivan, 1896). In this article, he formulated the famous words 'form ever follows function' and he explains this principle by the instance of the skyscraper. Sullivan describes the tall office building as consisting of three parts. The ground floor and the first floor have a public program. Stores, banks, or other public functions that require a large area take up residence here. Everything is arranged spaciously, with a flexible layout, and lit brightly by large surfaces of glass in the façade. This public plinth has a strong relationship with the exterior and is easily accessible; extra escalators and stairs lead to the first floor. The middle part of the skyscraper is situated above the first two floors and consists of offices. An indeterminate number of identical floors is stacked on top of each other, the offices similar to cells in a honeycomb. Each office receives a window because it requires light, and all these windows are alike just like the offices themselves. On top of this, the upper storey of the tall building constitutes the third and final part. This top functions as storage space for technical installations, such as elevators, shafts, pipes, and tanks. No daylight is needed, which makes windows superfluous. Also, a certain structural division as in the storeys below would be misplaced. The heavy, solid walls of the upper floor are perfectly suitable to emphasise the definitive ending of the building (Sullivan, 1896, p.404).

Sullivan tries to convince his readers that the design of the exterior and interior of a building automatically results from its function. The bottom part is publicly accessible and shall consequently be designed as being attractive, inviting, spacious, and transparent; the middle part consists of identical floors with identical offices, which results in repetition in the façades; the top purely has a technical function and should therefore have a closed and solid appearance. A tall building is a tall building. Its verticality has to be enhanced by the design, and the building will display prestige, dominance, and pride. Sullivan is opposed to tricks that disguise the altitude of the building and he advocates honesty. He refers to nature, where plants, animals and other natural phenomena neither present themselves different from what they are. They are recognisable, characteristic and ‘natural’. Buildings should be designed according to the same law of nature: form follows function (Sullivan, 1896, p.408).

Although this essay is written by one man only, in Western architecture it has always been assumed that a direct connection between the exterior design and the function inside is essential. Sullivan’s mental legacy formed amongst others the basis for the Modernism and still today many architects design according to this philosophy.
Koolhaas' architectural lobotomy and vertical schism

It is remarkable that Rem Koolhaas uses the very same example of the skyscraper to illustrate his theory about lobotomy and vertical schism, which are actually inconsistent with Sullivan’s phrase ‘form follows function’. In his book Delirious New York, Koolhaas attributes the origination of the skyscraper to the invention of the elevator (Koolhaas, 1976). The skyscraper as a formal result of the functional qualities of the elevator implies a direct relationship between the two. A theorem, published in 1909 in the form of a cartoon and shown in Figure 21, defines the ideal skyscraper. In this description, the elevator is used solely to solve the problem of the finite area in Manhattan by a multiplication of the original plot. The building is proposed as a compilation of disconnected, individual privacies. The fact that the levels constitute a single building is completely ignored. Besides the independency of the different platforms from one another, they are also disconnected from their supporting framework. Therefore, a particular site is incompatible with any single predetermined purpose. This reversal in the way of thinking made architectural projects less foreseeable and predictable than before. Despite its visual solidity and definitive appearance, the skyscraper offers uncertainty and programmatic instability, which can be seen as a first disengagement of form and function (Koolhaas, 1976, p.82).

Koolhaas elaborates this notion further by stating that each structure is perceived as a monument when it exceeds a certain size, even if the accommodated activities do not deserve the monumental status. He calls this category of monument the ‘automonument’: it becomes a symbol merely through its sheer volume (Koolhaas, 1976, p.100). However, this is a hollow symbol without meaning, lacking the representation of an abstract ideal. Its purest manifestation is the skyscraper, which is characterised by two contradictory conditions: its monumental appearance, implying permanence and solidity, and its function as an accommodation for humans, suggesting flexibility and ordinariness. When a building increases in size, the connection between monumental appearance and functionality reaches a breaking point. As said earlier, a relationship between exterior and interior has always been considered as desirable. A façade that reveals or refers to the inner activities of the building is called ‘honest’. The disconnection of exterior and interior that is introduced by the automonument, indicated as ‘architectural lobotomy’ by Koolhaas, entails a great freedom for architects. The dishonest façade was for instance designed with hidden windows, to conceal the embarrassing everyday life inside (Koolhaas, 1976, p.165).

The skyscraper induced a second liberation, which was already predicted by the 1909 theorem, namely the ‘vertical schism’ (Koolhaas, 1976, p.105). This means the deliberate segregation of the different stories. The arrangement of the interior has become autonomous and even arbitrary through the lobotomy. Floors are assumed to be independent from each other, and therefore a random dispersion within the building is admissible. This concept accepts the skyscraper’s unstable composition, but the few known functions are eagerly welcomed by extreme specificity on the other hand. The vertical schism is implemented to the utmost in the Downtown Athletic Club, built in south Manhattan in 1931. The different facilities that the building incorporates appear to be allocated in a purely arbitrary sequence, an arrangement where seemingly incompatible functions, such as a boxing room and an oyster bar, are positioned side by side (Koolhaas, 1976, p.155). The elevator is the crucial condition which enables this design approach. Another illustrative example is Raymond Hood’s design for the Central Methodist Episcopal Church in 1927. The client wished to combine the church with a parking garage, to make the church easily accessible, and with a hotel, apartments, and shops, to make the site profitable. Hood stacked the activities directly on top of each other without taking the programmatic hierarchy into account; he was completely indifferent to the symbolic compatibility of the functions (Koolhaas, 1976, p.173).
Rossi’s unforeseeable events

In his Scientific Autobiography, architect and architectural theorist Aldo Rossi dwells further on Koolhaas’ analysis of the development of skyscrapers in the 1920s, when the first detachment of form and function was realised (Rossi, 1981). The by Koolhaas described turn to a more uncertain and unpredictable program is seen as favourable by Rossi. It is impossible to avoid or ignore the relation between form and function completely, but in Rossi’s opinion this relationship should not be the main focus or the starting point for a design. Although every object has a function to which it must respond, the fact that functions alter over time introduces a contradiction. The problem is that the intended program of the building is one of the few things that are known and fixed during the design process. Consequently, the design is often based on these known facts, while Rossi thinks freedom and imagination are more important (Rossi, 1981, p.6).

In this way, Rossi had an own, strong attitude towards the nowadays popular term ‘flexibility’. He thought that the dimensions of a building or an object are decisive, not because of the predestined function they should fulfil, but because they permit other functions (Rossi, 1981, p.3). The predetermined program for which the architect designs is merely a desired event that may actually never occur. Rossi emphasises the significance of the unforeseen; when a building admits many unanticipated incidents, it can be called successful. He is more interested in what might happen and in the unpredictability of a certain space (Rossi, 1981, p.65). Architecture can be seen as a background for daily life, as a stage for different events. A flexible building stimulates the variety of these events. In fact, every building is comparable to the theatre; the procession in which Hamlet’s body is carried away is similar to two people that have an emotional conversation in their house. These incidents are neither forms of functionalism nor necessity. From this point of view, form and function should not be connected indissolubly since function actually always remains unknown (Rossi, 1981, p.48).

Finally, Rossi argues that the context of a project is stronger than its function. The influence of people on the course of events is limited. Time and place are more determining, the fixed scene is stronger than the transitory succession of incidents. Therefore, architecture should be timeless and eternal to a certain extent, perhaps even anonymous. In this way, the building allows all kinds of events to happen on its stage, within its definitive context (Rossi, 1981, p.50).

Sennett’s distinction between naturalness and artifice

The term ‘honesty’ has been mentioned by all previously discussed writers. Whereas Sullivan promotes the honest façade and Koolhaas recommends the dishonest façade, sociologist Richard Sennett does not have such a black and white opinion. In his book The Craftsman, he places the qualification of honesty in a socio-historical context and links it to material consciousness (Richard Sennett, 2008). The purpose of attributing ethical human qualities, such as honesty or modesty, into materials is to increase our consciousness of the materials and to reflect upon their value.

Sennett mentions the example of seventeenth century English bricks, which have a diverse colour range due to differences in the origin of the clay and firing methods. Later, this variation was connected to the old, authentic method of baking and was experienced as desirable. The term ‘honest brick’ already existed in the eighteenth century, and it referred to bricks made from clay without artificial pigment or to a particular brickwork bond. Honesty could also refer to the façade of a building, when the masonry was visible instead of covered with a concealing material; no cosmetics were applied. During the Enlightenment, which stood for the promotion of science and intellectual exchange,
bricklayers became involved in debates on the meaning of naturalness as opposed to
artifice, and in discussions about the appropriate application of natural materials. Isaac
Ware published in 1756 “The complete body of architecture”, a book about naturalness.
Ware’s statement implies that the exterior of a building should look like the materials which
constitute its inside: this makes the building honest (Richard Sennett, 2008, p.138).

