The Space of History Museum

Master Thesis Explanatory Document
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ABSTRACT

Architecture is the art of space. There is no doubt that humans are influenced by architectural space. This research project – writing and design – focuses on the influence of architectural space. By means of case studies of the design of museum space, other public building space, and urban space, the writing discusses the space elements, the features of space and the influence on human feeling. Relating to the design of a history museum, it could evoke a certain feeling or memory of a historical event. The design component of this project is located in Shenyang, a big city in the northeast of China. It intends to impress visitors with a vivid history of Shenyang in order to improve the image of the city.
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INTRODUCTION

Space is the soul of architecture. As Lao Tzu said in 600 BC: “The door and windows are cut out (from the walls) to form an apartment; but it is on the empty space (within) that its use depends.” There is no doubt that architectural space can influence human feelings. This project focuses on the influence of architectural space, particularly in a history museum, which could evoke a certain feeling or memory of a historical event. This project intends to impress visitors with a vivid history of Shenyang in order to improve the image of the city. Shenyang is famous for its heavy industry in China. People think of Shenyang as an old city with a lot of factories. The municipal government is trying to change this impression of old Shenyang. The city combines tradition and fashion in the new image of Shenyang. The museum will present this to visitors – the vibrant Shenyang with life and energy.
PART I: SPACE

1. The Essence of Space

Space is the soul of architecture, as Lao Tzu said in 600 BC:

“We put thirty spokes tighter and call it a wheel; but it is on the space where there is nothing that the utility of the wheel depends. We turn clay to make a vessel; but it is on the space where there is nothing that the utility of the vessel depends. We pierce doors and windows to make a house; and on these spaces where there is nothing that the utility of the house depends. Therefore, just as we take advantage of what is, we should recognize the utility of what is not.”

Bruno Zevi also describes: “Architecture… does not consist in the sum of the width, length and height of the structural elements which enclose space, but in the void itself, the closed space in which man lives and moves.” The utility of architecture is not the solid shell which enclose a space, but the space itself. Of course, to enclose a certain space, we must use physical materials, and in accordance with certain construction methods to fit these materials together. But these are not the purpose of architecture, but a means of achieving.

2. The Features of Space

Architecture is the art of space: its visual form, its dimensions and scale, the quality of its light — all of these qualities depend on our perception of the spatial boundaries defined by elements of form. As space begins to be captured, enclosed, molded, and organized by the elements of mass, architecture comes into being. The space that concerns architects is most usually expressed in an enduring architectural element: the room. The room is a human creation. The root of the word is related to “Raum”, which in German means “a place cleared for settlement or lodging.”

The features of space make one space different from others, just like a bedroom is different from a living room and an office is different from a library. It makes the bedroom cosier and the library quieter. It makes a space vivid and affecting. When a space is a living room as well as a bedroom, it will lose some features in order to fit the multiple functions of it. Thus the features could be linked to the function of the space. While the space is only with a single function, the feature of this space is pure, strong and the most affecting. Apparently, when a space is multifunctional, the feature of it would become neutral to cater for different functions.

1 Lao-tzu, Tao Te Ching, 6th century BC
Of course, being neutral is also a feature.

In a museum, there are many different functions. It is impossible to deal with all these functions with the same type of space. Even the exhibition spaces are not all the same. The fixed exhibition room is different from the temporary exhibition space because of its simpler function and particular atmosphere, which relates to the individual theme of each fixed exhibition room. It is confirmed by the designer at the beginning of the process, which can be presented by architectural language. Nevertheless, the temporary exhibition needs to suit different displays. A large, open and neutral space is a good solution.

The elements of space play an important role in differentiating one space from another. By means of designing the element, the features of space can be intensified. The elements include the enclosing elements, which define the space, such as plane elements (floor, deck and overhead) and vertical elements (column and wall), and circulation elements, such as horizontal circulation (windows and doors) and vertical circulation (stairs and ramps). The features also depend on the qualities of the space that intimately relates to these elements, which is the result of the composition of different elements. The form; the colour, texture, pattern and sound; the proportion and scale; the definition and configuration; the degree of enclosure, light and view are all the qualities of space that the design is based on.

3. The History of Space

Before the nineteenth century, there were almost no treatises talking about space in architecture. Those theories were more about the physical elements of the architecture and on the formal justification of authors than about the space defined by them. At the beginning of the nineteenth century, the German philosopher F. W. J. Schelling, in his “Philosophie der Kunst”, referred to the debate on space. After that, throughout the nineteenth century, the spatial theory was fully developed by historians such as Wolfflin, Riegl, and Schmarsow. August Schmarsow presented his work “Barock und Rokoko” with insistence on the significance of space in architecture. He proposed that

“... Man imagines in the first place the space which surrounds him and not the physical objects which are supports of symbolic significance. All static or mechanical dispositions, as well as the materialization of the spatial envelope, are only means for realizing an idea which is vaguely felt or clearly imagined in architectural creation ... Architecture is 'art' when the design of space clearly takes precedence over the design
of the object. Spatial intention is the living soul of architectural creation.\(^4\)

In the Beaux-Arts school, the order and sequence of spaces were given primary importance. In museums, the staircase at the entrance was important because it implied the metaphor of rising to be enlightened by great artworks.

In the twentieth century, the architecture achieved a satisfying development as a non-figurative art. Space is an important part of it. In the period between the World Wars, Le Corbusier and Mies van der Rohe with other modernists rethought the demarcation of rooms. The “plan libre” was a result instituted by Le Corbusier. Bruno Zevi wrote in his book:

“... supporting pillars are raised from the foundation to the roof before any interior or exterior walls are put up ... Using vast windows, by now entire walls of glass, [there is] complete continuity between interior and exterior space. Internal wall partitions may now be thin, curved, freely movable, which no longer work with static bearing functions. This creates the possibility of linking up interior spaces, of... the open and elastic plan of modern building.”\(^5\)

The space is born from the relationship between objects or planes, which play a role of boundaries; but it is defined both from the indoor and outdoor just like the two sides of a wall. Franz Schulze talked about Mies in his book “Mies van der Rohe: A Critical Biography”:

"... he sought to explore the dynamism of space by breaking down barriers between interior space and exterior space and by relating interior spaces more closely to each other. Glass and freestanding walls become his primary means of achieving these ends ..."\(^6\)

The forming of indoor and outdoor spaces is a primal human activity. Siegfried Giedeon writes:

“Man takes cognizance of the emptiness which girds around him and gives it a psychic form and expression... [space is] the portrayal of man’s inner relation to his environment: man’s psychic record of the realities which confront him, which lie about him and become transformed.”\(^7\)

Frank Lloyd Wright is another architect in the United States who undertook a reconceptualising of space throughout his whole career.

