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Le Corbusier's exhibition pavilion: The heterogeneous character of his modernism between representation and functionalism

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Abstract

This study investigates the exhibition spaces designed by Le Corbusier and their common features by describing and classifying them as the existing literature does not offer a full genealogy of his exhibition spaces with the intent to identify connections between them. The relationship of architecture and the exhibited object is the key concept in understanding of the exhibition spaces, including the pavilions, galleries, and some of his museums, which can be described in three main groups: in the first group, architecture becomes the representation itself as a nomadic gesture. In the second group, the structure separates itself from the materiality of the exhibition to create a dual existence and in the third group, the structure and the exhibition obtain singular yet connected and well-defined identities. The reading of exhibition spaces indicates a career-long search by Corbusier for the identity of architecture as a representation of the exhibition itself, which explains the emergence of a template in the late years. The development of exhibition spaces from 1924 to 1962, evidences the existence of a clear leitmotif, which connects Corbusier's pavilions one another and represents his conception of exhibition space. All temporary exhibition spaces have a very specific shape, which can be described as a reverse double triangular at the roof or on the facade. The relation of this formal leitmotif as the common feature and the understanding of exhibition space reveals an example of Corbusier's rationalism, which contains elements of symbolism, formalism, functionalism and structural innovation as a synthesis.

Keywords
Le Corbusier, Exhibition Pavilions, Representation, Functionalism, Leitmotiv.

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1. Introduction

This paper will focus on the relationship of the exhibition pavilions Le Corbusier has designed throughout his career. In addition to the analysis of formal features of the temporary exhibition spaces, how Le Corbusier conceives them will also be described. On the basis of a classification and genealogy, the common features of pavilions will be brought to spotlight in terms of symbolism, formalism and functionalism.

In the first part, the first exhibition pavilions will be studied. The *L'Esprit Nouveau Pavilion*, Nestlé Pavilion, Bat'a Pavilion and New Times Pavilion can be considered as a group of exhibition spaces, where an experimental and light structure puts forward the exhibition and acts predominantly as a faceless skin to transform the architecture into the exhibition itself. The structure in its pure sense exposes various timid triangular experimentations.

In the second part, it will be focused on the two pavilions as a period of transition. The Water Pavilion and Synthesis of Major Arts Pavilion represent an intermediate tone where the structure becomes more independent than the exhibition areas. Thus, as the structure becomes less attached to the exhibition, it also becomes less representative. The independent umbrellas exhibit wave-like rise and falls in obtuse angles.

In the third part, some of the museum designs of Le Corbusier will be analyzed in terms of their relation to the exhibition pavilions to emphasize the role of the triangle leitmotif. The World Museum of Mundaneum, the City and State Museum and the Knowledge Museum in Chandigarh (are the atypical museums of Le Corbusier, which are in a formal dialogue with exhibition pavilions. They have a direct connection with the archaic pyramidal shape that was first used in Mundaneum's museum. It will be shown that the pyramidal reference obtains certain concrete and representational functions, whereas the historical reference weakens after the Mundaneum project.

A fourth group of pavilions can be described as a template, which were designed in 1950s and proposed many times as a part of a cultural complex. The exhibition areas preserve their semi public, circulation-based character, but the limitless shell structure of attached units becomes a more formally defined roof with double pediments. The last pavilions, namely the Philips Pavilion, Ahrenberg Palace and Heidi Weber Pavilion, the last realized project of the architect, represent a maturity where the expressionist character of the shell continues, whereas the exhibition spaces become less nomadic and more unique. While Phillips Pavilion is rather an exception, combining architecture with the exhibition space, the Heidi Weber museum embodies the separation of shell of folded steel and exhibition space and they both have their own architectural formal character.

In the fifth part, the leitmotif will be evaluated on the background of Le Corbusier's architecture. It will be noted that a certain understanding of exhibition space reveals itself throughout the development of exhibition pavilions and, thus, prints its stamp as a leitmotiv, which is the reverse triangles.

Finally, it will be suggested that reverse triangels have representational, formal and structural connotations. As a conclusion, it will be noted that the leitmotiv as reverse triangles in exhibition is an example of Le Corbusier's rationalist attitude.

2. Exhibition pavilions: From Nestlé Pavilion to Water Pavilion

Exhibition Pavilions are signs, like billboards, that have the intention to draw attention. As portable structures, an exhibition pavilion is expected to stand for something else. Le Corbusier's first pavilion in 1924, *L'Espirit Nouveau*, was a pavilion showcasing the modern life and it's style of designs. The graphically designed letters on the outer wall reminds us that it was not a real modern villa, but a promotion of it. It was standing in the place of modern architecture itself. While *L'Espirit Nouveau* is the starting point implying a main direction, it is the Nestlé Pavilion that should be considered as the first exhibition space speaking entirely for something else.

Nestlé Pavilion is detachable exhibition pavilion for the Paris fair in 1928, adopting a metal framework

Figure 1. *Ateliers d'Artistes, 1910.*

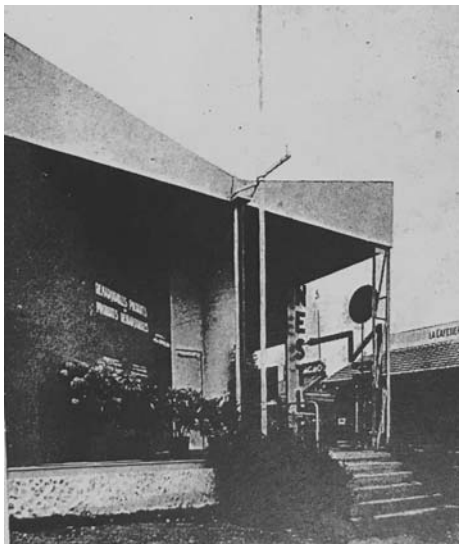

Figure 2. *Mundaneum, Musée Mondial, FLC 32114 (FLC/ ADAGP).*

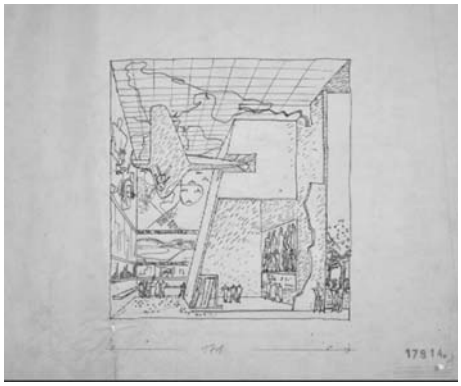

Figure 3. *Musée de la ville et de l'etat, FLC 28814 (FLC/ ADAGP).*

coated with sheet metal. Demountable and functional, paired with the use of graphic design, the pavilion helped to popularize the metal and glass structure and acted as a strategy of promotion of modern materials. (Panigyrakis, 2015)