Although Ware also stresses the usefulness of stucco, he foreshadowed modern historian
John Summerson, who has a great aversion to stucco as a fake material (Richard Sennett,
2008, p.139). Stucco is a flexible material, suitable for simulating many things that it is not,
such as imitated pillars or completely fake caves in backyards. The material allows quick and
cheap construction of extraordinary structures. It may be clear that the artificial columns
and caves, pretending to be cut out of stone, did not claim to be animated as brickwork.
Still, the versatility of stucco provides a freedom of fantasy for the craftsman. The material
allows him to experiment in his work. In the eighteenth century, craftsmen who were
proficient at sculpting with stucco were admired within their profession (Richard Sennett,
2008, p.140). The heated discussion on naturalness versus fantasy-artifice resulted in two
different versions of craftsmanship. Many philosophers have argued that the borderline
between nature and culture is artificial and subjective. This distinction can be constructed
and therefore depends on individual norms and values. Brickwork has become a symbol of
natural honesty, but this natural virtue was created rather than discovered (Richard Sennett,

The development of the machine in the eighteenth century stimulated the discussion on
the integrity of brickwork. Machines were namely able to imitate some of the properties
of ‘honest bricks’. They manufactured bricks that had the appearance of being made
traditionally, but the fabrication was much cheaper and faster. Sennett describes the
example of the Baker House by architect Alvar Aalto, constructed of bricks which were
sundried and fired in manually stacked pyramids with the use of oakwood. The conscious
choice for this primitive method illustrates Aalto’s preference for the natural, which could
only be developed in our current, industrialised society. We need the negative image to
produce and appreciate the ‘real’ positive. The industrialised delusion forces us to reflect
upon nature and the border between naturalness and artifice (Richard Sennett, 2008,
p.143).

**Conclusion**

In 1896, Sullivan formulates the immemorial assumption that form should ever follow
function in architecture. A direct relationship between the exterior design and the program
inside is indispensable. He uses nature as a reference, where life is recognisable in its
expression, and states that buildings should be designed according to the same law.

Although a theorem about the detachment of form and function is published only some
thirteen years later, Koolhaas studied this development and the transformation of the
skyscraper in the 1970s. Therefore, it is better justified to place his findings in this later
period of time. Through the double disconnection of lobotomy and vertical schism,
the exteriors of structures can only be devoted to formalism and their interiors only to
functionalism. According to Koolhaas, the conflict between form and function is solved
forever in this way, and this disengagement allowed Manhattan’s buildings to be both
modern and eternal at the same time.

Rossi intimates the same conviction as Koolhaas, using his personal design attitude instead
of proof from historical facts. He thinks unforeseeable and unpredictable events that may
occur in a certain space are more significant than the function that was allocated to the
building beforehand. The contradiction raised by Rossi is the fact that the function of a building is likely to vary during its lifetime, whereas its shape is definitive and permanent. Rossi proposed the same solution as Koolhaas: to loosen or sever the strict connection between form and function. A well-designed flexible building allows a wide variety of possible events. In addition, the view that the fixed scene is stronger than the course of events suggests that architecture should be timeless and eternal, similar to Koolhaas' beliefs.

While Sullivan's view formed the basis for the Modernist movement, the opinions of Koolhaas and Rossi from the 1970s may be seen more as Postmodern notions. Especially Rossi's preference for imagination, freedom, and personal associations over solely functional sobriety is characteristic for Postmodernism. It is difficult to position Sennett within this. He discusses urban social themes rather than architecture on the level of buildings, which makes his writings harder to relate to the other pieces of literature. Furthermore, his book 'The Craftsman' is published relatively recent.

The previously discussed passage of Sennett's book is a theoretical and sociological explanation of the attribution of human qualities to materials. Sennett illustrates this mainly with the development of English bricks, but also refers to the honest façade, just like the other writers do. He mentions instances of naturalness, such as façades that are not covered with concealing materials, but naturalness can also be interpreted as an honest, direct relation between form and function. Opposed to this, the artifice would be the independency of form and function. In Sennett's opinion, the distinction between naturalness and artifice is not clear-cut. The boundary between the two is artificial and subjective, which invalidates Sullivan's assertion that a direct connection between form and program is natural and therefore desired. A disengagement of form and function can provoke different insights and results, which are not necessarily inferior.

In conclusion, Koolhaas, Rossi, and Sennett agree with the position that form does not necessarily have to follow its function. In fact, they all favour the advantageous of loosening or severing the connection between form and program in architecture. This independency allows buildings to be modern, flexible and adaptable on the one hand and definitive, permanent and eternal on the other hand.
PUBLIC ART DEPOT
Programme

The majority of the art is stocked in depots, unable to serve its main purpose: to be perceived. Art is stored away for conservation reasons, safety reasons, curatorial reasons or simply for practical reasons. Control over the indoor climate is crucial for conserving art, especially for very old and delicate objects or certain materials, such as paper or photographs. Temperature, humidity and lighting can be regulated carefully in a closed storage, offering a more stable indoor climate than a public space. Besides that, different climate requirements are needed in a public space in order to ensure the users’ comfort. It may in addition be safer to store rare and costly pieces of art away in securely locked depots rather than spaces where people can wander around freely. Moreover, museums often possess extensive collections of art, which makes it impossible to show every piece. This is also not desirable, as museums wish to change their exhibitions frequently to attract visitors over and over again. Therefore, the curator decides which objects have to stay in storage, and which ones can show themselves.

It is too bad that many pieces of art are hidden in depots, inaccessible to public. The aim of this project is to show the people that there is more than only the objects on display. Besides exhibitions spaces, museums contain depots, restoration facilities, workshops, material handling, transhipment, rooms for packing art, for acclimatising etc., all of which is normally concealed from the audience. These spaces are often located in underground basements, and people are not aware of the fact that the actual museum is only the tip of the iceberg. In the Public Art Depot, the storages and research facilities will get a prominent place as they constitute the main function of the building. The size of the immense collection will be made visible through the architecture, making visitors aware of the vast quantity of objects of arts, and subsequently of the importance of preserving these objects. The various functions and objectives of the Public Art Depot will be elaborated in the next chapter in relation to the function of the museum and its development in history.

In order to provide the depot with visitors, it is going to be combined with an art gallery. In its turn, the depot supplies the gallery with exhibits, enabling a quick succession of expositions. The merge of depot and gallery offers mutual benefits in this way, although it entails a polarity as well. Similar to the previously described polarity of Stvanice Island, the two functions form a contrast: storing art as closed, private, introvert and secured part; versus exhibiting (the storage of) art as open, public, and inviting part. The contrast between the two, but also the relation and collaboration between them is the main theme of this graduation project, creating problems and difficulties, but also opportunities and challenges.

The Schaulager in Basel and the Collection building for the Museum Boijmans Van Beuningen were two sources of inspiration for the Public Art Depot. In both projects, the boundary between closed storage and public museum is blurred. These two references will be discussed further on in this chapter. The idea for this project was also provoked by Prague’s cultural image. Prague is described as “a true cultural treasure trove, bursting with fascinating museums, galleries, theatres, and music venues” (Prague Life, 2013). Numerous prestigious exhibitions, events, and international festivals take place regularly in the capital. Prague has always been a cultural city of influence throughout history, mainly due to the early establishment of a university in 1348, attracting great minds to the city. Unless the decay during communist domination, Prague once again presents itself as cultural hub.
Figure 24
Public art gallery, Guggenheim Museum New York, 1927

Figure 25
Storage of art
Since Prague has dozens of museums, the National Gallery was selected for this project as the largest museum of art in Czech Republic. The museum was founded in 1796 and owns currently over 400,000 objects, spread over seven locations (Narodni Gallery, 2013). The collection comprises art of Asia, the ancient Mediterranean, ancient Greece and Rome, a cabinet of prints and drawings, chamber collections of arts and crafts, a sculpture gallery, art from the Middle Ages, Renaissance art, Baroque art, and modern art. Therefore, the depots are going to be filled with objects from nearly all periods, styles, and locations, offering the possibility to organise very divergent exhibitions. In this way, the gallery of the Public Art Depot can function as an introduction to art for laymen, who can discover their interests before visiting one of the seven museums of the National Gallery.

Several references have been analysed:
- Collection building Museum Boijmans Van Beuningen, Rotterdam
- Herzog & de Meuron, Schaulager, Basel, 2003
- Neutelings Riedijk Architects, Museum aan de Stroom, Antwerpen, 2010
- Ateliers Jean Nouvel, Musée du Quai Branly, Paris, 2006
- Bureau SLA, Nationaal Glasmuseum, 2010, Leerdam
Collection Building Museum Boijmans Van Beuningen
The existing depots of the Museum Boijmans Van Beuningen in Rotterdam do not satisfy the current demands with regard to the storage of the museum collection. Therefore, the commission is given for a new building, called the 'Collection Building'. In the summer of 2013, five architects were selected to make a design.