"Wright conceived of his architecture in its essence as a revolt against 'enclosure,' a way to 'beat the box' as he put it... [the interiors] flowed from living area to dining area and beyond, removing the walls that created interior boxes. Wright called this 'the liberation of space to space.' The apotheosis of this liberation is the nearly seamless

\(^4\) August Schmarsow, Barock und Rokoko, (Eine kritische Auseinandersetzung über das Malerische in der Architektur, Leipzig, Verlag S. Hizel), 1897, 6-7, quoted in Pierre von Meiss, Elements of Architecture From Form to Place, (Van Nostrand Reinhold (international) Co., Ltd), 1990, 101
\(^5\) Zevi, 141
\(^7\) Siegfried Giedeon, Space, Time and Architecture, (Cambridge, MA: Harvard University Press), 1947, 515
transition from interior to exterior…”

In the twentieth century, with development of new building techniques, it became possible to create a fluid space which could communicate with other spaces freely. The materials and structure were no longer the limit of space.

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PART II: CASE STUDY

1 Interior Space (Architectural Space)

1.1 Museum Space

1.1.1 The Jewish Museum Berlin, Berlin, Germany

The Jewish Museum exhibits the social, political and cultural histories of the Jews in Germany from the 4th century to the present. It consists of two buildings. One is the old Kollegienhaus, a former courthouse, built in the 18th century. The other is a new addition specifically built for the museum, designed by world-renowned architect Daniel Libeskind. The new extension was completed in January 1999, and opened to the public with fully installation in September 2001.

The new extension is connected to the Baroque building via underground axial roads. The longest road leads to the "Stair of Continuity" and to the Museum itself, while the second leads to the "Garden of Exile and Emigration" and the third to the dead end of the "Holocaust Void." The displacement of the spirit is made visible through the straight line of the Void, which cuts the ensemble as a whole, connecting the museum exhibition spaces with each other via bridges. The Void is the impenetrable emptiness across which the absence of Berlin's Jewish citizens is made apparent to the visitor.

Libeskind’s academic and intellectual practice culminates in this much-talked-about and unusual building. The design is based on a process of connecting lines between locations of
historic events and locations of Jewish culture in Berlin. Libeskind called this project “Between the Lines”, “because it is a project about two lines of thinking, organisation and relationship. One is a straight line, but broken into many fragments; the other is a tortuous line, but continuing infinitely”, which forms a basic outline and structure for the building. “These two lines develop architecturally and programmatically through a limited but definite dialogue. They also fall apart, become disengaged, and are seen as separated.” A void, which is discontinuous, being created in this way, runs through this museum. This building successfully stirs up the emotion of agony to the contradictions of the ordered and disordered, the chosen and not chosen, the vocal and silent.

The long and narrow space between the solid walls with a few strip windows shows a kind of compression. Even in the super high ceiling, the whole space seems to be extruded badly into a disproportional shape. The oblique beams seem unstable and out of order. A gleam of skylight through a small opening in the top of the wall cannot illuminate the whole space. The darkness can stir up some negative emotions. The very angle exhibits a sense of pressure as well. All of these can stir up some different emotions from different people, for instance, oppression, sadness, pity or even anger. But they are mainly negative emotions. And these emotions are strengthening ceaselessly when people go through these spaces. In the "Holocaust Void" this kind of emotion culminates; the round pattern is like a crying face and the lofty, erect and isolated gray walls surround this space; a sense of hopelessness is stirred up.

1.1.2 Bilbao Guggenheim Museum, Bilbao, Spain

The Guggenheim Museum Bilbao designed by Frank O. Gehry is located in the city of Bilbao in northern Spain. This museum was mentioned as “the greatest building of our time” by Philip Johnson. King Juan Carlos I said: “It is the best building of 20th century.”
Its site is between the Nervion River, which runs through the city to the Atlantic Coast, La Salve Bridge, the railway and the new town. It is a symbol of the Basque metropolis that can be seen from a considerable distance. Looking into the city from the north shore of Nervion River, the museum is the most striking sight of offshore water as the first layer. Faced with such an important and most challenging site, Gehry gave the most daring answer in the whole history of architecture: the whole building was a combination of a group of masses with irregular surfaces covered by titanium, its form foreign to past architectural practice, beyond any experience in the habit of construction. It makes the museum integrate into the urban context seamlessly. The unfolding shapes of stone, glass, and titanium interconnect on a 32,500m² site along the Nervion River in the old industrial centre of the city. Since its opening in 1997, this museum was hailed as one of the most important buildings of the 20th century with its distinctive titanium curves and soaring glass atrium.

On the waterfront north elevation, the 3-level exhibition hall with a long transverse wave is designed to be in perfect harmony with the horizontal flow of water and its large scale. Because of the backlighting in the north orientation, and the fact that the main elevation of building is in the shadows all day, the building surfaces are designed as a series of random curves in order to catch sunlight. With the angle of sunlight changing, each curved surface of the building will show the constantly changing light and shadows. Furthermore, it successfully avoids the tediousness of the north elevation of a large building.
To the south of the building, in front of the main entrance of the museum, there is only one street between the old buildings in the 19th century urban area and the museum. Therefore, the building is designed to match the old urban area by form, scale and material. In the south elevation, to be different to the north, some classic orthogonal shapes with stone facades are designed to be a transition to the urban context. Furthermore, in order to resolve the impact between La Salve Bridge and the ground floor of the museum, Gehry designed part of the museum to be under the bridge on the ground and connected to a tower on the other side of the bridge, in order to create an impression of the bridge as being held in the arm by the museum. To the south, a road runs through the ground floor of the building, under the plaza in front of the main entrance. The museum connects indivisibly with the urban context.

As a place of arrival, orientation and relaxation for the visitor, the vast atrium is the true heart of the museum, which is one of the most characteristic spaces in this museum. In this space, it is possible to get an idea of each exhibition space and gallery. The whole museum is presented to visitors in this space. The enormous glass walls, the unusual irregular shaped galleries and the rectangular shaped ones are all shown at the same time. It is an essential part in the museum. In the 50-meter-high space, there are a series of bridges, glass lifts and a staircase tower, which is connected to exhibition spaces at three levels.
In this museum, the spaces are provided for a variety of exhibition displays and specially commissioned installations, which has been planned with and for artists by the designer. There are 20 galleries distributed in the 11,000m² exhibition space. Ten of them are in classic orthogonal plans, which are identified from the exterior by their stone finishes. As a remarkable contrast, the irregularly shape of nine other galleries follow their swirling forms outside, which can be identified by their titanium cladding. The largest one was designed as a temporary exhibition space, 30m wide and 130m long. In 2005, the largest sculpture commissioned in history, Richard Serra's monumental installation *The Matter of Time* was displayed in this room.

There is no doubt that it is a highly complex building. However, the circulation is quite clear. It can be simplified into one of basic circulation, in which there is an atrium connecting to each of the galleries. After visitors finish one gallery, they need to go back to the atrium. The
other basic type, the tandem type, is partially used also. In the largest orthogonal shape, there are 3 galleries in tandem with each other on each level. Another characteristic of this museum is that the general idea of the design is shown perfectly in the vast atrium. Visitors can understand the whole museum earlier when they are in the atrium.