The colorful facade was painted like a billboard and had a basic composition of metal and glass. The interior was like a "collage painting into which the viewer could walk". (Naegle, 2004) The first thing that attracts attention is how the street facade gradually passes from transparency at the bottom to opaqueness so that the wings on topsides of main sign give an effect expansion. The butterfly shaped roof on the other facade is enhancing this effect. Two obtuse triangles are striking, as it is neither a gable roof nor the terrace roof described by Le Corbusier in "Five Points". Interestingly, Le Corbusier were going to use the same butterfly roof in a house design, *M.A.S. Maison* in 1939, a prefabricated dry construction of standardized units to tie his rare use of butterfly roof to prefabrication. As *L'Esprit Nouveau* pavilion was a turning point in the design of modern interior as a house, the Nestlé Pavilion rather quietly sets the standards for exhibition spaces of Le Corbusier - a system of light architecture consisted of a metallic framework with a folded roof and covered with sheet metal. So, it is the first time a double triangular shape appears on the roof of an exhibition pavilion.

A decade later, architecture and exhibition unifies once again in Bat'a Pavilion, an unrealized design executed in 1937 for the Czech shoe and airplane manufacturer Bat'a (Naegele, 2011). It was a closed box with one ceiling consisting of translucent glass with a map on it and another as a projection screen. All walls were covered with photographs and texts or simply painted. An airplane was suspended to intensify the inseparable character of representation from the space. Representation was becoming one with the space. It was a combination of artifacts in the size of a building to surround the visitor completely with the objects, visual material and texts. Whereas the interior was designed a separate entity from the structure, it was inseparably from the represented objects.

On the entrance the letters Bat'a were part of the geometric composition like the "E" and "N" letters in *L'Espirit Nouveau's* outer wall or "Nestlé" in Nestlé Pavilion. Still, there was a continuous circulation in this rather tiny building and one single space despite being partly divided. It was supposed to be a continuous space as a converted pictured book. Le Corbusier was trying to use steel's potential and in Bat'a he used the truss system not only in columns but also in the roof. Except a ceremonious shed roof no triangular dominated shape can be seen in this unrealized building. But the truss with a slight angle can be noticed in the section. yet the roof detail connects this pavilion to the former galleries. The space inside is covered with documents; even the walls were proper for projection. It is not a void; it is a customized space for a particular group of artifacts. Le Corbusier's emphasizing on standard production elements exists here as well. By standardization, the construction becomes easier to proceed and it gives his designs the notion of reproductively.

Another pavilion designed around the same time is the New Times Pavilion (Pavillon des Temps Nouveau). After the failures of three proposals for Paris 1937 Exposition, a fourth one, the Project D was finally accepted. The New Times Pavilion was planned as an immense tent, which could be dismantled and transported to other places. With the pylons outside supporting the tent, it is a huge space, which surrounds the exhibition inside. The exhibition acted as anthology of modern urbanism and it was a result of the many years of work by the architects and their CIAM colleagues who were presenting their work to a large public, to the professional community and government officials. (Shumkov)

The exhibition itself seems to be a separate entity with its partition walls and cubic character. The skin of the pavilion lays an obvious emphasis on transportability as the roof was sewn in one piece and unrolled all at once. A structure of steel pylons and tensioning cables, "expressing forcefully the idea of a temporary event and nomadic occupation". (Papillaut) Easy to build and deconstruct, the pavilion's main structure was a flexible cover construction atop. Its lightness puts the emphasis on the interior, which Le Corbusier describes as a "trial of museum of popular education". It was like a book with photos and passages on the panels, where one could walk inside. His interest in the tent as a primary form was evoked earlier, as his popular book Towards a New Architecture suggests. The Primitive tent can be compared to New Times Pavilion, "where he preferred to keep the interior free of architecture, as the roof hangs in an inversion of the vaulted form" (Samuel, 26)

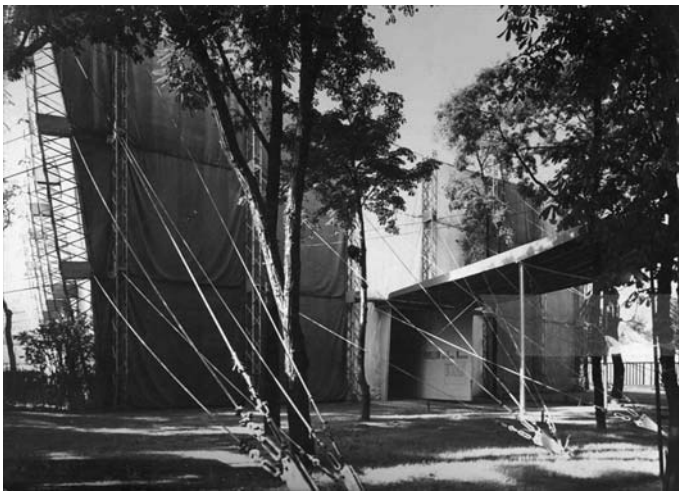

Figure 4. *Musée de la Connaissance, Chandigarh, 1962 (Le Corbusier - Oeuvre complète, Birkhäuser, 2006).*

3. The transition period: The separation of exhibition and structure

The last pavilion proposal before the Second World War was for an exhibition for the history of water and its importance in civilization. In August 1937, Le Corbusier was summoned to the committee of the Liège Exhibition and was asked to submit his idea on the overall design of the exhibition. Le Corbusier and Jeanneret came up with the idea of creating a total space with a flexible cover construction atop as they used the techniques of fabric covering the steel structure in a large composition of parasols of welded sheet steel above the pedestrian ramps. (Papillaut)