The Collection Building is a unique type of building due to the combination of public and private collections and its image of 'working with objects'. People become increasingly interested in all facets of the preservation of heritage and the Collection Building contributes to this by making the storage of art partly visible. The buildings is not a mausoleum; on the contrary, it bubbles with activities. Visitors who enter the Collection Building will enter an impressive, spectacular and inviting building. It should feel like the money bin of Dagobert Duck, a building which contains a costly and precious collection of art. Although certain areas of the Collection Building are not publicly accessible, the visitor will not experience the building as a 'no go area'; a surprising route crosses the whole building. On his way, the visitor enters freely accessible spaces, he sees restricted accessible spaces, such as workshops, and occasionally catches a glimpse of corridors with heavy safe doors. The accessible parts of the building should reveal what happens behind the scenes. Only 20% of the building is publicly accessible, but this feels like 50% to the visitor.

The depots form the core of the building, surrounded by the other functions and facilities. Public functions are concentrated in the plinth of the building, directly behind the facade, and on top of the roof, which reduces the risk of burglary into the safes. Besides the collection of the Museum Boijmans Van Beuningen, also private collections are stored in the Collection Building. The building fulfils the need to outsource the professional care for private collections to a reliable and experienced party. Private collections can be stored anonymously or in a more public way (Museum Boijmans van Beuningen, 2013).
Schaulager
Previously, works of art not on display were dismantled and boxed for storage, which meant that the majority of the collection could not be viewed. Furthermore, the long-term effects of storage on the often unfamiliar materials could not be predicted or checked. The concept of a completely new kind of art institution, one that is neither a museum nor a traditional repository, was born. If the works are stored unpacked and installed properly, they can be made accessible for both research and restoration purposes.

Through cooperation with the University in Basel and running events, symposia and research projects, the Schaulager is also evolving into a place for research into contemporary art. Exchange and collaboration takes place among specialists from the fields of art, students and researchers. The Schaulager fills the gap between traditional museum pedagogy and university-level education, and is primarily directed at a specialist audience: museum workers, conservators, curators, researchers, students and teachers. For occasional exhibitions and special events, the Schaulager is also accessible to a broader public. Finally, offices and workshops, an auditorium and the necessary facilities for loading and unloading artworks complete the programme (Laurenz Foundation, 2012).

The emphasis of this institution is not on attracting large crowds, but education and research are central. Visitors are allowed inside only during expositions in summer. Inside, quietness, peace, light, and space predominate. No large crowds, no annoying schoolchildren, no headphones telling you where to go and where to look, no bulgy café, no shop full of merchandise, but silence as in an ancient library, allowing you to focus on the pieces of art (Lisser, 2005).

Museum aan de Stroom
Although the MAS in Antwerp is meant for exhibiting art instead of storing art, it has two interesting aspects. Firstly its visible art storage, which occupies the whole second floor. The MAS can draw on a large collection of approximately 470,000 objects; most of these items are located either in the museum or in one of the two new storerooms elsewhere in the city. When not on display, 180,000 objects are to be found in the MAS’s unique Visible Storage. This Visible Storage provides visitors with the rare opportunity to look behind the scenes. The first part of this storage area, which is not opened to public, is packed floor to ceiling with labelled items. From behind a transparent wall, visitors can view objects not on display in the galleries. The objects in the Visible Storage are preserved in the best possible conditions with a climate control system providing a constant temperature and humidity level. Here, museum staff check and record the objects and pack and unpack loaned items. The public does have access to the second part of the Visible Storage, which tells the story of a history of active collecting (MAS, 2013a).

Secondly, the MAS Boulevard is like a vertical city tour. Escalators take visitors up to a roof terrace on the ninth floor for free. Along the way, visitors take in views of Antwerp through the 6-metre-high glass panels, a foretaste of what awaits at the top: a sweeping panorama of the city, the port and the river. Every year, a new exhibition is organised in showcases along the escalators of the MAS (MAS, 2013b).

Musée du Quai Branly
Museum Quai Branly has a visible depot space as well. Objects from Quai Branly’s collection of 9,000 musical instruments that are not displayed on the exhibition-hall floor are stored in a 23m tall, elliptical tower that runs from the museum’s basement, through the lobby, up to the gallery level. Although visitors cannot enter the space, they can appreciate the collection from afar through its curved glass wall (Gonchar, 2007).
Nationaal Glasmuseum Leerdam

The Glass Museum in Leerdam is renovated and extended in 2010 by Bureau SLA. Four bridges of nineteen meters long are hung between two old, monumental villa’s. The gangways are not a third building, but form a connection between the two existing villa’s. The bridges also function as a storage for the 9,000 pieces glass collection. The showcases, which continue over the full length of the bridges, tempt visitors to stay longer in the depot than in the actual exhibition spaces (Bureau SLA, 2010).

Programme requirements

The programme requirements are derived mainly from the Collection Building Museum Boijmans Van Beuningen and from the Schaulager. The depots of the National Gallery constitute the largest function of the building, followed by the galleries. A precise overview of all spaces is shown on the following pages.
<table>
<thead>
<tr>
<th><strong>Depot</strong></th>
<th><strong>4.480</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>1. Entrance art and handling</strong></td>
<td><strong>535</strong></td>
</tr>
<tr>
<td>1.1 Lock, space for 2 trucks, size 20x7m</td>
<td>140</td>
</tr>
<tr>
<td>1.2 Material handling, temporary installation of art</td>
<td>75</td>
</tr>
<tr>
<td>1.3 Transhipment, temporary storage of art</td>
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<tr>
<td>1.4 Acclimatizing</td>
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<tr>
<td>1.5 Registration and numeration in 1.6</td>
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<tr>
<td>1.6 Packing and unpacking art</td>
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<tr>
<td>1.7 Quarantine</td>
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<th><strong>2. Depot spaces National Gallery</strong></th>
<th><strong>2.475</strong></th>
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<tbody>
<tr>
<td>2.1 Depot paintings (L)</td>
<td>200</td>
</tr>
<tr>
<td>2.2 Depot paintings (M)</td>
<td>470</td>
</tr>
<tr>
<td>2.3 Depot photographs (L)</td>
<td>160</td>
</tr>
<tr>
<td>2.4 Depot inorganic materials (L)</td>
<td>75</td>
</tr>
<tr>
<td>2.5 Depot inorganic materials (M)</td>
<td>200</td>
</tr>
<tr>
<td>2.6 Depot inorganic materials (S)</td>
<td>100</td>
</tr>
<tr>
<td>2.7 Depot organic materials (L)</td>
<td>225</td>
</tr>
<tr>
<td>2.8 Depot organic materials (M)</td>
<td>225</td>
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<tr>
<td>2.9 Depot organic materials (S)</td>
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<td>2.10 Depot metals (M)</td>
<td>200</td>
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<td>2.11 Depot metals (S)</td>
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<td>2.12 Depot plastics (S)</td>
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<th><strong>3. Depot spaces private collectors</strong></th>
<th><strong>510</strong></th>
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<tbody>
<tr>
<td>3.1 Private depot 1, small foyer, workplace, pantry and toilet included</td>
<td>100</td>
</tr>
<tr>
<td>3.2 Private depot 2</td>
<td>170</td>
</tr>
<tr>
<td>3.3 Private depot 3</td>
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<th><strong>4. Entrance staff and goods</strong></th>
<th><strong>125</strong></th>
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<tbody>
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<td>4.1 Entrance staff and private collectors</td>
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<td>4.2 Supply and discharge of goods</td>
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<td>4.3 Building management and security</td>
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<th><strong>5. Offices</strong></th>
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<tbody>
<tr>
<td>5.1 Offices</td>
<td>175</td>
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<td>5.4 Space for printing, copying</td>
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<tbody>
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<td>225</td>
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<td>6.2 Multifunctional studio for (large) objects</td>
<td>250</td>
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<tr>
<td>6.3 Photography studio to record the collection</td>
<td>75</td>
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<td>6.4 Storage of materials and chemicals</td>
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## Gallery

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<th>Section</th>
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<th>Floor Space (sqm)</th>
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<tr>
<td>7.</td>
<td>Public entrance</td>
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<tr>
<td>7.1</td>
<td>Entrance</td>
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</tr>
<tr>
<td>7.2</td>
<td>Information desk and tickets sale</td>
<td>60</td>
</tr>
<tr>
<td>7.3</td>
<td>Cloakroom, for 200 coats and 50 lockers</td>
<td>25</td>
</tr>
<tr>
<td>7.4</td>
<td>Shop</td>
<td>75</td>
</tr>
</tbody>
</table>