1.1.3 Groninger Museum, Groningen, The Netherlands

The Groninger Museum, which is a museum of modern and contemporary art, is located in Groningen, the largest city in the north of the Netherlands. It is a piece of art standing in Verbindings Canal opposite the main railway station on the southern edge of the inner city. It consists of three main building units designed by three different designers.

Alessandro Mendini, an Italian designer/architect, was appointed almost immediately. His work was also collected in the Groningen Museum. His basic design is made up of three
separate, austere and simple pavilions lying lengthways in the Verbindings Canal, connected by passageways, which also serve as bridges. The two shores are linked by a cycling and walking path, which is part of the passageways traversing the complex. Therefore, the station and the inner city are connected and the Museum has become an entrance gate to the centre.

A number of architects were invited as guest architects to design the sections and pavilions of the Groninger Museum. Philippe Starck’s silver cylindrical building and the pale blue deconstructivist space designed by Coop Himmelblau were adopted as two of three parts of the museum, constituting the current Groninger Museum with the middle part, the yellow tower, designed by Alessandro Mendini.

The golden central tower, the most attractive one, is the storage and also the entrance to the Museum. In Mendini’s opinion, the storage is the heart of a museum, in which the Museum collection, the most valuable possession, is kept. It is the most important part of a museum. Therefore, it has been put in a central position with a golden facade as a first eye-catcher. Another two blocks are located symmetrically beside the tower, one pink and the other green.

The western section consists of two big pavilions. A square one, slightly tapering towards the top, is on the bottom, while a circular one is on the top. The lower one is clad with red bricks, traditionally the most common building material in Groningen. It consists of a central part and nine temporary exhibition rooms, respectively presenting objects from the Groningen cultural history and expressionists. The vivid colour of the exhibition areas is the most striking feature, especially when coloured lighting is applied to reinforce its intensity.
The upper one is clad with aluminium plates designed by the French designer Philippe Starck. It is different from the lower one, both inside and outside. It is not full of different colours, but plain and simplex. In the round hall, the curtains are used to partition space, except the space where the visitors want to concentrate on the exhibition objects. The dramatic layout of this pavilion is outstanding and original. In this section, a traditional display in neutral space takes turns with an exciting layout that enkindles the imagination of visitors.

The east section of the museum is also represented as “Classical” museum architecture in its lower two storeys in a trapeziform designed by Mendini. It includes seven consecutive temporary exhibition rooms on the ground floor and a space on the first floor for the museum’s own collection. On the ground floor, the colours of walls are repeatedly changed, as well as floors’ and ceilings’. But on the first floor, the colour in each space is different, following a colour scheme developed by the Dutch artist Peter Struycken.
The top storey of this block, which is also a much-discussed section of the museum, was designed by Coop Himmelblau. It contrasts markedly with the simple and regular forms of the rest of the building. It is a typical example of the architectural movement at the end of the 20th century, Deconstructivism, in which all architectural traditions were thrown away. The first impression of this pavilion is rough-and-tumble. These elements, the wall, floor, window or ceiling, of this space have been thrown into confusion, with a wall turned into a floor and a ceiling into a window. There is no established value and standard as a starting point except the creating of a spirit of fragmentation, chaos, contrast, movement.

The Groninger Museum is designed by many designers, not only architects but also artists. It is an art work in the centre of Groninger. It directly presents all kinds of works of art, and is not merely a covering for art. All its shapes, layouts, and choice of materials and colours were designed to fulfill this purpose.
1.1.4 Imperial War Museum North, Manchester, U.K.

Imperial War Museum North, located in the Metropolitan Borough of Trafford in Greater Manchester, is designed by architect Daniel Libeskind. His first building in England, it has been widely praised. The museum was built on a site overlooking the Manchester Ship Canal in Trafford Park, which had been heavily bombed during the Manchester Blitz in 1940 because that area was an important industrial centre during the World War II.

Imperial War Museum North represents the conflicts, which have shaped the twentieth century and will continue to shape the future. The concept for the museum is that of “a globe shattered into fragments and then reassembled as an iconic emblem of conflict.”

The museum memorialises not the war, but the hardship in obtaining peace, and what the building represents is the contradictions and conflicts of it. Imperial War Museum North is designed to emphasize the "tragedy" effect. The form of the museum is simple geometrical. Huge curve shapes cross each other and it is hard to see the window on the dark concrete walls.

The building consists of three interlocking fragments representing respectively earth, air, and water. The fragment of the earth provides a plentiful and flexible exhibition space symbolizing “the open, earthly realm of conflict and war”. The Air Shard serves as a dramatic entry into the museum, with its projected images, observatories and education spaces. In the Water Shard, there is a performance space deck, cafe, and restaurant. The visitor can overlook
the Manchester Ship Canal and the views of the Manchester skyline from a viewing balcony in this area. It visually gives the impression of the three pieces colliding and conflicting with each other. It bluntly represents the conflict of war on the earth. The whole building was almost covered by metal cladding, with 5,000 square metres of aluminum plate on the roof, and a 6880 metre long standard prefabricated aluminum composite wall panel. The whole structure is based on the geometrical characteristics of the earth. Even the main floor is a globe clad wall. The effect of the building is fantastic.

Libeskind said at the opening of Imperial War Museum North that he looked for creating a building which “emotionally moved the soul of the visitor toward a sometimes unexpected realization”[10]. Moving close or entering the building, one sees a complex combination of geometric shapes. Nearly every vertical line is slanting, with only a few exceptions. The designer said the concept of the museum had come from the metaphor of the ravage, physical or psychological obstacle that caused war.

All the exhibits are concentrated in a huge exhibition space. The great anomalous exhibition space is partitioned by a series of anomalous clapboard to display the exhibits. The space is dark, with only a few accent lighting on the exhibits and the circulation. By building an internal environment, the architect intends to affect the visitors in order to disengage them from daily life and enter another sight of the world. The form of the museum is unique, though on the plan it is a little similar to the Jewish Museum Berlin.

One of the features of the exhibition is “the big picture”. In the exhibition space, the lighting will dim every hour. On all the walls will be projected pictures, quotations and playing of important events, which cause echoes in the hall. Its purpose is to allow visitors to fully experience the challenges of despondency in wars.

1.1.5 Ningbo Historic Museum, Ningbo, China

Ningbo Historic Museum designed by Wang Shu, who is Professor and Head of the Architecture Department at China Academy of Art, Hangzhou and an architect from the Amateur Architecture Studio, is located in an open and clear square in Yinzhou District, Ningbo, a seaside city in the east of China. The area is a part of Ningbo city, which is a famous historical city, though it looks as if it were built last year. The roads around the square are wide enough to
accommodate 6 or more carriageways, but they are not open to traffic. There are only trees and shrubs beside the roads and withered grass between tiles. To the east of the site, there are two huge government buildings, a capacious square and a cultural centre. Across a park, there is a vast expanse of paddy field in the south of the site, but these paddy fields of a beautiful village will soon disappear. In this area, which had been mutilated, there are only visible broken bricks and tiles everywhere. In the distance, the outline of a new high-rise apartment and an unfinished office building secretly foretells the prosperity in the future, though at present this area is temporarily in a state of limbo, with the past gone and the future still vague.