The continuous ramp in the middle as the entrance and exit was supposed to gather the different pieces of the exhibition as an infinite nave. Le Corbusier reapplied the ideas that he used in New Times Pavilion and Bat'a Pavil-

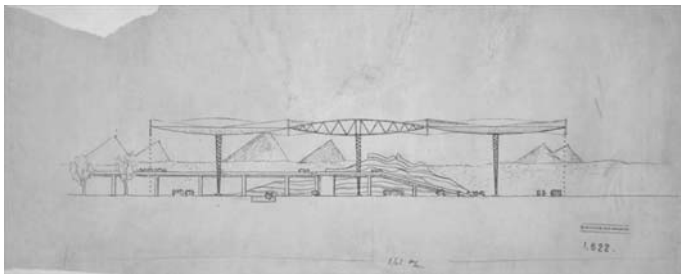

Figure 5. *Pavillon L'Espirit Nouveau (FLC/ ADAGP).*

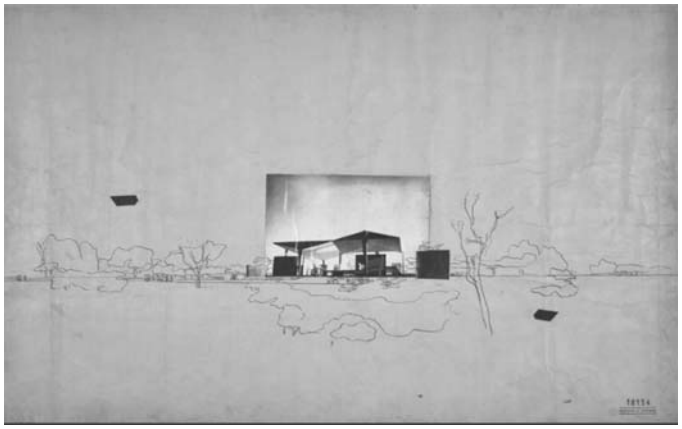

Figure 6. *Pavillon Nestlé (Le Corbusier - Oeuvre complète, Birkhäuser, 2006).*

ion. The combination of steel-trussed poles and wires became horizontally expandable double vaulted trusses. Structurally more complex, it was designed as a unit to be attached to each other at all sides. Le Corbusier defined his building as 'infinite nave' reminding his Museum of Infinite Growth of 1939, especially in terms of the asymmetrical swastika of the ramps. But his exhibition space can be considered as a total flux in one axis instead of the spiral growth of the museum. A double bowstring truss above his building should give a 'breath' to the whole exhibition while the promenade entrance provides a sense of monumentality. Covering the main walkway, this arch-structure does literally not touch the exhibition itself but it creats a semi-open space underneath. This aspect was premature in New Times, but it was the Water Pavilion that completely separated the structure from the exhibition. The double bowstring trusses are doing the job of the triangles as intermingled sinus curves moving ahead. A wave emerges from the two curves performing the exactly opposite movement. The vaulted tent of New Times Pavilion can be sensed here, too, as umbrella units, while one vault is looking up, the next looking down. A rhythmic rise and fall movement then, dominate the structure.

The "infinite nave" remained unrealized but the wave movement of umbrellas reemerged as a motif right after the Second World War. Le Corbusier already made an appeal for a synthesis of the major arts in his essay for the journal *Volonté* in 1944. The theme then was taken up by CIAM and finally, a meeting was held in Paris to put in practice this introduction of the plastic arts into architecture in 1948. The concrete task, which Le Corbusier undertook was to create, the "architectural conditions" into which painting and sculpture might be introduced in the form of an exhibition at Porte Maillot, a ground which was provisionally loaned by the town of Paris. The selected artists was supposed to show their work to under "a series of shelters, umbrellas and parasols" placed along a circulation ramp to from "a succession of coordinated sensations" (Le Corbusier).

The main aspect of the design is a double roof structure, covering independent units and the ramp for public exhibition. The double unit roof structure has its roots in the semi open parasols of Water Pavilion. It creates a public space, independent of the exhibition itself. The roof does not consist of curved trusses but of angular sheet-steel units, which face opposite directions -one heading down, the other up. It is not an infinite number of the roof unites, but only two, whereas the alternation effect is similar to Water Pavilion. This alternation of orientation of the grand steel umbrellas implies the continuity as a possibility, expressing a f dynamism at the same time. The continuous sinus curves of the roof of Water Pavilion became the recognizable alternating triangles of Synthesis of Major Arts Pavilion.

Le Corbusier firmly believed that architecture itself was the synthesis of arts and as he became more of a poet of "right angel" then the prophet of machine age after the Second World War, it was understandable he initiated an association and an majestic exhibition to fortify architecture's artistic value and his position as the most suitable delegate of it. At this stage, it

was obvious that the architecture has separated from the representation, it became the synthesis itself, sheltering the semi-public exhibition of painting and sculpture.

4. The pyramid and Le Corbusier's museums

Le Corbusier's museums and exhibition pavilions together constitute the solution of exhibition problem in two compartments, permanent and temporary. They should be covered as a whole as many museum and pavilions were proposed next to each other on the same side as part of his cultural center baggage. Moreover some of his museums, which do not fit to the strictly applied, trademark museum temples, the generic Museum of Infinite Growth, can rather be linked to exhibition pavilions.

Le Corbusier's exhibition pavilions until 1950 showcased a process from the unity of exhibition and space towards the independence of structure. The intense functionalism of 1920s and early 1930s was replaced with a more expressionist character in 1950's. And after years of experimentation Le Corbusier envisioned a template gallery as a part of the cultural complex. At that point, the pavilions presented various ways of dynamic roof -from the butterfly to the triangular cross-section umbrellas. The main point was structural, though. The growing expressionist effect towards 1950s can be seen in some of the museums, as well. The pyramid and triangular facades in comparison to the triangular cross-sections of pavilion roofs can be traced back to Le Corbusier's formative years. Le Corbusier considered himself as an artist, as a poet in the age of the machines, so it is no coincidence that the first project, a couple sketches from 1910, belongs to an art school in La Chaud de Fonds. It is actually a preliminary proposal for the school where he studied and worked as an instructor for a while before moving to Paris permanently. A small pyramid in the middle is surrounded by masses organized in a grid system, which quickly reminds an ancient ziggurat. As Le Corbusier did not break his visible ties with neo-classical architecture not until 1920s, the ancient reference seems not being of great importance. But as it is well documented, Le Corbusier, an admirer of Greek architecture, always stayed close, if not loyal, to the mathematical formalism of guiding lines and basic shapes that he considered as fundamentals of ancient temples. Fittingly, a pyramid pops up in the first pages of *Oeuvre Complète*, the self-edited book of collected works by Le Corbusier and Pierre Jeanerette. This project, maybe unconsciously, sets the tone of art related projects in Le Corbusier's career.