## Galleries

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Floor Space (sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>Galleries</td>
<td>2,000</td>
</tr>
<tr>
<td>8.2</td>
<td>Children's corner</td>
<td>50</td>
</tr>
<tr>
<td>8.3</td>
<td>Auditorium, 80 seats</td>
<td>120</td>
</tr>
</tbody>
</table>

## Restaurant

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Floor Space (sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>Restaurant, facilities for 100 persons</td>
<td>220</td>
</tr>
<tr>
<td>9.2</td>
<td>Kitchen</td>
<td>75</td>
</tr>
<tr>
<td>9.3</td>
<td>Storage</td>
<td>10</td>
</tr>
</tbody>
</table>

## Other

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Floor Space (sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>Installation space</td>
<td>750</td>
</tr>
<tr>
<td>11.</td>
<td>Outdoor Art Square</td>
<td>500</td>
</tr>
<tr>
<td>12.</td>
<td>Parking, 60 cars</td>
<td>2,000</td>
</tr>
</tbody>
</table>

## Total

<table>
<thead>
<tr>
<th>Description</th>
<th>Total (sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional, useful floor space</td>
<td>7,105</td>
</tr>
<tr>
<td>Layout losses 4.5%</td>
<td>320</td>
</tr>
<tr>
<td>Useable floor space</td>
<td>7,425</td>
</tr>
<tr>
<td>Traffic and installations 11.5%</td>
<td>850</td>
</tr>
<tr>
<td>Net floor space</td>
<td>8,275</td>
</tr>
<tr>
<td>Structural 14%</td>
<td>1,150</td>
</tr>
<tr>
<td>Gross floor space</td>
<td>9,425</td>
</tr>
<tr>
<td>Round off gross floor space</td>
<td>9,500</td>
</tr>
</tbody>
</table>
Museum typology

In order to get a grip on the combined function of art depot and gallery, the typology of the museum has been surveyed briefly. The museum as an institution has developed throughout history, changing and shaping the concept of the museum as we know it today.

The museum can be seen as a place where past, present and future collide: a place where the special from the past is currently exhibited and conserved for the future. Although the term museum earlier referred to an academy of scholars, the museum has meant a building that both housed a collection and served as a research facility since the nineteenth century. In spite of a shift of focus from gaining knowledge towards the collection itself, the functions of exhibition and education have always coexisted.

(Re)presentation

The museum is a form of presentation and representation. Objects are removed from their original context, to be exhibited in a space especially designed for that purpose. This new environment, the museum building, is crucial to the way in which the objects are being perceived. Besides the function of presenting artefacts, the museum building is presented as well. A city, town or even region can identify itself through the architecture of the museum, more than through any other building type. As a typical instance, the Guggenheim Museum has put the previously unknown city of Bilbao on the map, attracting on average 800,000 non-Basque visitors to the city a year, compared to less than 100,000 before the Guggenheim Museum opened. The phenomenon is even called ‘the Bilbao effect’ (Plaza, 2007). Prague is already known for its rich cultural history and its abundance of (historical) art museums. Without taking the possibilities of iconic architecture into consideration, an art depot as a building type could lend Prague the image of preservation, responsibility, reliability, and sustainability. Positioning the building in the middle of the Vltava river proclaims the statement of being able to defy the floods, which strike the city regularly.

History of the institution

The history of the museum dates back to the fifteenth century, when the wealthy began to collect contemporary art as well as classical antiquity. These collections belonged to royalty for the greater part, and galleries were built as an indispensable part of palace buildings.
In the seventeenth century, the royal art collections increasingly opened up to scholars, connoisseurs and artists, with the intention to cultivate the observers and develop taste. Education was the principal purpose of the museum of the eighteenth century, a way to acquire and disseminate knowledge. In this period, the museum functioned as a window on the world, a view of faraway places and as a centre of information about the latest developments (Noordegraaf, 2004).

During the eighteenth century, museums acquired the status of a place of national representation. This was emphasised by the design of museum buildings, oriented on the architecture of palaces and temples of classical times (Von Naredi-Rainer, 2004). At the same time that museums became more independent, autonomous buildings, the emancipation of the bourgeoisie led to a gradual transformation of the museum into a place for the general public. A more explanatory way of presentation was necessary for these less educated visitors. Therefore, guide books about the collection and guided tours provided extra context. With this change in audience and function, the museum obtained another focus than education and the development of taste, namely the aesthetics of the exhibition itself in order to make a museum visit more appealing. Nevertheless, the change of public was not yet fully comprehended towards the end of the nineteenth century, and museums were increasingly accused of being ‘mausoleums of art’, uninteresting for the ordinary man (Stead, 2004).

In the twentieth century, one tried to change the display strategy to bridge the gap between the expectations of the visitor and the offerings of the museum. Densely packed galleries were transformed into sparsely arranged showrooms, where the aesthetic effect was more important than the didactic purpose (Von Naredi-Rainer, 2004). The neutral, empty background was seen as the perfect environment for pieces of art, ensuring optimal viewing conditions. This ideal of the modern museum eventually prevailed worldwide. The only problem of the museum concept of the 1930s was the deep conviction that the objects were self-explanatory, which did not correspond to the limited knowledge of the general public. Although neatly and conveniently arranged, insufficient information was provided along the objects of art. The invisible post-war museum was a continuation and amplification of the 1930s sober display strategy. Museums were poorly visited in the 1950s because they were still considered boring and elite. Also, the architecture of the museum building played a role in this problem: the white cube appeared to be not very effective and unappealing to the majority of the audience (Noordegraaf, 2004).

Movements in the 1960s and 1970s tried to make the museum more attractive by enhancing the educational and amusement aspects. Moreover, receiving as many visitors as possible became increasingly significant, as a consequence of insufficient public funding and the privatising of many museums (Von Naredi-Rainer, 2004). This trend also caused the entertainment function of the museum to be more relevant than it had ever been. Although there was no general museum concept anymore in the 1980s and 1990s, the common characteristic was spectacle. Museums had finally learned to mass-customise their offerings, by using a combination of a spectacular building, theatrical exhibition designs, audio-guides, text panels, booklets, videos, touch screens etc. The pleasure derived from a visit lied in the multi-sensory experience. According to Von Naredi-Rainer, this leads to two possible types of museums in the future: “the place where inheritance and history have to be conserved, and the place that one seeks out in order to entertain and enjoy oneself” (Gorsen, 1988 cited in Von Naredi-Rainer, 2004, p. 18). This means that museums either return to their main asset, attracting only visitors who already have an interest in and knowledge of the subject, or they participate further in the experience economy and try to compete with the spectacle of theme parks and shopping centres (Noordegraaf, 2004).
Interpretation
Several conclusions can be made on the basis of the concise historical overview above, summarized in Figure 33.

![Figure 33: Development of the museum](image)

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Public</th>
<th>Function</th>
<th>Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>16th c.</td>
<td>royalty</td>
<td>contemplation</td>
<td>classical</td>
</tr>
<tr>
<td>17th c.</td>
<td>scholars</td>
<td>education</td>
<td>autonomous</td>
</tr>
<tr>
<td>18th c.</td>
<td>general</td>
<td></td>
<td>n.*</td>
</tr>
<tr>
<td>19th c.</td>
<td></td>
<td>a.*</td>
<td>n.*</td>
</tr>
<tr>
<td>20th c.</td>
<td>m.*</td>
<td>e.*</td>
<td>s.*</td>
</tr>
</tbody>
</table>

The museum as institution has become increasingly accessible throughout history, transforming from private into public. The audience of the museum has altered from royalty, to scholars and artists, to the general public and laymen, to the masses in the twentieth century. The target group used to be well-educated people with a profound knowledge of and curiosity about the objects on display, but it gradually changed to uneducated and even uninterested visitors in search of pleasure and sensory experiences.

On the one hand, the Schaulager in Basel can be placed within this trend of enlarged accessibility because storage has been made visible to the public as the main function of the building. On the other hand, depot and exhibitions spaces are still strictly separated and the storage spaces are visible from a distance only, as can be seen in the section of Figure 34.

This project of the Public Art Depot in Prague is a further continuation of the development of increased public accessibility. Freely accessible public space is drawn into the building, and visitors are allowed to wander through the depot spaces and to peek inside.