The designer said that when he began to design the building, he thought of the lofty mountains. He could not design for the city, because there was no city. Therefore he wanted to create something zoetic and animate. Finally, he decided to design the museum with the concept of the mountain, which is part of the Chinese tradition. In this new and clear urban area, which lacks a vital force, the form of Ningbo Historic Museum was designed into a fragment of a mountain. The mountains are continuous, just as the urban context of a vital city is continuous. Therefore, the building, with the square border as the man-made fragment cut from the continuous mountains, remained or was left here. However, it can also be imagined as a fragment from the urban context from which a city’s rebuilding is continuing.

The bottom of the building is a simple rectangle. On the top, it is split into five pieces as a similar shape of a mountain. Visitors enter the museum through a flat 30 metre wide hole in the middle of the building. The north of the building is in an artificial pool, with soft banks and
reeds planted in the water. The water runs over a stone dam in the middle of the pool, ending in the large pebble shoals. On the top of the building, there is an open platform hiding behind the five offsets. The visitors can see the view of the city and the distant view of the paddy field and the mountains.

The facade of Ningbo Historic Museum is reinforced concrete molded on the surface using bamboo canes instead of wooden planks, as well as a large number of old bricks and tiles collected from old demolished buildings and demolished sites all over the region. This kind of wall built by recycled bricks and tiles is called Wa Pan Wall, which is developed by local farmers to cope with natural disasters but is nearly lost nowadays. The facade of the building presents 20 different types of bricks and tiles that form a unique pattern.

The application of the Wa Pan Wall, with the extensive use of resource-saving recycled materials, embodies the traditional Chinese virtue of recycling construction. On the one hand, it embodies the traditional construction system of Ningbo, with its texture and colour fully
integrated in nature. On the other hand, it freezes the time. These recycled bricks and tiles contain hundreds of years of history. They are the witnesses of history. The collection of these bricks and tiles coincide with the collection of history, which is the idea of the museum. The “bamboo cane molded concrete” was a new creation. Bamboo is a characteristic local plant in the Ningbo region and the nature of the bamboo’s random cracking is clearly shown on the concrete through its texture.

The designer indicates that the new museum is analogous to the Chinese garden. At the beginning of the completion of the Chinese garden, the state is not at its best, but after ten years of nourishment, it is provided with a thriving vital force. The application of special material of Ningbo Historic Museum gives it a vital environment. Some years later, when the Wa Pan Wall is covered with green moss and even shrubs, the museum will immerse in nature and truly integrate into history.
1.2 Other Space
1.2.1 Church

Jubilee Church, Rome, Italy

Richard Meier

"The central ideas for creating a sacred space have to do with truth and authenticity, a search for clarity, peace, transparency, a yearning for tranquillity, a place to evoke otherworldliness in a way that is uplifting. And to express spirituality, the architect has to think of the original material of architecture, space and light." --Richard Meier

The area of the church is 10,072m², including the church building and the community centre. The materials of building include concrete, travertine and glass. The profiles of the three concrete shells generated by three circles of equal radius look like white sails. They imply the Holy Trinity, while the reflecting pool symbolizes the role played by water in the baptism ritual. The glazing roof and skylights let in natural light down to the interior space, reflected by concrete shell to create a solemn and quiet space. At night, the light from inside the church creates a perspective of heaven, which perfectly combines with the surrounding environment. Although its partial elements are the same as other modern buildings, the ambience of combination is not banal, because the increase or decrease of the scale between different shapes creates an obvious sculpturesque style.
Mortensrud Church, Oslo, Germany
Jan Olav Jensen

The Mortensrud church is located in a mountain district in a southeastern Oslo suburb. The site is on a ridge and surrounded by pines. The designer tried to obtain a delicate balance between nature and artifact on this site. The main materials of the facing consist of gallets (slice stone), bricks, metal, timber and glass. The materials were chosen with respect to the natural resources and the local construction tradition. Bricks were applied in the form of an arch in the ceilings and walls of the transept; the metal was used on the entire sloping roof; the ground was covered with timber in the outdoor space as the element between nature and artifact; and the light portico was covered with glass.
As the eye-catcher of the design, the gallets are presented in two parts. One is the exterior walls of the transept and the services space, which also blend into each other with the gallet basement, in order to achieve harmony with the site. The other one is the gallet walls, which as the elements to demarcate the space of the chapel on the level above the ground floor. The structure under the heavy gallets is quite open and light, which is the main path of the daylight. On the top of the chapel, the light enters the space softly through the gaps between the gallets, creating a sense of mystery.

1.2.2 Palace

The Forbidden City, Beijing, China

Located in the centre of Beijing, China, the Forbidden City is the world's largest surviving palace complex and covers over 725,000 m² of gardens, palaces and halls. It is surrounded by a 12 metre high and 3400 metre long wall, creating a rectangle city, and there is 52 metre wide moat outside the wall, forming a separate city. The palaces in the Forbidden City are wooden structures, with yellow glazed tiled roofs and white marble terraces, and decorated with the resplendent and magnificent painting.
The Forbidden City was built along a north-south axis with all the important plazas located on it. It is bilaterally symmetrical. In the Outer Court of the Forbidden City, the magnificent and imposing palaces and the large and impressive plaza embody the sovereign feudal regime. The Hall of Supreme Harmony, the largest plaza and the ceremonial centre of imperial power, is located in the centre of the Forbidden City, standing on the three-tiered white marble terrace, which is 30 meters high. It was designed to show the authority of the emperor in order to overawe the world. In the Inner Court, the plazas and courtyards are compact and recondite. Therefore there are a series of self-contained courtyards and minor palaces spreading in an orderly manner to the east and west of the three main halls, the official residences of the Emperor and the Empress.