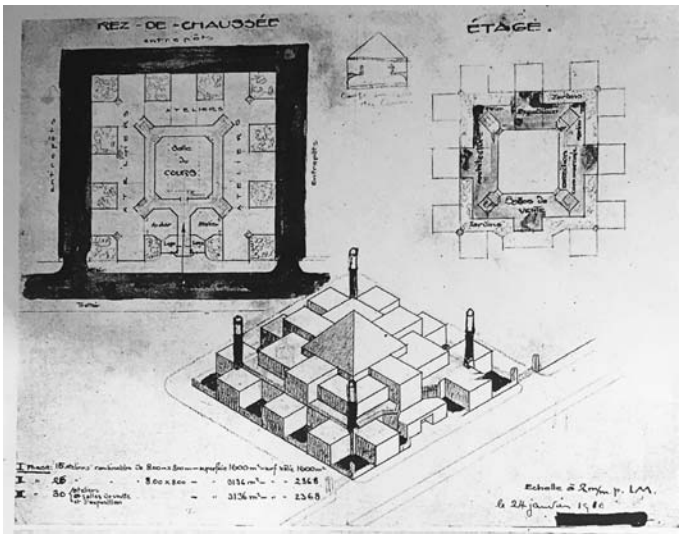

Figure 7. *Pavillon Bat'a, FLC 17814 (FLC/ ADAGP).*

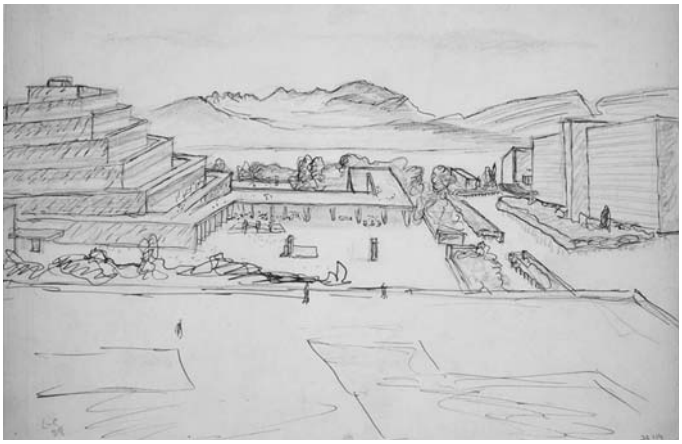

Figure 8. *Pavillon des Temps Nouveaux, (FLC/ ADAGP).*

Workshop of Artists was not an exhibition center, but the pyramidal form and the *salle centrale de cours*, the central room, would resurface in the World museum of Mundaneum project in late 1920s. Shortly after the foundation of League of Nations, a preliminary enterprise for the future UNESCO was put on the agenda, following the outline by Paul Otlet. Le Corbusier

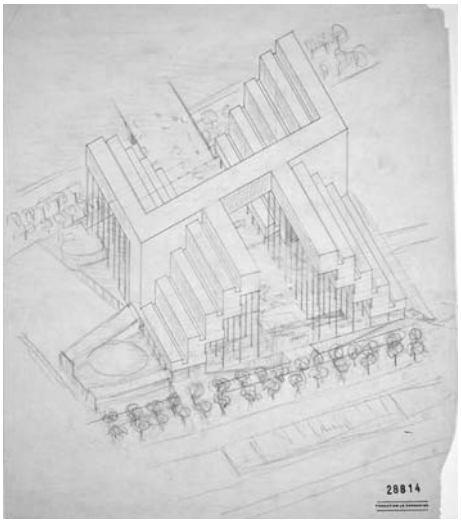

Figure 9. *Pavillon de la France à l'exposition de l'Eau, FLC 00622 (FLC / ADAGP).*

and Pierre Jeanneret designed an urban complex as a meeting point of cultures, called Mundaneum, which also included a World Museum. Although the timid modernity of its architecture was not approved in the final round of the competition, it was the first museum project Le Corbusier worked on.

Mundaneum project is based on a three-dimensional spiral, which forms the exhibition naves, setting up an obscure main hall in the middle. The circulation, starting from early cultures, brings the visitor to present which is symbolized by the escalation of ramps. The project was not built, but it played a subtle but an important role as an early prototype for the museums and exhibition centers throughout Le Corbusier's career. In 1929, right after the publication of the plans, Karel Teige published a harsh criticism towards Le Corbusier from the camp of functionalist architecture. Teige, one of the most influential advocates of modernism in 1920s, denounced the project for its archaic impression. In his article (Teige, p. 145) on Mundaneum project in Czech magazine *Stavba*, he argued that the museum building in the shape of a pyramid has no functional justification and it "produces an effect of an old Egyptian, or rather old Mexican atmosphere". According to Teige, the symbolic character of a museum idea for League of Nations lead to monumentality and geometric proportions, thus to a *priori* aesthetics. On the other hand, Le Corbusier explains his idea in functionalist tone, but never denied the symbolic character of the building, representing the whole achievements of mankind.