As said before, the museum can incorporate different functions at the same time, but the general focus has shifted from contemplation, to education, to aesthetics, to entertainment in the twentieth century. The type of museum building has evolved as well from a temple or palace, to a more autonomous building type, to a neutral background in the twentieth century and finally to a spectacular environment for the objects of art. Naturally, both the function or aims of the museum and the building type are closely related to the visitors attracted and follow a logical development during time. Therefore, it can be stated that there is a relation between the form and the function of the museum, at least to a certain extent. The reliquaries, jewellery, exotica, and images of religious narratives preserved in
treasure chambers and church treasuries served the purpose of contemplation, in accordance with the temple- or palace-like building in which they were kept. When the collection was made accessible to a wider public, the museum turned into a pedagogic facility and the building became more independent. As the foreknowledge of the visitors decreased, they were unable to find their way through the chaos of the fully stacked exhibitions rooms, and museums were forced to arrange the objects in a more orderly manner. The background of the modest, neutral museum building facilitated this strategy, stimulating the public to find their way through. Towards the end of the twentieth century, the desire to attract the masses to the museum, partly initiated by financial circumstances, resulted in the aim for pleasure and amusement, offered by spectacular and flashy buildings, which sometimes are ambitious works of art themselves.

The public depot in Prague can be considered as a continuation of the described alterations, the publicly accessible depot spaces as an exciting attraction, enabling visitors to look behind the scenes. The gallery is also meant for a wide audience, making it easily approachable by offering a broad range of pieces of art since the storage spaces of the National Gallery of Prague, which ‘feed’ the gallery, contain objects from nearly all periods, styles, and movements in art. In this way, the gallery of the public depot can function as a first acquaintance to art, where one is able to discover one’s interests, preferences and fascinations, thereby adding an educational function to the building. Moreover, the proximity of depot and gallery facilitates a rapid succession of different expositions. Furthermore, the combination of a small gallery and a much larger depot contributes to the understanding of the current situation, revealing the real proportions of the amount of exhibited objects compared to conserved objects. Exhibitions on conservation methods and restoration techniques, as well as the possibility to look inside the restoration studios are part of the didactic aspect of the public depot and make people think and contemplate on the importance of the preservation of the cultural legacy of Czech Republic. It can be concluded that the Public Art Depot should comprise all different functions of the museum that can be distinguished throughout history: contemplation, education, aesthetics, and entertainment. Now, the question arises whether the appearance of the public depot should correspond to its multiple functions. This will be addressed in the next chapter.

Building typology

As the function of museum has its origin in the Renaissance, also the fundamental components of the building type were developed in the sixteenth, seventeenth and eighteenth century (Von Naredi-Rainer, 2004). Despite the fact that the museum was released from its architectural obligations in the nineteenth century, many of the modern museums built in the twentieth and twenty-first century are still characterised by architectural elements that are typical for the traditional building typology. Although the Public Art Depot can be seen as a new building type, invented with the construction of the Schaulager, the utilisation of recognisable architectural components can be a powerful means in making the aims of the building more clear to the visitors. Aldo Rossi advocates the use of existing elements in architecture. In his opinion, form does not necessarily follow function, but preferably follows memory and association.

“These relationships [between architect and observed architecture] become fixed in a memory, and memory soon becomes symbol (…). These points of connection between personal and public history have always appeared to me laden with significance.”

(Rossi, 1981, p. 62)

When the architect uses recognisable elements, which are related to the typology of museum buildings, the users of the building might associate these elements with other
museum buildings, turning them into symbols. Due to his memories, the visitor will feel a stronger connection to the building. Therefore, a short enumeration of historical components of the museum building typology is of importance.

Several elements are typical for the museum:

- portico
- courtyard
- gallery
- domed rotunda
- stairway
- skylights

All these elements recur in the Public Art Depot, which is shown further on in this report.

**Portico**

The portico or front gable is derived from classical architecture, and consists of load-bearing pillars, which mark the entrance in the front facade.

**Courtyard**

The first building especially designed for the exhibition of art is the Vatican belvedere, built in 1508, which contains a courtyard of statues. Soon, the courtyard became an indispensable element in the ground plan of the museum.
**Gallery**
The gallery was first applied in the sixteenth century as an elongated room, mostly lit by windows placed along (one of) the long sides. Galleries could be executed as one- or two-storey galleries, with a flat ceiling or barrel vaults, with or without arcades on ground floor.

**Domed Rotunda**
The domed rotunda belonged since the second half of the eighteenth century to the fixed repertoire of museum buildings. This central room often contained the most precious objects of the collection, evoking the character of a sanctuary.
Central stairway
The central staircase is an allusion to the ceremonial stairway in baroque palaces; it accentuates the museum space and guides visitors.

Skylight
This element of the museum building was often combined with the cupola or rotunda, and lit the room from above, which is beneficial from a technical point of view.

Routing
The circulation of visitors is a central issue for the museum's architect. The routing as a result of the arrangement and connection of the individual spaces determines the quality of the museum to a large extent (Von Naredi-Rainer, 2004). This sequence in route and the relation between journey and endpoint are crucial aspects of the museum design. The previously discussed components of the traditional museum building can be part of the routing: the front gable marking the entrance, the elongated gallery suggesting a linear movement, the domed rotunda as an intermediate or final goal, the central stairway as a connection between routes on different levels, and (sky)lights influencing the sequence of space. The exterior often plays an important role in the circulation as well; the landscape as background, greenery which enters the building, or carefully chosen views on the surroundings are significant architectural tools. Besides the aesthetic quality, the route should also be functional, guiding the audience through the building. Moving around in a continuous way and being aware of one's location within the building are indispensable
aspects of a logic and practical structure. Disorientation and the loss of track should be avoided at any time, and this can be accomplished in different manners. Exterior views along the route at calculated intervals is one way to improve the orientation of the visitor, also orientation points that provide an overview of the spatial layout can help the visitor to retrace its course (Von Naredi-Rainer, 2004).

Different arrangements of museum spaces and the routes between them are possible, ranging from one-way to 'many-ways'. The enfilade stands for a linear sequence of rooms, particularly suitable for didactic purposes and guaranteeing a continuity of movement (Von Naredi-Rainer, 2004). On the other hand, this type of arrangement limits the freedom of the visitor to a minimum. Le Corbusier’s Museum of Unlimited Growth is an extreme, theoretical instance, showing that linearity can also be expressed by the shape of a spiral. Open space is the contrary of a linear route, creating a flexible and variable exhibition facility and allowing the visitor to choose his own path. Another option are matrix-like room layouts without a dominant direction. The open space and the matrix-like arrangements both offer the audience a choice, but the architect should be aware of the fact that the excitement of discovery soon leads to confusion and disorientation.

Several existing museum buildings have been analysed both in section and in plan in order to get a better understanding of how their routing works (Figures 48 and 49). Being familiar with the feeling of getting lost in huge art museums where the route has more similarities to a labyrinth, the main focus was on logical and comprehensible circulation. From this study, it can be concluded that linearity (in any shape), dead ends or a combination of the two are effective means to create a practical and clear route through the building. Furthermore, a long linear route with a dead end causes the anti-climax of taking the same way back, as in the example of the MAS in Antwerp. These findings are used in the design of the Public Art Depot, where a one-way route is utilised to create a logical movement through the building and to tell the audience a story.
References linear routing

2. Neutelings Riedijk Architects, Museum Aan de Stroom, Antwerp, 2010
3. Friedrich Hoff Zwink, Museum of Modern Art, Salzburg, 2004
4. KSP Engel und Zimmermann Architekten, Documentation Center of Bergen-Belsen Memorial, Lohheide, 2007
References dead end routing

1. Jörg and Sturm, Museum Franz Gertsch, Burgdorf, 2002

2. Zumthor, Kolumba Kunstmuseum, Cologne, 2007
The building as diagram

So far, the relation between form and function has been mentioned several times. In the chapter about the typology of the museum, it was concluded that a relation between the function and aims of the museum and the appearance of the museum building has existed throughout history. For instance, precious and costly objects used to be preserved in temple- or palace-like buildings in order to provoke a feeling of contemplation. As the didactic purposes of the museum became increasingly important, the building transformed into a neutral background, guiding visitors through the exhibitions. These developments indeed imply a link between form and function. This link is clearly visible in the two parts that constitute the Public Art Depot. The depot is standing as a rock along the boulevard, its solid mass in keeping with its function of storage. The clean interior of the art gallery and the clear routing also correspond to its programme.