The whole Forbidden City, from its overall layout to the smallest detail, was meticulously designed to reflect the philosophical and religious principles of Chinese tradition, and above all, to symbolize the majesty of imperial power. It is a masterpiece unsurpassed in architectural history. Its layout, elevation and form perfectly materialize the majesty, the grandiosity, the stateliness and the harmony. It is grand, magnificent, and luxurious, the pick of the basket in ancient Chinese architectures. It indicates the essence of ancient Chinese cultural traditions and reveals the excellent achievement of architects and builders more than 500 years ago.
1.2.3 Hotel

Sotelia Hotel, Podčetrtek, Slovenia

The new Sotelia Hotel is located in the gap between two existing hotels, but does not try to imitate the nearby structures. The designer breaks down the large volume, which would otherwise obstruct the view, into several groups of small units that distinctly break away from the built context but integrate themselves into the natural surroundings. These units compound with each other, which is dictated by the folds in the landscape to create a particular shape and give strong spatial experiences to the customers and passer-bys. The especial location, diverse structure and large bright courtyards, which are enclosed by those units, create the feeling of harmony with the view around. The interior space design also follows the same concept, which creates a hospitable space and a relaxing atmosphere.
1.2.4 Store

Shanghai Apple Store, Shanghai, China

Located in one of the most bustling areas surrounded by a series of high rise buildings, the new Apple store in Shanghai was designed with a polished aesthetic idea and is recognizable almost in an instant, similar to their special products. Its entry is a cylindrical crystal tower between two large skyscrapers and surrounded by a substantial circular concrete wall. In the tower, there is a crystal revolving staircase that leads people into the store. The design of the tower creates an exquisite and fantastic feeling of the space attracting people to the store. In the store, there is a simple and straightforward space to display their products.

Momentary City (Sales Pavilion), Hefei, China

It is a sale pavilion for the apartments beside the construction site along the street. In this developing city, old buildings are replaced by new ones every day. Facing the future, the city of today is only moment. It is a long space with six courtyards located between the interior space and the noisy and dusty street to create a peaceful and tranquil space. The situation and orientation of courtyards form the logic of the transformation between interior spaces. The sunlight through a series of windows on the north elevation beams directly or indirectly into the space. With the change of sunlight and seasons, the shadow is always changing in the space.
The adequate indraught of daylight establishes an inseparable connection between space and time.

1.2.5 Office

Vetreria Airoldi Office and Showroom, Milan, Italy

The Vetreria Airoldi Office and Showroom was designed by Italian firm Buratti + Battiston. In this project, they created the contemporary working space based on their strong grasp of aesthetics, which was made of a series of coloured glass entirely. The facade of the building is a glazing curtain wall with vertical fins, which emphasizes the sense of presence of the building. The attention is immediately attracted to its simplistic and elegant aesthetics. Furthermore, the glass staircase in the centre of the room, which looks as if it were floating effortlessly without any fixing screws, catches the eyes immediately. The large space is partitioned into different zones by the diverse texture and colour of the glass, which possess their own identities, such as the dividing screen on the first floor, where the coloured glass panels lap over each other and create several peculiar intermediate colours.

2 Exterior space (urban space)

2.1 Street

In the street, the sidewalk is a space between the buildings and the transport system. It serves as an intergradation of activity space and transport space. The trees on the sidewalk provide a nice space where people can stay and even have lunch.
Santana Row, San Jose, California, US

The Santana Row is an upscale shopping, dining and entertainment complex in San Jose, California, US. It was designed as a social space with some shaded grassy plazas, courtyards, fountains, intimate public seating areas, extra-wide sidewalks and street medians green space. It also provides spaces for live music, farmer’s market, and other public activities.

In Flakes, Towada, Japan

They are a series of benches made of stainless steel with polished surface and designed by the Japanese firm Mount Fuji Architects Studio beneath the cherry trees at the Towada Art Centre in Japan. Several simple elements are joined together to support each other. They are fitted together at random to represent the flakes of a broken mirror, which reflect everything floating around in the air, such as the cherry blossoms in spring, sunlight sifting down through the trees in summer, leaves in autumn and snowflakes in winter, which create a dreamlike space.
2.2 Plaza

Saitama Plaza, Saitama, Japan

The Saitama Plaza is located on a big roof with separate foot passengers from noisy, dusty and high-speed transport. The plaza was designed as a fifth "elevation" of a totally glazed building that contained a shopping centre at ground level. The designers brought a square of the forest, which consisted of 220 Zelkovas placed in a perfectly classical grid, into the centre of the huge new urban construction. In this plaza, people can stay for a rest, read newspaper, or chat with a few close friends. It is the essence of city life.

Capitol Plaza, New York, US

This plaza is a mid-block open space located in the residential neighbourhood of Chelsea Heights, which is surrounded by Flower District shops and weekend antiques markets. Capitol Plaza aims at providing people with a space to have a rest with, in the midst of lush bamboo
groves and ornamental grass plantings, distinctive contemporary seating and adjoining cafes and shops. Capitol Plaza as a small urban space emphatically lived up to its potential to enhance urban living by touching our daily lives. Capitol Plaza is not designed in an unreflecting gesture of form and colour. The success of this small urban space is the result of a series of careful analysis of neighbourhood dynamics and a deep understanding of the design principles.

2.3 Green space

**Battery Park, New York, US**

Battery Park is located at the southwestern tip of lower Manhattan in New York City, facing New York Harbor. This used to be a refuse dump without any natural characteristics, lacking vegetation coverage, microclimate and diversity of space. However, now the situation is different. It is a public park that creates an open space with a sea view footpath, allowing one to totally keep away from the din of city life and get into peace and calmness, and providing a comfortable space for outdoor activities.

**Taiping Bridge Park, Shanghai, China**

The new Taiping Bridge Park not only further improves the ecological environment of the city centre, but also provides a comfortable space with restful environment and charming scenery and improves the living conditions of more than 10,000 residents living nearby. In
addition, the green space and water area lower the temperature and reduce dust. It is well integrated into the city space, with the lake as the principal part of the park reflecting the fine architecture surrounding the park, offering a good recreation place for the community, tourists and people who work in the surrounding buildings.

3 Conclusion

Through the analysis of these cases, it is easy to find spaces that not only satisfy the function but also satisfy the spirit. The architecture is not the product but the artwork, which is the art of the space. In these spaces, there is a kind of atmosphere or feeling that can touch the heart of visitors and evoke a resonance, making the architecture outstanding. Some of the examples are the artworks themselves, particularly the museums. They not only provide the spaces for display but also are a part of the exhibition.

From the quality of space point of view, there is no doubt that, through the design of the elements of space, the expected space effect is achieved. For example, the space in the Jewish Museum Berlin, which is long and narrow with some very sharp angles and depressive feelings, is totally different from the space of Bilbao Guggenheim Museum, which is flowing and exciting. In the two churches, Jubilee Church and Mortensrud Church, the application of different materials, which create different light and shadow, brings different spatial experiences, heavenly and mysterious. The Wa Pan Wall of Ningbo Historical Museum evokes the memory of the old days. In the Groninger Museum, the colour is presented as an abstract painting but in Forbidden City the colours symbolize the dignity of imperial power. The Sotelia Hotel carefully controls its volume and form to create an approachable space. By contrast, Imperial War Museum North represents the fragility of people faced with conflicts and wars through the huge and unapproachable form. In the following project, these will be practised and tested through the design.
Part III Project: History Museum

1 Topic: The start point of history

As a history museum in a city with a long history, it is not possible to present the whole of the thousands of years of history. This project focuses on the important history events that have happened in Shenyang, which were the starting points of different period of history.