The City and State Museum, a competition project dating to 1934, does not follow the same path, yet its affinity to Mundaneum is all but faint due to the escalation effect of the ziggurat-verse steps. According to the competition program, the building was to house the state and city museums. Although praised by the jury for being an "extraordinary solution, original and worthwhile", it was eliminated in the first round, for being not suitable in terms of lightning. (Van der Steur, p. 47) Ironically, the most prominent feature of the project was its lightning scheme as one of the aspects to justify the terraces. Le Corbusier and Jeanneret (1934) noted in the project report published in the same journal, *Musieon*, that there was "no single room, whatever its size, deprived of direct sunlight". The galleries were arrayed like the branches of a tree to provide immediate orientation. It was aimed thar the visit takes place in an unbroken circuit. The musum ramp leads the visitor from the bottom of the building to the top "on a continuous promenade". It was not a spiral as it was in Mundaneum's museum, but the uninterrupted circulation seems to be crucial (O'Byrne). While proper lightning and fluency in movement were the main functional aspects, the double building cannot be defined better than its courtyards or its negative spaces. One side of the building creates a sliced pyramid, while the other side creates another sliced pyramid on its top. On the facade, both sides clearly reveal the pyramidal outline, but in a fragmented way. It can be argued that a similar formalist scheme was processed in a modernist manner.

Le Corbusier's museums soon found their archetype in Museum of Infinite Growth, leaving the pyramidal references behind until the Knowledge Museum of Chandigarh, a project that remained unrealized as one of the last projects Le Corbusier presented to the Indian authorities. It is a unique building for two reasons. It is not ordered by the government and it is the

only building in Chandigarh for which Le Corbusier defined the whole program himself (Millet). Expressing that he wanted to set up "an important instrument, a language specialized in the information of machines (...) so that information can be gathered together", the Knowledge Museum was significant for Le Corbusier. The collection of knowledge in a museum naturally reminds the Mundaneum, which was expected to act as a universal index. The symbolic meaning of the Knowledge Museum in Chandigarh is similar to the one of Mundaneum. Nevertheless, it is not a well documented project, designed in the final years as a consultant architect and never seemed to be fully supported due to its conceptual complexity and budget (Millet).

The basic plan was in a rectangular form, the huge ramp breaking the continual geometry of the prism decorated with awnings. The exterior ramp, which is identical to Secretariat in Chandigarh, can be compared with the vertical "tree trunk" transitions of City and State Museum. Furthermore, the sun shields placed on either facade between all columns, differ along floor in a rhythmic movement. The modules including stairs to connect storeys vertically have a more solid look and by sliding them one step towards the middle on each floor, Le Corbusier creates a triangle on one side and a reverse triangle on the other side. The building shows strange but obvious similarity to the City and State Museum. It gives the first impression as if Le Corbusier put the terraced part of the City and State Museum on the top of the other side to obtain a rectangular prism with a junction mark on the triangle facade.

The City and State Museum and Knowledge Museum are derivations of Le Corbusier's strictly followed museum archetype manifested in the built Chandigarh museum, an elevated building without facade, with a swastika plan presenting multiple vistas - a version of museum of unlimited growth without the ability of growth. The resemblance to pyramid or triangular terraced organization may have the archaic reference or its functional aspect, too, but it essentially reveals a representational attitude. The terraced

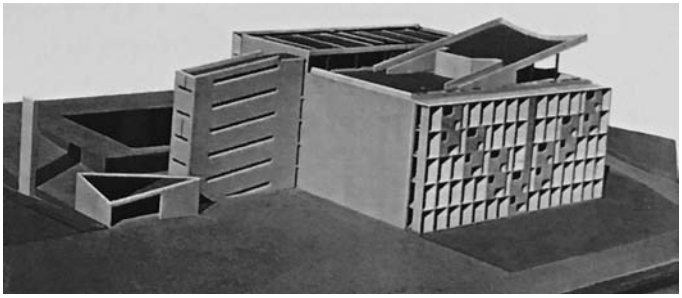

Figure 10. *Exposition "Synthèse des arts majeurs", FLC 18154 (FLC/ ADAGP).*

ascendance represents the rigid circulation of permanent exhibition areas and the flow of history as a compact story with a firm beginning and an end, or a course in a "good school", in the words of Le Corbusier in "Decorative Arts Today", (1925) who wrote in glowing terms that he "acquired certainties without holes from museums".

Le Corbusier's early education encouraged him to think of architecture in idealistic and metaphoric terms: architecture not as a building, but as a representation. Schooled in the neo-medieval beliefs of John Ruskin and Owen Jones, and in the organic style of art nouveau, he was convinced that art and industry, like art and craft in former times, could naturally ally. For Le Corbusier, a building was always *like* something else (Naegele, 2011).

The triangular cross-section roof of Nestlé Pavilion was also designed in the same year as Mundaneum's Museum, but there the structural necessities and dynamic expression were on his agenda. So, until the early 1950s dynamism of triangular cross-section structures of pavilions had a separate development than the symbolic triangular facades of atypical museums. This, however, was going to change Cultural Complexes after mid-1950s when pavilions would also obtain a certain expressionist aspect.

5. The gallery template in cultural complexes

The double steel umbrellas of the unrealized Synthesis of Major Arts exhibition became the starting point and an ideal solution for pavilions for Le Corbusier in 1950's. A very similar design firstly reappears in Chandigarh under the name of Art Gallery along

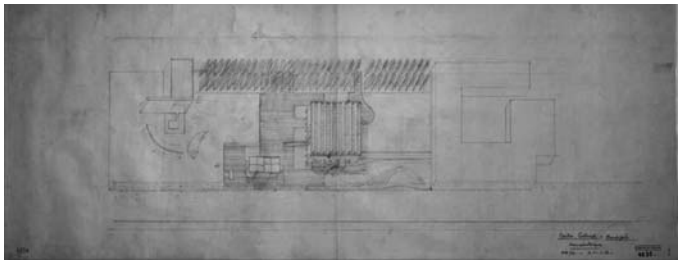

Figure 11. *Centre Culturel, Chandigarh, FLC 04830 (FLC/ ADAGP).*

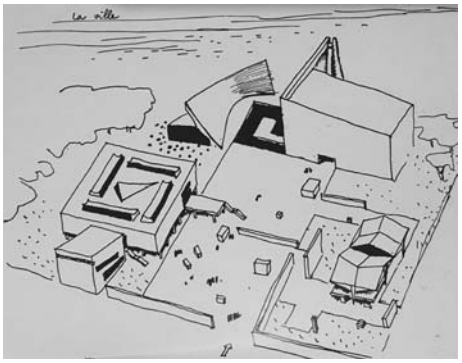

Figure 12. *Musée National des Beaux-Arts de l'Occident, Tokyo (Le Corbusier - Oeuvre complète v7, Birkhäuser, 2006).*