On the contrary, the essay about the relation between form and function, which was based on literary works of Koolhaas, Rossi and Sennett, suggests that loosening the connection between form and programme is favourable. Partly due to this vision, the appearance of the Public Art Depot is only indirectly related to its functions of art depot and gallery. If the design was exclusively based on these two functions, it would have resulted in two separate buildings, or a building consisting of two disconnected parts. However, there is more than that. Looking at the building as a whole, it is actually the expression of a statement, namely the fact that the art depot should be made publicly accessible. Therefore, the two parts of depot and gallery do not stand next to each other unaffectedly, but they form a movement together. The volume of the gallery flows underneath the depot without touching it, the two turning their backs to each other, after which the gallery rises and slowly approaches the depot, to finally pierce right through it, tearing a hole in the roof so that daylight can enter the closed box. The movement of the building is meant to facilitate the movement of the visitors, to make the depot accessible to everyone. In addition, the facade materials are wrapped around the two volumes as one jacket, unifying the two parts into one sculpture.

A diagram of the just described movement, which was sketched early in the design process, appeared to be very powerful and began to lead a life of its own. Despite some changes, the final shape of the Public Art Depot is derived from this drawing. This phenomenon can be traced back in the design of many contemporary architects. Koolhaas developed the design...
strategy of the ‘stacked diagram’ in the 1990s, and became a source of inspiration to many others (Archidialog, 2012). The diagram is treated as an icon and used directly to generate a shape, resulting in a close resemblance between the functions diagram and the realised form of the building (Hambright, 2011). Some examples of well-known architects are shown on the next page. Sometimes, the diagram is even used as logo or branding, as is clearly visible on the website of BIG. The homepage shows all their projects in one glance, as every project is presented by a 1x1cm icon.

The diagram is an effective tool for the architect, functioning as evidence. This impersonal drawing represents a pragmatic design process, giving the impression that the final form is a necessary result of external influences, without intervention of the architect. Even though it is evident that the design process is truly a subjective act, influenced by opinion, intuition, and taste, the diagram remains a strong means, suggesting to be proof for an irrefutable design. Moreover, the diagram is mostly related to the programme, causing an indirect connection between the deduced building and its function. This is also the case for the Public Art Depot, because the statement of making the depot publicly accessible, which is expressed in a diagrammatic way, is related to the polarity between the closed art depot and the public gallery. The following part of this report illustrates the evolvement from the diagram into a building.
DESIGN
Sculpture

The building of the Art Depot is located within the strip of buildings on Stvanice Island, described in the chapter about the masterplan. The particular spot next to the Hlavkuv bridge and the Stvanice locks is selected as an interesting and challenging location for the depot and gallery building. Heavy traffic on the bridge can cause noise nuisance, but the thousands of people that cross this bridge every day can be seen as an opportunity as well. Furthermore, tourist boats pass the locks frequently, offering their passengers a nice view of the south side of the building. Another existing element at this location is the former lockkeeper’s house, now in use as office. Although very little information is available, the villa is associated with Stvanice Islands and the sluices and is considered valuable; therefore, this building is not demolished or neglected, but it will be part of the design challenge. Besides the currently existing context, the developed masterplan also provides boundary conditions with the linear public area of boulevard and beach as main characteristic, forcing the entrance of the building to be located on the north side. However, the most complex and probably most influencing factor of the situation was the traffic connection between the Hlavkuv bridge and the island with a difference in height of six meters, inevitably resulting in a huge car ramp. This ramp led to a hard struggle, but was eventually intertwined with the design concept and with the shape of the building literally.

As soon as the extent of the programme and the concept of the duality between public gallery and closed depot took shape, a vast number of building volumes was tested within the environment. At first, the public volume of the gallery was logically positioned along the boulevard, whereas the larger volume of the art depot (about two thirds of the total) was placed at the ‘backside’ next to the locks. Soon it became apparent that the fifty meters distance between the bridge and the villa was not that large compared to the programme of nearly 10,000 m², compelling the two functions to be swapped. While the enormous facade of the depot volume oppressed the villa in the first situation, it was fully justified along the boulevard beside the other giants.

Taking a closer look at the direct context, the polarity between city and fringe turned out to be dominantly present in this particular section of the island. During discussions about the fringe situation of Stvanice Island among our team of students, the unconscious crossing of the island was mentioned repeatedly and we agreed that the Hlavkuv bridge was not a part of fringe Stvanice, but a part of the city which floats over the island without touching it. The same holds for the locks at the south bank of the island, which have an urban character and a stronger connection to the city. On the contrary, the northern and eastern side of the building plot have a truly ‘fringy’ character, as the row of massive buildings and the boulevard and beach introduce another world. Therefore, the Public Art Depot is on the very boundary of city and fringe. In this perspective, the reverse positioning of depot and gallery fits well with its context, as the public function of art gallery belongs more to a lively city centre, while a depot would reasonably be established in an outcast area.
Figure 59
Development of the sculpture
Models 1:500

Figure 60
Oppressing the villa

Figure 61
Reversal of building volume

Figure 62
Polarity of direct context
The former lockkeeper’s house not only caused the inversion of the two functions, it also influenced the shape of the gallery to a large extent. Due to the difference between the modern Public Art Depot and the traditional architecture of the villa, a certain distance between the two buildings is maintained. The new project respects the existing villa and moves around it politely. In this way, an encapsulated square is created below the gallery and between the depot, the villa and the car ramp. The square forms a public space behind the Art Depot; unlike the large open space in front of the buildings, this one is sheltered and connected to the sluices and the river.

As already mentioned, the required car ramp between bridge and island formed an obstacle in the beginning of the design process, obstructing the access to the building and confiscating a huge space. Ideally, the Public Art Depot would span the full width of its plot, deriving the benefits from both the boulevard at the north side and the river at the south side. The solution was found in placing the car ramp in between the two volumes of depot and gallery, amplifying the barrier between them and offering spectacular views. As a result, one enters Svánice Island through the building that functions as entrance gate. Six meters below bridge level, the ramp passes into a road that runs behind the buildings, leading eventually to an underground parking.

The main entrance of the building is situated along the boulevard, as well as the restaurant with terrace where passers-by can take a rest and enjoy the view over the beach and park. A second entrance is located along the river on the south bank, visible in Figure 70. The square between depot and villa is connected to a space in front of this second entrance, which consists of several steps where people can sit quietly, close to the waterline and watch boats. Inside the lock, the water level fluctuates four meters. At the highest level, a gap between stairs and entrance plateau is flooded, obstructing the route, while water streams into a triangular pond. Passengers are able to enter Svánice Island or the Public Art Depot when boats are waiting in the sluice to be lifted or lowered. In case of a flooding, the rise of water level is made visible through the different steps which lead to the entrance. Another design decision that was influenced by the risk of flooding is the lifted cube of the depot, a measure to keep the pieces of art dry at all times. The functions on ground floor are allowed to be flooded without malfunctioning of the building.
Figure 65
Public Art Depot, seen from the park
Figure 66
Public Art Depot, seen from the park
Model 1:200
Figure 67
Public Art Depot, seen from Hlavkuv bridge, looking in northern direction
Model 1:200
Figure 68
Car ramp as entrance to Stvanice Island
Model 1:200
Figure 69
South entrance, pond and square
Model 1:200
Scenography

In this chapter, the arrangement of the programme, the routing through the building and the experience of the users will be explained in more detail. The general layout of the different functions is shown in the image below. The more freeform, embracing volume fulfils the function of art gallery, with an auditorium for eighty spectators on the fourth floor. The cubical depot consists of five storeys of 3.6m, 4.8m, and 6.0m floor to floor height, due to the different sizes of the stored objects. Restoration spaces are positioned on the upper floor because of daylight and are the first thing that visitors pass as they enter the depot. Collectors have their private depot spaces one storey lower, while the offices of the museum staff are located on the third floor. The second floor is dedicated completely to the storage of art, while the lowest storey of the depot is mainly meant for handling, transhipment and the acclimatisation of objects.

Routing

With regard to the circulation through the building, the aim was to achieve a logical, practical and comprehensible routing. This was done in the form of a linear route, where stairs are the link to the next space. The anti-climax of a dead end has been avoided by creating a one-way route with a loop back to its starting point. Despite the limitation of freedom of the visitors, this linear route provides several benefits, such as easy orientation, suitability to exhibitions with a certain order or staging, and the possibility to create a sequence in routing. Moreover, the route is a result of the conviction that the art depot should be made publicly accessible, facilitating the influx of visitors into the depot.