1.1 The summary of history of Shenyang

Shenyang is famous for its history and culture. The earliest human habitation there can be traced to 7,200 BC, the Neolithic age. It is one of earliest cradles of Chinese civilization. The remains of that period, Xinle Remains, were first found in 1978, in the northern part of the city. In 300 BC, it was one of the most important cities in Yan\(^ {11} \). It was also the first time it was recorded as a city. Throughout a 2,000 year period of changing dynasties, Shenyang was destroyed and rebuilt time after time because of its location. It was always built as a military

\(^{11}\) Yan (864 BC ~ 222 BC), a state during the Western Zhou, Spring and Autumn and Warring States Periods in the north of China.
stronghold in the strategic passage in the north of the dynasty.

By 1625, the Manchus had founded their own capital of pre-Qing Dynasty, and built the imperial palace in the centre of the city – the Mukden Palace (Shenyang Imperial Palace), which is a UNESCO World Heritage Site. The city appeared in the historical arena once again. In 1644, the Manchu then allied with the Ming Dynasty general Wu Sangui, and seized control of Beijing, which became the new capital of the Qing Dynasty. Shenyang was the auxiliary capital.

In the Warlord Era\textsuperscript{12}, the Fengtian faction, led by Zhang Zuolin, was an amalgamation of Beiyang\textsuperscript{13} and local units. Shenyang — at that time called Fengtian — was the capital of this faction’s forces. Zhang took over the northern government in June 1927 as troops from the National Revolutionary Army (NRA) were flooding into his territory. On 2 June 1928, Zhang resigned after agreeing to hand over Beijing to the NRA. He was assassinated with a Japanese bomb while fleeing to Manchuria on 4 June. Five days later, NRA troops seized the capital and exterminated the Beiyang government. Zhang's son and successor, Zhang Xueliang, recognized the Nationalist government on 31 December, 1928. By that day, all of China had been consolidated at least nominally, and the Nanjing government received prompt international recognition as the sole legitimate government of China. In this period, China opened to the world again after hundreds of years of closure to the outside world. New technologies came into China as well as different building styles. Zhang Zuolin had founded a series of factories, which became the basis for heavy industry in Shenyang.

Just after that — in 1931 — the Mukden Incident, also called the September 18 Incident, broke out. This represented an early event in the Second Sino-Japanese War, although full-scale war would not start until 1937. With Shenyang as the starting point, the whole northeast of China was rapidly occupied by Japan. In the following 15-year period, it was controlled by the Imperial Japanese Army until the end of World War II. During this 15-year period, the north-east was developed to support the Imperial Japanese Army in the war. In Shenyang,

\textsuperscript{12} Warlord Era (1916-1928), the period in the history of the Republic of China when the country was divided among military cliques

\textsuperscript{13} The Beiyang Army, a powerful, Western-style Chinese military force, created by Yuan Shikai in the late 19th century under Qing Dynasty government. It is the base of Yuan Shikai to found the Beiyang government. After he died, the Beiyang Army divided into warlord factions, which ushered in a period of regional division.
factories were built one by one, including Shenyang Heavy Machinery Factory, Shenyang Machine Tools Factory, Shenyang Foundry, Shenyang Low-voltage Switches Factory, etc.

After the founding of the People's Republic of China, Shenyang became the capital of Liaoning Province and the largest city in the northeast of China because of its heavy industry.

But it did not last for long time. From the 1990s, the city had to face the reality of the end of the industrial era, when its massive factories went bankrupt, which left millions jobless. But challenges always come with opportunities. Shenyang has already changed its development strategy.

1.2 The Start Points of History

Xinle Remains – the start point of civilization
Yan – the start point of becoming a city
Pre-Qing Dynasty – the start point of Qing Dynasty
Warlord Era – the start point of opening to the outside world
Mukden Incident – the start point of the Second Sino-Japanese War
Famous Industrial Centre – the start point of the industrial era of China
Collapse of Heavy Industry – the start point of the dismissal of workers in factories
Challenges and Opportunities – the start point of a new era
2 Size

2.1 New Museum Architectures in the World

<table>
<thead>
<tr>
<th>Museum</th>
<th>Location</th>
<th>Area m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solomon R. Guggenheim Museum</td>
<td>New York, United States</td>
<td>6,138</td>
</tr>
<tr>
<td>Groninger Museum</td>
<td>Groningen, The Netherlands</td>
<td>9,300</td>
</tr>
<tr>
<td>Museum of Contemporary Art</td>
<td>Helsinki, Finland</td>
<td>13,000</td>
</tr>
<tr>
<td>The Jewish Museum Berlin</td>
<td>Berlin, Germany</td>
<td>15,000</td>
</tr>
<tr>
<td>Bilbao Guggenheim Museum</td>
<td>Bilbao, Spain</td>
<td>24,000</td>
</tr>
<tr>
<td>Average Area</td>
<td></td>
<td>13,487</td>
</tr>
</tbody>
</table>

All the samples are selected from museums all over the world, which were built in recent years and designed as such. There are a lot of museums located in historical buildings, such as the famous Louvre, but these buildings were designed for a different function. Their sizes cannot be analysed in analogy.

As shown in the table; the Solomon R. Guggenheim Museum was only 6,138 m² when it was designed by Frank Lloyd Wright. The average area is 13,487 m², but only one museum, the 24,000 m² Bilbao Guggenheim Museum, is over 20,000 m². The other museums are no bigger than 15,000 m².

2.2 New Museum Architectures in China

<table>
<thead>
<tr>
<th>Museum</th>
<th>Location</th>
<th>Area m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hangzhou History Museum</td>
<td>Hangzhou, China</td>
<td>6,700</td>
</tr>
<tr>
<td>Wuxi Museum</td>
<td>Wuxi, China</td>
<td>17,000</td>
</tr>
<tr>
<td>Ningbo History Museum</td>
<td>Ningbo, China</td>
<td>30,325</td>
</tr>
<tr>
<td>Tianjin Museum</td>
<td>Tianjin, China</td>
<td>35,032</td>
</tr>
<tr>
<td>Shanghai Museum</td>
<td>Shanghai, China</td>
<td>40,000</td>
</tr>
<tr>
<td>Average Area in China</td>
<td></td>
<td>26,576</td>
</tr>
</tbody>
</table>

These samples are selected in China, on the same level as this project, which is a museum of a big city. The Hangzhou History Museum is the smallest one, only 6,700 m², but 3 of the 5 museums are over 30,000 m² with the largest one, the Shanghai Museum, being 40,000 m². These figures are much larger than the international ones, because of the larger population,
higher density and even the different culture and tradition. The average area of these museums in China is 26,576 m².

Considering that there is another museum in the city, the Museum of Liaoning Province, which is 28,900 m², the new museum needs to show respect to it. From these figures and analysis above, the size of the new museum will be chosen between 24,000 m² and 26,000 m².