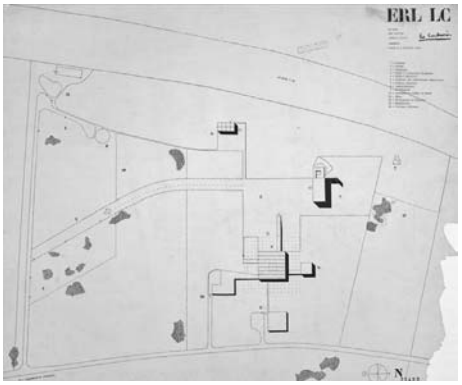

Figure 13. *Centre d'art international, Erlenbach, 1962 , FLC 23422 (FLC/ ADAGP.*

with the Museum of Infinite Growth, plus a "Spontaneous Theatre" and a "Box of Miracles". These trademark designs compose the ideal art complex for the last years of in Le Corbusier's career. The first sketches of the Art Gallery date from March 1955 and it is today's Architecture Museum, which was constructed, according to the plans of Le Corbusier, posthumously by one of the architects' disciples. The double square-plan building includes a U-shaped access ramp vertical to the building's main axis and the two prismatic parasol roofs supported by flared piers shelter the exhibition spaces.

Shortly afterwards, Le Corbusier proposed one of his exposition pavilions as part of the cultural center for Tokyo in the same year, 1955. Both designs, for Chandigarh and Tokyo, remained unrealized, as only the versions of his Unlimited Growth Museum have been constructed, but his temporary exhibition pavilions have not. In 1962, Le Corbusier once again proposed his typical museum as a part of a cultural complex for Erlenbach International Art Center and along with it, his exhibition pavilion. The design directly follows the studies of 1950's Synthesis of Major Arts Pavilion. In 1956 the name of the building type became the "Pavilion of Temporary and Traveling Exhibitions for the Synthesis of the Plastic Arts" and "the transition from cloth at Liege to sheet metal in Tokyo is made by way of folded cardboard [as the model testifies]" (Papillaut). At this point, it can be seen that a template for temporary exhibition pavilions was established as well as a package containing the trademark designs of theatre and museum under the name of Cultural Center.

6. Towards a synthesis

Last years of Le Corbusier's career include two more exhibition galleries of the same template, albeit some differences implying a synthesis of various schemes in the past decades. The roof structure and exhibition spaces would reach a mature and balanced self-expression. The first example of that balance was designed in 1962. The Ahrenberg Palace (Pavillon d'exposition, Palais Ahrenberg) was not designed as a nomadic structure but accommodates a modifiable museum interior. The building was lifted from the water on pilings and a bridge provided the entrance. The roof was supported by large portal frame, which avoided the necessity of having bearing structures inside the building, whereas the ramp system allowed a continuous visit (Papillaut). The project wasn't realized, again, and the frustrated architect wrote that "one could believe that God who created the world does net tolerate little man to be impassioned with creation-even on his own small scale".

The proposal, this time, was not a semi-open space; it was a single and

closed building under the double umbrellas. This difference lies on the program, as Ahrenberg Palace was not part of a cultural complex, as second tier to the major museum building. In other versions since 1950, the exhibition spaces were composed of either independent small buildings integrated through ramps or walkways, or, at most, a semi-open single building. Ahrenberg Palace, on the contrary, has its own proper facade balanced with the roof structure. "Circulation has been designed in such a way, that visitors are guided through a great variety of spaces: along an esplanade, through a two storied covered space, then lower spaces 2,26 m high, by a garden with monumental sculptures and over a ramp underneath the umbrellas" (Le Corbusier, 1962).

On the other hand, all exhibition pavilions, including the one for Stockholm, had the twin parasols, two butterfly-shaped steel folds facing opposite directions. In the meantime, a deviation form the template can be seen in the famous experimental design of Philips pavilion. Yet, it also represents the expected dynamism of his exhibition spaces created again by triangular shapes, even if it is much more complicated.

Philips Pavilion in Brussels fair in 1958 cannot be considered in the line of typical exhibition spaces with the pressed triangular trusses. The pavilion completely toys with some other structural opportunities. The structure is composed of hyperbolic-parabolic shells. But it is interesting to see the complex facade of various triangles. It is called an electronic poem, creating a space with possibilities of projection and sound. The architecture becomes one with representation, as in his early pavilions, but Philips Pavilion has its unique formal character. It is not a faceless structure to bring the exhibition area under the spotlight. The complex triangular three-dimensionality expresses lightness and dynamism as expected.

Le Corbusier's last pavilion and last realized design is located in Zurich and based on his pavilion template containing an angular sheet-steel roof cantilevered from a series of steel piers and detached from, but still covering, a rectilinear steel structure below (Ochshorn). The building was designed as a house for the gallery owner, Heidi Weber in the template of Le Corbusi-