When a visitor enters at the main entrance of the Public Art Depot, he is immediately confronted with an exposition, freely accessible to everyone. The ground floor stretches out to the river for 70 meters, running below the depot and below the road, to the south bank of the island facing the locks. At this far end, after passing the museum shop, a cloakroom and 400m² of free exhibition, the visitor can choose to buy a ticket to enter the gallery and depot spaces. The south entrance opposes the ticket office and welcomes visitors as well. Going up the stairs, the visitor passes several floors of rather small exhibition spaces,
which are visually connected by voids. Objects stored in the depot can be put on display and exhibitions about the conservation and restoration of art are possible as well. An open, tilted elevator slides as a platform over a rail to bring people or large objects of art to other storeys. On his way up, several windows offer the visitor framed views of particular elements of the building’s environment: the Štvanice locks, the villa along the locks, the triangular pond, Prague castle, the approaching depot, and the Vltava river. The upper floor again reveals a corridor-like space, which is clearly oriented in the direction of the depot and its central atrium. The window at the far end, which gives a splendid view over the beach and park of Štvanice Island, is already visible from the afar, as can be seen in the impression of Figure 78. Walking within this direction on the slight slope, the visitor experiences the feeling of entering a hidden world; daylight fades as he steps into the depot. Although the ceiling continues even outside the cubical volume, the corridor-like space ends just in front of the atrium (Figure 80), which again shimmers in daylight. After taking in the spectacular view across the atrium, the visitor can descend the stairs and finally set foot in the depot. Restoration activities undertaken in the studios are shown to the public. A last glance out of the panoramic window and the visitor can start his descend. Along the way down he passes many different depot spaces where he is able to look inside or discover a part of the stored items (Figure 74). Despite the fact that none of the depots is physically accessible to public, the visitor will have the feeling that he can see what happens behind the scenes. The route crosses the entire building, from facade and roof until the very heart of the atrium. If the visitor is lucky, he might catch a glimpse of a wealthy art collector who is discussing a sale in his private depot. At the bottom level of the depot, the visitor may be persuaded to have a drink in the restaurant. After the last stairs, he arrives back in the entrance hall near the museum shop and can exit the building from the north or south side.
Figure 72
Routing in the Public Art Depot

Figure 73
Connection between atrium and depot
The public routing and the routing of staff and private collectors are strictly separated and can never overlap or cross because of safety and climate reasons. At many floors, the two streams are even separated by a difference in floor height, as the floor levels of the public route to not correspond to the floor levels of the art depots. The entrance for staff and collectors is located in the east facade of the building and a stairs leads to the first floor where the corridor is isolated from the public atrium. Here, the art enters the building through a lock which can accommodate two trucks. Vertical routing for staff, collectors and objects of art is located within the core, as well as the escape route for visitors, which is still separated from the rest. Collectors have their private depots on the fourth floor, while staff is mainly working on the first, third, and fifth floor.

As the river influenced the arrangement of functions and shaped the south entrance, the risk of flooding has consequences for the routing too. The flow of objects of art will never be affected, because the bridge is above the maximum flooding level. The ground floor on the other hand can be flooded in an extreme situation. In this case, visitors will have to enter the gallery from the bridge; the entrance will be free of charge as the water has literally lifted the visitors above the level of the ticket office. Users of the buildings that are standing on the east side of the Public Art Depot will also enter here. They can enter the neighbouring building on the upper floor via a walkway. Visitors of the depot exit near the start of the car ramp, so the routing does not form a closed loop anymore.

**Traditional components of the museum building**

As said earlier in this report, several architectural elements that refer to the typology of the museum building have been applied to the design of the Public Art Depot. The utilisation of recognisable components can be an effective manner to clarify the aims to the visitor, resulting in a stronger connection to the building through association. The traditional elements of the portico, courtyard, gallery, domed rotunda, stairway, and skylights all recur in the Public Art Depot.

A front gable is created by lifting the depot volume and placing it on top of load-bearing
columns. The entrance to the 'art square' lies below this box and between these columns. The elongated space of the first gallery constitutes the entrance to the building, which protrudes between the columns on ground floor and attracts the attention of pedestrians strolling along the boulevard.

The art square on ground floor forms a connection between the public space on the north side, the boulevard and the beach, and the more hidden square adjacent to the villa and the locks on the south side. However, the art square does not only function as a passage, but as a courtyard as well, which is surrounded by the museum building on four sides. This enclosed outdoor space, which exhibits objects of art, has an extremely public and inviting character, being freely accessible to everyone, similar to the CaixaForum in Madrid.

Furthermore, the building contains two galleries: one to mark the entrance to the building and the start of the exhibition part, the other one to mark the entrance to the depot. Both galleries are elongated spaces of 70 and 45 meters long, filled with objects of art. The sequence of space, the changes in the incidence of light, and a clear 'end point' are characteristic for the galleries.

The domed rotunda is not used in a literal way, but the main space of the depot, where the second gallery leads to, can be considered as this central room. The importance of the space is comparable to the significance of the rotunda in the traditional museum building, expressed by its large dimensions, dazzling depth, the enormous skylight in the roof, the winding staircase, and the amazing view over Stvanice Island.

The central stairway is expressed in the public depot in two different ways. There is a very clear route in the building with a way there and a way back, a way up and a way down. The way up is formed by the exhibition part, which moves upwards to the depot volume, so the museum volume actually is the staircase towards the depot. The way back consists of a grand staircase, which is winding down the atrium, leading visitors past the depot spaces. The skylight enables daylight to shine upon this stairway and penetrate deep into the depot volume.

The final element, the skylight on top of the atrium, is already mentioned, being the consequence of the gallery that penetrates through the solid cube of the depot. As a result, the intruding exhibition part provides the closed depot with daylight.
Figure 77
Interior view through upper gallery

Figure 78
Interior view of atrium

Figure 79
Interior view of the merge of gallery and depot
Structure

This final chapter describes the materialisation of the building and its supporting structure. The focus is on the way in which the earlier established objectives are realised in tangible materials and on how the design is elaborated to a larger scale. The dimensions of structural elements, such as steel profiles and floor thicknesses, are estimations based on rules of thumb only, and will be calculated and determined later on in an additional structural report.

Load-bearing structure

The concept of the polarity between gallery and art depot recurs in all aspects of the design, so it does in the construction of the load-bearing structure which is shown in Figure 82. The volume of the art depot consists of a heavy concrete structure, as mass is needed to minimise vibrations, which could damage the delicate objects of art. Mass is also favourable to maintain a stable indoor climate, absorbing the extreme fluctuations in temperature. The lifted cube is placed on top of six concrete columns and a core, and has a bottom floor of 600-1000mm poured-in-place concrete. This table-like structure enables a ‘set-back’ of the concrete columns on ground floor, these columns are positioned 3.6m inwards to give the notion of floating. On top of this concrete ‘table’, a regular structure of load-bearing facades and interior walls, consisting of prefab concrete elements, supports the precast concrete floors, which have a maximum span of 12m. The stability of the building is ensured by the four facades, the table-like structure on ground floor and the concrete core, which contains two emergency staircases, three elevators, toilets, storerooms and a shaft. Because the grid of the depot volume is orthogonally ordered and has many partition walls, the structure is quite simple and will not attract the attention in the interiors.

The contrary is true for the volume of the art gallery. For this twisting shape with its tilted and curved surfaces, the geometry of the load-bearing structure has been determined in the early stages of the design process and has influenced the final design significantly. In order to support the cantilevering volume and limit deformations and displacements, a steel truss surrounds the interior spaces. The frame with hinged connections consists of circular hollow sections as diagonals and HE800A profiles as horizontal beams, as can be seen in Figure 81. In between these edge beams, secondary beams carry the floors, which consist of precast concrete panels with poured-in-place concrete on top, spanning up to 6m. No precast hollow core slabs are applied here due to the irregular shape of the floors, caused by many voids, stairwells and the tilted facades. The structural frame enables the flexible use of the floor spaces to mount different types of exhibitions. Furthermore, the use of steel members instead of closed walls allows daylight to enter the galleries through the semi-transparent facade. The coarse mesh and relatively large sections are chosen with the intention to make the structure visible and emphasise its presence in the interior. It will also affect the appearance of the exterior. During the day, the building is perceived as a closed and solid sculpture, but at night, when artificial lighting shines through the metal mesh in the facade, its interior is revealed. Objects of art, visitors, but also the impressive steel truss will be visible from the outside, showing the way in which the building functions.
Figure 80
Steel structure, connection

1. Steel diagonals, CHS Ø 508, 12mm
2. Steel beams around floor edge, HE800A
3. Secondary floor beam, HE500A
4. Precast concrete floor panels, 50mm and 250mm poured-in-place concrete
Figure 81
Structure

1. Concrete columns, Ø 1400mm
2. Concrete floor, poured-in-place, 750mm
3. Concrete core, poured-in-place, wall thickness 250mm
4. Precast concrete walls, 250mm
5. Concrete hollow-core slab, 320mm
6. Steel beams around floor edge, HE800A
7. Steel diagonals, CHS Ø 508, 12mm
8. Precast concrete floor panels, 50mm and 250mm poured-in-place concrete
Materials

Only one material is chosen to cover the whole facade, in order to unify the two parts of art depot and gallery into one building. The Public Art Depot is wrapped in anodised aluminium plates, notched with little cuts where daylight is desired in the space behind. The choice for aluminium and metal mesh was based on the association with bulletproof steel, a steel safe, and with a fence, since the building is meant to protection the art stored inside. Steel is replaced by dark anodised aluminium, which has the same tarnished look, but is much lighter.