3 Location

3.1 The Site Analysis of Those Examples in the world

<table>
<thead>
<tr>
<th>Museum</th>
<th>Location</th>
<th>Nearby</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Jewish Museum Berlin</td>
<td>Berlin, Germany</td>
<td>Mehringplatz</td>
</tr>
<tr>
<td>Bilbao Guggenheim Museum</td>
<td>Bilbao, Spain</td>
<td>River, Highway, Old Urban Area &amp; Art Area</td>
</tr>
<tr>
<td>Groninger Museum</td>
<td>Groningen, The Netherlands</td>
<td>City Center, River, Railway Station</td>
</tr>
<tr>
<td>Museum of Contemporary Art</td>
<td>Helsinki, Finland</td>
<td>City Center, Railway Station</td>
</tr>
<tr>
<td>Solomon R. Guggenheim Museum</td>
<td>New York, United States</td>
<td>Central Park</td>
</tr>
<tr>
<td>Dalian Contemporary Museum</td>
<td>Daling, China</td>
<td>Xinghai Bay Square</td>
</tr>
<tr>
<td>Hangzhou History Museum</td>
<td>Hangzhou, China</td>
<td>Wushan Square</td>
</tr>
<tr>
<td>Ningbo History Museum</td>
<td>Ningbo, China</td>
<td>Yinzhou District Government Square, Yinzhou Park</td>
</tr>
<tr>
<td>Shanghai Museum</td>
<td>Shanghai, China</td>
<td>City Center, People's Square</td>
</tr>
<tr>
<td>Tianjin Museum</td>
<td>Tianjin, China</td>
<td>Yinhe Square</td>
</tr>
<tr>
<td>Wuxi Museum</td>
<td>Wuxi, China</td>
<td>Taihu Square</td>
</tr>
</tbody>
</table>

It is clear that all the samples are close to at least one place of social activities, such as a square, park, railway station and city centre. It means that all these museums are where people gather. Some museums are combined with a plaza particularly in China. The new museum is always built as a symbolic building in a city. It requires that the building can be seen from a long distance. Being allied with a large open space is a good solution, such as a park or a plaza.
3.2 Site Selection and Analysis

Considering the results of research and analysis, the site of this project is proposed to be in the urban area of Shenyang. There is a river, Hun River, flowing through the south of the city. The site will be located on the bank of the river, which is the cradle of the city. The literal meaning of Shenyang is “the city on the north bank of Shen River”. Shen River is the old name of the Hun River. Now there is a new developed area on the south bank of the river. The site will be based on the “present” and face the “future”. One of the streets crossing the river is Qingnian Street, which is the north-south central axis of the city, also called “Golden Corridor”. The site is located by the crossing of the street and the river. A number of public buildings for culture and activities accumulate near the site. To the west of the site, a new underground station will be completed by the end of this year. On the other side of Qingnian Street, there is a new exhibition and conference centre under construction. This area is full of 5-star hotels, luxury stores and other facilities.
4 Concept: Trace

The concept of this project is the traces of history. The historical buildings are traces of the old days, are left in the city to present the past time. They belong to different times, some are very well protected, and some are only recorded in old photos. Some are remembered because of some famous events, and some are forgotten forever. It does not matter whether the buildings exist or do not exist. The basements of some of them are buried deep under the ground. They are also the traces of the buildings. When a new building is built on them, its own traces are left at the same time. After this building is destroyed, another building is built on it. During the past thousands of years, the whole city was full of this kind of traces. Some of them are endowed with particular significance by history.

Shenyang Imperial Palace of the Qing Dynasty is the most famous one. It was built in 1625, when the Manchus founded pre-Qing Dynasty and decided to use Shenyang as the capital. The palace was built in traditional Chinese style, but also exhibited hints of Manchurian and Mongolian styles. It includes more than 90 buildings with over 300 rooms and 20 gardens in total. All the ostentatious decoration shows the symbol of power and grandeur. This palace records the resplendence of old days.

Shenyang General Zhang's Mansion was first built in 1912. It was the domicile and office of Zhang Zuolin and his successor Zhang Xueliang. Its buildings are a mixture of different
styles. In the middle, there is a Chinese traditional 3-line quadrangle dwelling, which also shows the style of North-east China, particularly the South Liaoning culture. There are a group of buildings built in European style around quadrangle dwellings. The most famous one is the Daqing Building, which resembles Romanesque architecture. It is a building best preserved from the Warlord Era.

Shenyang Heavy Machinery Factory campus was first built in 1937 by the Japanese. As one of the earliest factories in Shenyang, it has witnessed the inchoation, development, boom, and decline of the industry in the city. In 1996, it was reorganized, with another 10 enterprises, as Shenyang Heavy Machinery Group Co., Ltd. Last year the new company moved to the economic and technological development zone in the west of the city. The old campus was left as a witness but it will be torn down by the end of this year.
When these buildings get together, they create an inimitable pattern, which represents the passing of time and the supersession of ages. This pattern is the background of the design. The lines of their basement are presented in the new museum as elements to show the traces of history. The elements are located in the building in accordance with the theme of each space, following different functions and feelings of space.

The design of the elevation follows the same concept, the traces of history. The different shades of grey present the shadow on a rugged surface, which was distorted during the long history. The trace cannot be kept in the same state throughout the long history. It has always changed with the passing of time and been influenced by a lot of factors.
5 Function and Circulation

There are 10 fixed exhibition rooms surrounding the central hall in the centre of the building. To the south there is a double height space for temporary exhibition on the first floor above storage. On the other side of building, there is the lecture theatre, learning and research centre, administration and a multifunctional space, and the cafe and restaurant between them and the entry hall.

When visitors first come into this museum, they start their trip at the entry hall, which is a simple space with a basic function of leading visitors into the first fixed exhibition room. The 10 fixed exhibition rooms are disposed in chronological order. Respectively, they are Xinle Remains, Yan, Pre-Qing Dynasty, Warlord Era, Mukden Incident, Famous Industry Centre, Comedown of Heavy Industry, Challenges and Opportunities and two rooms for the future, which helically surround the centre hall. The other functions, such as temporary exhibition space and lecture theatre, are located beside the central circulation and connect to the fixed exhibition rooms on each level. They are independent from the main circulation in order to provide other opportunities for the visitors who are only interested in some particular exhibitions or activities. There are two other entries for the lecture theatre and administration, as well as a loading entry for storage.
6 The Climate and Environment Design

Shenyang is the biggest city in north-eastern China. Its climate is totally different from New Zealand’s. Shenyang is in a temperate zone and is greatly influenced by monsoons all year round. The lowest average temperature is -28°C and the highest is 36°C. July is the hottest month of the year with an average temperature of 25°C. January has the lowest temperature of the year and has an average temperature of about -11°C.