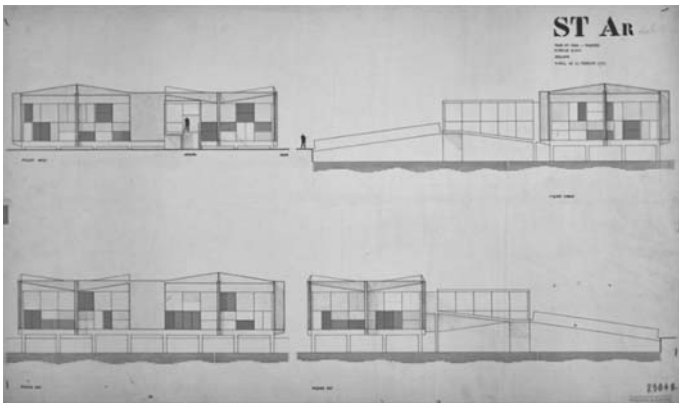

Figure 14. *Pavillon Exhibition, Palais Ahrenberg, FLC 25048 (FLC/ ADAGP).*

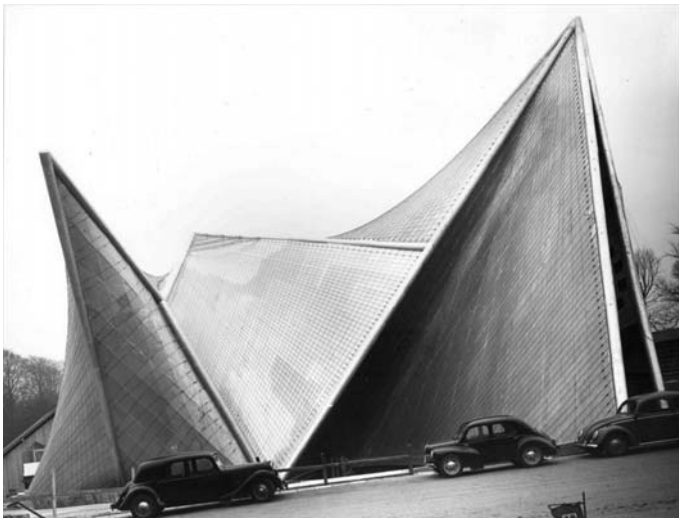

Figure 15. *Pavillon Philips (FLC/ ADAGP).*

Figure 16. *Pavillon d'exposition ZHLC (Maison de l'Homme), (FLC/ ADAGP).*

er's pavilions and, ironically, converted into a gallery later. "More precisely Mrs. Heidi Weber wanted a house/museum/house-exhibition hall able to present to the public works of (...) Le Corbusier". The folded roof is built of thin welded sheet metal supported, as before, by exterior piers, thereby opening up interior areas surrounded by colored enamel.

Although Heidi Weber contacted Le Corbusier in 1960 for the first time, the final project was prepared only in 1962. One year before Le Corbusier's death, the construction has started and it was inaugurated as the Centre Le Corbusier in 1967. The general outline is the same as Ahrenberg Palace, except the distance of the roof from the building. The design of the roof is characteristic, steel screens fitted together as brise-soleil. It consists of two square parts of welded metal sheets that were lifted and fixed on the pillars. With the frame completed, walls, windows, ceilings and floors were then screwed onto the steel frame. The building has two floors connected by a concrete ramp, which is a mass itself, reminding the ramp of the Knowledge Museum (also the Secretariat of Chandigarh, essentially). Heidi Weber Pavilion manifests the independent parts as self sustained architectural entities. The roof structure has the same expressionist character of the template. But the spaces underneath are not walkways or scattered prisms; but they constitute the building itself. The building has a balance between the roof structure and interior as two separate entities. Furthermore, today's Le Corbusier Center in Zurich is a representation of Le Corbusier's architecture itself. Painted panels in primary colors dominate the facade, whereas the distances maintain the standard of Modulor, the 2.26 m height as a basic unit. In a way, it is a return to the first pavilion structures of *L'Esprit Nouveau* and Nestlé in the way that the architecture becomes the represented object at the same time. The main difference is that in Zurich the architecture is on the spotlight and it attracts the attention with its own formal features. In a way the architecture became more dominant to the temporary representation space. Still the nomadic sense is there -the flying roof, tens of thousands of bolts and other parts whixh were prefabricated and assembled in the ground. It is conspicuous that folded steel sheets were placed behind two triangles - one looking up, one looking down, which can also be found at the sides of the building. And the concave and convex umbrellas are not supported at the corners but at the center, which is a direct connection to the Nestlé Pavilion of 1928.

6. Revealing the leitmotiv

Starting from 1920's, until his death, Le Corbusier designed numerous exhibition pavilions. It is intriguing to notice that all of them, albeit their varying contexts, have a set of common features. His conception of temporary exhibition space can be defined as a single search guided by the dialogue between architecture and audience. An anecdote related to the complaints by La Roche of his house in Paris gives an early example of this tension: "I commissioned from you a 'frame for my collection'. You provided me with a 'poem of walls'. Which of us most to blame" (Weber, 201). Moos once noted that Le Corbusier "left no stone unturned in order to emphasize his anti-utilitarian position within Modernism" (von Moos, p. 64).

The problem of representational architecture naturally arises in the architecture of representation. His exhibition spaces, therefore, reflects a shared conception and can be evaluated in four groups. The first group, the early designs, brings architecture and the exhibited object together, transforming architecture into the representation. Surrounded by the exhibition, architecture becomes an initial part of the spectacle. The house/exhibition *L'Espirit Nouveau* is a fine and first example of this, as the pavilions of Nestlé, Bat'a and Temps Nouveau are part of this group of early buildings in the form of demountable structures. The second group, Liege and Port Maillot pavilions, represents a transition from the billboard-like lightness to the floating umbrella. The structure is separated from the exhibition creating a semi-open, boundless space underneath. The structure acts as a sunshade in the

air, definitely apart from the exhibition masses. It is not an integral part of it, such that it floats in the air even without touching it. The third group of exhibition spaces includes the temporary exhibition Pavilions of Chandigarh, Tokyo, Fort-Lamy, Erlenbach and Paris. Among all parts of the ideal cultural center, the umbrella structure becomes a formally defined shell construction with a more self-confident identity and relation to the ground. The distance remains, however, between the roof and exhibition space and the semi-open and extendable exhibition area does not cease to exist immediately. The fluid character of the exhibition spaces was obvious in cases whenever they were placed next to a museum as part of the cultural complexes, providing the necessary rigidity for permanent exhibitions. The exception is Philips Pavilion, which represents a reunion of architecture and representation and where architecture has its own geometric language in contrast to the less eye catching functional constructions of the first pavilions. The last group also includes the pavilions the unbuilt *Palais Ahrenberg* and another house/gallery, the Heidi Weber Pavilion, being the mature final examples of the development. The well-defined shell remains without any change, so does the independent ramp, but the exhibition spaces drop off their nomadic character. The Heidi Weber Pavilion expresses a balanced relationship between independent roof and prismatic exhibition space, so that it acquires their own architectural agenda.