The cube of the depot is mainly covered with the closed aluminium panels, as daylight is not needed in the depot spaces. At certain locations where daylight is desired, such as the restaurant, offices and restoration studios, the facade is semi-transparent by the use of metal mesh panels. Behind the metal mesh, glazing is applied in panels which can be opened inwardly to be washed. The only exception is the large window in the north facade on the fifth floor, which is fully transparent and shaped as a hole in the metal facade. For the interior, the prefab concrete is left unfinished without a layer of stucco to stress the function of storage. The floors in the atrium are executed with floor screed.

The art gallery is wrapped in metal mesh on all sides, with some windows to mark certain views on the surroundings. The metal mesh panels and the glazing of the windows lie in the same line, to create one sculptural form and to offer maximum views. Daylight enters through the vertical facades, as glass is placed behind the metal mesh panels. The distance between these panels and the glazing is 700mm to be able to clean the windows on the outside. Although they have the same exterior look of metal mesh, the tilted facade and roof are not transparent but consist of a structure of beams with purlins in between, filled with timber panels, thermal isolation and finished with plaster. The ceilings are covered with plaster as well and the computer floors consist of tiles with screed as infill.

The sections on the following pages do not cut through real locations in the building, but show the principles of the different facade systems in the best possible way.
Figure 84
Fence

Figure 85
Metal mesh
Figure 86
Materials depot

Scale 1:100 (left)
Scale 1:30 (right)

1. Roof construction:
   Bituminous adhesive,
   Thermal insulation 150mm,
   Concrete hollow-core slab 320mm,
   Cellular concrete as roof edge

2. Insulating double glazing,
in steel frame Stabalux 180mm

3. Facade construction:
   Black anodised aluminium panels,
   U-section,
   Thermal insulation 150mm,
   Precast concrete element 250mm,

4. Floor construction:
   Floor screed,
   Concrete finishing layer 70mm,
   Concrete hollow-core slab 320mm,
   Air ducts below floor

5. Facade construction:
   Metal mesh MetaDecor, black anodised aluminium,
   U-section,
   Insulating double glazing

6. Floor construction:
   Floor screed,
   Concrete finishing layer 70mm,
   Concrete floor, poured-in-place, 750mm
   Thermal insulation 150mm,
   Sealing layer,
   U-section,
   Black anodised aluminium panels
Figure 87
Materials gallery

Scale 1:100 (left)
Scale 1:30 (right)

1. Roof construction:
   - Metal mesh MetaDecor, black anodised aluminium,
   - U-section,
   - Distancers,
   - Bituminous adhesive,
   - Thermal insulation 100mm,
   - Steel floor beams HE500A,
   - Thermal insulation 160mm,
   - Precast concrete floor panels 50mm
   - and 250mm poured-in-place concrete,
   - Plaster

2. Insulating double glazing,
   - in steel frame Stabalux 180mm

3. Floor construction:
   - Computer floor:
   - Floor screed tiles,
   - U-profiles,
   - Distancers,
   - Steel floor beams HE500A,
   - Precast concrete floor panels 50mm
   - and 250mm poured-in-place concrete,
   - Plaster

4. Facade construction:
   - Metal mesh MetaDecor, black anodised aluminium,
   - U-section,
   - Insulating double glazing,
   - in steel frame Stabalux 180mm

5. Load-bearing steel structure:
   - Diagonals CHS Ø 508, 12mm,
   - Beams around floor edge HE800A,
   - Steel profile HE240A,
   - Thermal break,
   - Sandwich panel 100mm,
   - Steel grid floor

6. Tilted facade construction:
   - Metal mesh MetaDecor, black anodised aluminium,
   - U-section,
   - Steel section IPE120,
   - Multiplex
   - Thermal insulation 150mm,
   - Steel section HE240A,
   - Plaster,
   - Steel beam RHS 400x400x12mm
Building physics

Light is of particular importance in the design of the Public Art Depot. Daylight is not allowed to enter the depot spaces, as it can damage sensitive objects and materials, but is desired in the public areas of the depot. The solution was found in the shape of an atrium that is lit by a skylight, and separate depot spaces surrounding this atrium. Some of the restoration studios also have skylights in the roof, although they are mostly lit from the side. Direct sunlight is kept out of the art gallery by the metal mesh panels, which function as sunscreens, while daylight enters the building. Gallery floors can be darkened (partly) by flexible partition walls, depending on the type of exhibition mounted.

The depot spaces have very strict requirements regarding the indoor climate. In most of the depots, the temperature should be between 16-20°C and the humidity between 47-52% in winter, and within the range of 18-22°C and 52-55% humidity in summer (Museum Boijmans van Beuningen, 2013). The constant indoor climate is ensured by a concrete structure with a great mass, a layer of 150mm thermal insulation and installations for air conditioning. These installation are placed in the basement of 750m², which is about 8% of the gross floor space. This space is surrounded by concrete completely en is locked of with watertight doors, to keep the installations dry in case of a flooding.

The ducts for air and water and cables for electricity are placed within sight below the ceilings in the depot volume, and are cleared away below the computer floor in the gallery part. The advantage of a computer floor is that electricity is available at every location within the galleries. Two shafts of together 16m² provide for the vertical transport of air and water. The required dimensions are estimated on the basis of the air change rate, maximum airspeed and volume of internal spaces (Museum Boijmans van Beuningen, 2013).
Plan 1
depot 2
paintings (M)

depot 5
inorganic materials (M)

depot 8
organic materials (M)

depot 10
metals (M)
Plan 3
Plan 5
Elevation North
Elevation South
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Images


5. Matrix analysed fringes [diagram]


15. Concept masterplan [illustration]

16. Infrastructure masterplan [illustration]

17. Flooding masterplan [illustration]

18. Masterplan [map]

19. Masterplan, model 1:2,500. Photograph by Joep Rutgers. [illustration]

21. 1909 theorem. [illustration]  

22. Floor plan Central Methodist Episcopal Church. [illustration]  

23. Baker house. [photograph]  
Available at: <http://howtobecomeanarchitect.wordpress.com/tag/alvar-aalto/> [Accessed 21 April 2013].

24. Light Makes Wright. [photograph]  

25. Furniture storage solutions. [photograph]  

26. Locations National Gallery Prague [map]

27. Nieuw collectiegebouw. [illustration]  

28. Schaulager Muenchenstein. [photograph]  
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29. Analysis Schaulager, functions and routing [diagram]

30. Overview references, floor areas [graph]

31. Programme requirements [diagram]

32. Guggenheim Museum Bilbao. [photograph]  

33. Development of the museum [diagram]

34. Section through the Schaulager [diagram]

35. British Museum London. [photograph]  

36. Carré d’Art Nimes. [photograph]  
Available at: <http://upload.wikimedia.org/wikipedia/commons/c/cb/Nimes_Carr%C3%A9_DArt_2358297444.jpg> [Accessed 24 November 2013].

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48. References linear routing [diagram]

49. References dead end routing [diagram]

50. Sketch of concept [drawing]

51. Diagram of statement [drawing]


53. OMA - Seattle Central Library. [photograph] Available at: <http://31.media.tumblr.com/tumblr_m6wglwQKGm1qln4yro1_r1_1280.jpg> [Accessed 18 December 2013].


59. Development of the sculpture, models 1:500 [photographs]

60. Oppressing the villa [diagram]

61. Reversal of building volume [diagram]

62. Polarity of direct context [diagram]

63. Public Art Depot within context, model 1:1.000. Photograph by Joep Rutgers.

64. Public Art Depot within context, model 1:1.000. Photograph by Joep Rutgers.

65. Public Art Depot, seen from the park [illustration]


68. Car ramp as entrance to Stvanice Island, model 1:200. Photograph by Joep Rutgers.

69. South entrance, pond and square, model 1:200. Photograph by Joep Rutgers.

70. Functions [diagram]

71. Section [diagram]

72. Routing in the Public Art Depot [diagram]

73. Connection between atrium and depot [diagram]

74. Traditional museum components in the Public Art Depot [diagram]

75. Atrium, model 1:200. Photograph by Joep Rutgers.


77. Interior view through upper gallery [illustration]

78. Interior view of atrium [illustration]

79. Interior view of the merge of gallery and depot [illustration]

80. Steel structure, connection. [illustration]

81. Structure. [illustration]


86. Materials depot [illustration]

87. Materials gallery [illustration]