**Shenyang Climate Chart**

Source: China Meteorological Administration

**Climate Data for Shenyang**

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average high °C (°F)</td>
<td>-4.8 (23.4)</td>
<td>-0.9 (30.4)</td>
<td>6.8 (44.2)</td>
<td>16.5 (61.7)</td>
<td>23.0 (73.4)</td>
<td>27.2 (81)</td>
<td>29.1 (84.4)</td>
<td>28.4 (83.1)</td>
<td>23.6 (74.5)</td>
<td>15.7 (60.3)</td>
<td>5.7 (42.3)</td>
<td>-1.9 (28.6)</td>
<td>14.0 (57.2)</td>
</tr>
<tr>
<td>Average low °C (°F)</td>
<td>-16.1 (3)</td>
<td>-12.2 (10)</td>
<td>-3.8 (25.2)</td>
<td>4.2 (39.6)</td>
<td>11.2 (52.2)</td>
<td>17.0 (62.6)</td>
<td>20.6 (69.1)</td>
<td>19.3 (66.7)</td>
<td>12.1 (53.8)</td>
<td>4.2 (39.6)</td>
<td>-4.2 (24.4)</td>
<td>-12.1 (10.2)</td>
<td>3.5 (38.3)</td>
</tr>
<tr>
<td>Precipitation mm (inches)</td>
<td>6.0 (0.236)</td>
<td>7.0 (0.276)</td>
<td>17.9 (0.705)</td>
<td>39.4 (1.551)</td>
<td>53.8 (2.118)</td>
<td>92.0 (3.622)</td>
<td>165.5 (6.516)</td>
<td>161.8 (6.37)</td>
<td>74.7 (2.941)</td>
<td>43.3 (1.705)</td>
<td>19.2 (0.756)</td>
<td>9.8 (0.386)</td>
<td>690.3 (27.177)</td>
</tr>
<tr>
<td>% Humidity</td>
<td>60</td>
<td>55</td>
<td>53</td>
<td>52</td>
<td>55</td>
<td>67</td>
<td>78</td>
<td>78</td>
<td>71</td>
<td>65</td>
<td>63</td>
<td>61</td>
<td>63.2</td>
</tr>
<tr>
<td>Avg. precipitation days (≥ 0.1 mm)</td>
<td>3.5</td>
<td>4.0</td>
<td>5.1</td>
<td>7.7</td>
<td>9.2</td>
<td>11.9</td>
<td>13.5</td>
<td>10.9</td>
<td>7.6</td>
<td>6.7</td>
<td>5.4</td>
<td>3.8</td>
<td>89.3</td>
</tr>
<tr>
<td>Sunshine hours</td>
<td>162.5</td>
<td>179.3</td>
<td>221.8</td>
<td>236.3</td>
<td>256.0</td>
<td>238.6</td>
<td>206.8</td>
<td>218.8</td>
<td>228.4</td>
<td>212.3</td>
<td>161.0</td>
<td>146.2</td>
<td>2,468.0</td>
</tr>
</tbody>
</table>

Source: China Meteorological Administration
The climate of Shenyang is totally different from New Zealand’s. In the winter, there is a fixed 5-month central heating period in each year, from November to the following March. In summer, the temperature is usually over 30℃ during day time. The focus of environment design is to reduce the heat exchange between interior and exterior. Air conditioning is applied to create a comfortable interior space that is highly different from the outside. The 300mm thick exterior wall with insulation is designed to protect the building from the exterior environment in accordance with the local building code.

7 The Space

In this museum, every fixed exhibition room has its own theme different from others. These rooms are not only the shell for displaying the objects, but also a part of the exhibition itself. What the museum exhibits is the history of the city of Shenyang. The museum itself is designed to be the memories of the city, which is dispersed everywhere of the city, buried under the ground. Now, they have been dug out to be presented in these spaces as a record of history. For example:

7.1 The Hall of Time and Space

The hall is the centre of the museum, with all the fixed exhibition rooms surrounding it on four levels. There are two ramps as a double helix surrounding this space, which pass by each exhibition rooms. On the ramp, visitors can look into the exhibition room through the gaps or openings on the walls. The ramp runs from the ground floor to the top floor, going through history from 7200 years ago. In this space, lines presenting the traces of history of different
periods meet and interweave with each other, leaving traces on the floor, the walls and the ramps. Some of them are continuous while others are broken, signifying that some of the traces are remembered or recorded while others are forgotten or lost in the long history. This space is the most satisfying embodiment of the architecture concept. The three plans, which belong to different times, interweave in this four-level space in order to create a space with time set in disarray, making visitors catch the idea of different times interweaving in this space.

7.2 Exhibition Room of Xinle Remains

This room exhibits the Xinle Remains, one of earliest cradles of Chinese civilization traced back to 7,200 BC, the Neolithic age. In this space, all the elements representing the traces of history are down to the floor as a series of interlacing lines. Some of them are the root of walls with half imbedded underground and half exposed as a part of exhibition, some as fragmentary walls becoming part of the partitions and some enclosing and forming a deck which is slightly above the floor level. Only some traces are presented as a group of columns revealing that they used to be part of an old building.

This is a double height space in which there is a bridge on the first floor level. The visitors can look at the exhibition on an upper level. There are fewer vertical elements in this space in order to reduce the blocks to view. It creates an open and hollow space which accords with the theme of the exhibition room, the hoary and ancient ages, the Xinle Civilization.
7.3 Exhibition Room of the Mukden Incident

In this space, the theme is the Mukden Incident in history. It is a very dark, repressive and hopeless period in the history of Shenyang. For most Chinese, World War II lasted eight years, but for the people who lived in northeast China, it lasted fifteen years. During that period, the city was controlled by the Imperial Japanese Army as a colony. This is a period full of crackdowns, desperation and chaos caused by war. It is the theme of this space. In Daniel Libeskind’s works, it is easy to get the idea of presenting the desperation and chaos caused by war, such as in the Jewish Museum Berlin and the Imperial War Museum North. Both the unaccustomed proportion and scale and the lines interweaving with each other deliver this idea.

In this exhibition room, the design still follows the main concept of the museum, the traces of history. The traces belonging to different periods interweave in this space, presented as partitions to display items and divided into a series of narrow and maze-like spaces in order to create a dark, chaotic and repressive atmosphere. In the darkness, however, there is a gap between two walls in which there is a gleam of light leading visitors to the next room, which displays the victory of the war and the growing up of the city.
CONCLUSION

Through the one year of hard work, the design is almost finished so far. From the choosing of topic and project, determination of size and selection of site, to concept design and building design, it has been a stiff process. In each stage, it is not a cursory decision, but is considered and tested time and again. Before the concept of trace was chosen, there were a lot of ideas, and even some different ways and means to present the trace were abandoned in the end. The background pattern was chosen from more than twenty different compositions. In each space the design of the elements, which present the traces of history, were also tested in different ways. It is not only a design process but also a study process. It was improved step by step to a state never imagined before.
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