While the development shows a variety of directions, certain common features can clearly be traced. Firstly, the free plan of the exhibition area and the ramps imply that the circulation was of major importance. Rather than a total and empty space, Le Corbusier designed the circulation scheme, even it was never an imposing orientation. On the contrary, he tried creating ambiguous boundaries, telescopic divisions and dramatic ramps. "It was not merely the ramp as such that we discovered here but its special formation as a path which is open to the outside permitting the visitor to look back to whence he has just come" (Joedicke, 104). Ramps play an important role in Le Corbusier's houses, especially in 1920s' villas, "offering prospects which are constantly changing and unexpected, even astonishing" (Le Corbusier and Pierre Jeanneret, 2009a, 24). The ramps create a three dimensional dramatic effect and adds a duration aspect to the visitor's perspective. This leads us to the second feature, the nomadic character of pavilions, as explicitly seen in the construction techniques and the semi-open exhibition areas. Le Corbusier strictly emphasized the temporary character of his pavilions, even for Heidi Weber pavilion, which was never meant to be a temporary structure. The demountable steel constructions, small structures around the walkways, free installation of partition wall created the nomadic impression in various examples. A third and a most important feature can be defined as a proper *Leitmotif*. Neither strictly functional, nor absolutely formalistic, the triangles continued to pop up in each and every pavilion. Although the triangles on the facades and roofs have different forms, they can be detected like a signature for each exhibition design. As it was pointed out, the three atypical museum designs of Le Corbusier have their triangular elevations themselves.

In 1920s and 1930s, the leitmotiv mainly emerges as a structural solution, as the butterfly roof of Nestlé Pavilion or the braced pylons of *Temps Nouveau*. Mundaneum's pyramid and the City and State Museum's terraced structures were functional solutions. Still, they all are very powerfully expressed. Le Corbusier abandoned the obvious pyramid but kept the triangles at his facades in an alternating formation. The wave-like umbrellas of de *L'Eau* Pavilion can be considered as a clue, as the constant widening and narrowing of the roof imply a horizontal flow. Another clue and the most formalist one of all can be found in Chandigarh's Knowledge Museum. It simply indicates a beginning and an ending on a facade decorated by repetitive brise-soleils. It refers to temporariness by being continuous like a wave, yet it is obvious where it starts and finishes. In house of Heidi Weber, the double

reverse pediments pinpoint the final strokes of the leitmotiv's evolution. They create a balanced composition between triangular pediments and the static prism on the ground. The obtuse triangular cross-section of the double umbrella roof has various roles, with strong implications as a reminder of the dynamic circulation and a classical yet well-hidden reference going back to 1920s. "Defining the roof as an autonomous form, distinct from the volume underneath, represent an archaism. It is the Doric temple or the Alpine barn roof redefined. The goal is spatial dramatization" (Von Moos, 121).

7. Conclusion

It can be argued that Le Corbusier's exhibition pavilions and some of his museums use the reverse triangles as a leitmotiv. The temporary exhibition space is represented by the dynamic expression by their wave-like up and down movement. The evolution of the pavilions into a representation of Le Corbusier's architecture assisted the emergence of the roof as an independent element. Thus an ideal solution was developed comprising a dynamic effect and a formalist geometry at the same time, which is not only supported but also well hidden by the structural necessities. As Moos once underlined "the assumption that an elementary geometry is inherent in the nature of mechanical design, and that 'the wholesome spirit of the engineer' will quite automatically result in forms that possess the objective, immutable character of classic beauty" (von Moos, 67).

Le Corbusier's play with the forms has always been controversial, to say the least. He extensively used formal compositions on house facades in 1920's, designed radical reconstruction urban plans, famously introduced a sculptural latitude of *Béton* brut after the Second World War or curiously practiced his meditation on proportions, the Modulor theory, on many occasions. Sometimes implicitly formalist, sometimes cavalierly lyrical, his architectural attiude never only fed from the functionalist aesthetics of the industrial age. He insisted in using highly individualized devices such as *pilotis*, architectural promenade or reverse triangular roofs. Only Mies van der Rohe among major figures of modernism was as consistant as Corbusier to apply trademark forms, but he never went towards an expressionist interpretation. Alvar Aalto or Hans Scharoun may have followed him in his poetic manners but they tried to avoid any kind formalism like most of their contemporaries. As Le Corbuiser's architecture does not only contain the functional and scientific standardization of forms but also the subjectification of them by the creative ego of the architect. It is no coincidence that Le Corbusier instantly took the opportunity given by the exhibition spaces to manifest his ideas and created a leitmotiv as part of his search for a synthesis of his representational and functional perspectives of archicture. Self-expression has always been one of the idiosynchratic aspects of Le Corbusier's persona.

Le Corbusier was used to set up rules to promote his vision. It is a leitmotiv, not a rule, which is standing in the center of a exhibition pavilion template as a result of a long search. It can be argued that his pavilions are all interconnected as Le Corbusier was looking for a synthesis of symbolism and the needs of nomadic structures for wide spans. The expressionist use of triangles as a leitmotiv combines representational aspects of architectural design with the functional aspets. On the one hand the leitmotiv can be read as an archaic reference or as a symbol of dynamic circulation, on the other hand it is a functional solution and a structural convenience.

While the leitmotiv of reverse-triangle in pavilions gave the opportunity to knead the forms beyond their function, the border between representation and function are quite complex in an exhibition space as an exhibition space itself do have the function of representation. The leitmotiv represents the nomadic character, the anti-hierarchical installation, free circulation, the separation of container and contained, which are the functional aspects of the pavilion template defining his ideal exhibition space. What transforms the functional agenda into the representational form is Le Corbusier's desire to highlight them to the user and render them as

specialities of the visitor's experience. They can be read in the spaces as a text through the representational character of the forms. Le Corbusier's pavilion leitmotiv is respresentional of its functional *raison d'etre*, which means it simply represents its own function. The function is not only functioning but it also becomes evident to that extent that the particular function separates the building from other kinds of exhibition spaces. It can be said that the representational character of Le Corbusier pavilion has a deep connection to its idiosynchratic function agenda. While the rationalist composition as a reference to antiquity in disguise and the representational aspect of architecture find their place in the leitmotiv of reverse triangles, the standardized modern techniques and the basic roofing function are also part of the same leitmotiv. It is a synthesis to exemplify Le Corbusier's contradictary inclanations. As a conclusion, it can be said that the leitmotivs of the exhibition pavilions manifests the heterogeneous character of Le Corbusier's modernism.

Abbrevations

FLC/ ADAGP Fondation Le Corbusier / Société des Auteurs dans les Arts graphiques et plastiques.

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