STUDY ON THE DESIGN METHOD OF ERICH MENDELSOHN
BASED ON THE FORMAL ANALYSIS OF THE SKETCHES
FOR THE EINSTEIN TOWER
アインシュタイン塔のスケッチの形態分析に基づく
エーリヒ・メンデルゾーンのデザイン手法に関する研究

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This paper has examined the sketches by Erich Mendelsohn for the Einstein Tower, classified them by formal features and performed the formal analysis of them. It has clarified various features from the analysis of the podium the expression of the continuation to the ground, from that of the tower the contrast between verticality and horizontality, and from that of the main body the rhythmic expression of masses and the delicate expression of lighted surface. And also characteristic aspects of his design method concerning symmetry, two-point perspective, effect of light on curved surface and linear expression were discussed.

Keywords : Erich Mendelsohn, Einstein tower, Formal Analysis, Sketch, Expressionism
エーリヒ・メンデルゾーン, アインシュタイン塔, 形態分析, スケッチ, 表現主義

1. Introduction

1.1. Research Purpose

The “Einstein Tower (Eisteinturm)” is famous as an architectural work of Expressionism, designed by Erich Mendelsohn (1887-1953). Its design was revolutionary because of a completely new type of architectural form, namely, a curvilinear shape like a plastic sculpture was developed here. It is generally considered that its architectural form was generated from the intuition of Mendelsohn’s genius referring to the curvilinear tendency of Jugendstil by H. van de Velde above all and the abstract form of Futurism, and also focusing on the plasticity of concrete. The work has been often mentioned and discussed in many books and articles for the architectural history and design. But the restoration work from 1997 to 1999 has brought important new findings, including in particular, Christine Hoh-Slodczyk’s research on the detailed design process5). The past research works have already clarified to some degree the process of Mendelsohn’s design. However it seems that there remains yet the question about the emergence and the development of its unique form as a representative work of Expressionism. This paper attempts to review the architectural form of its sketches and to get new insight into his mystic design from the general intention to review the Modernism at the beginning of 20th century.

1.2 Research Method

To accomplish this purpose, we decompose the total form of the Einstein Tower and make the detailed formal analyses of his sketches. Although it is said that the overall shape of this building displays a monolith and therefore it appears hard to disassemble it into some parts, we take it useful in order to investigate deeply its background thought of design. As for the objects to make the formal analysis we have used the published materials, including mainly Bruno Zevi’s monograph “Erich Mendelsohn - The Complete Works”2), 1999 (original Italian in 1970), which is considered to contain almost all sketches kept by Mendelsohn himself and his wife Luise, and
preserved now in the archive of Kunsthochschule Berlin since 1975, and also some other old and new books published since 1923\(^3\). The remained sketches in relation to the Einstein Tower are not so many. We have attempted at first to classify all these sketches, which are found in the publications, and made the formal analysis extracting the features of design technique, and we have also investigated the literary materials of his lectures, writings and letters in order to clarify the meaning of each formal feature\(^4\).

2. Classification of the sketches according to the design process

Christine Hoh-Slodczyk\’s has clarified precisely the chronology of Mendelsohn\’s design using remaining materials including all kinds of drawings and writings\(^5\), but obscurity remains yet concerning the development of spatial and architectural idea in the brain of Mendelsohn. So we have tried at first to classify the sketches focusing on the formal features while reconstructing the design process (Fig.1-6\(^6\)).

An astrophysicist and an assistant at Potsdam Observatory, Erwin Finlay Freundlich, was thought to be acquainted before 1917 with Mendelsohn. Freundlich wished to build a new observatory in order to certify Albert Einstein\’s theory of relativity. Mendelsohn was supposed to become familiar with the theory of relativity through Freundlich around 1917 and impressed strongly by it. When World War I had begun in 1914 Mendelsohn was sent to the French and Russian front since 1915 and drew in 1917 simple visionary sketches of observatory among other building types. Remained several sketches (Fig.1=1a,1b,1c) are characterized by the composition of a cupola at the center and some masses around it, which appear as certainly big complexes.

After German Empire was defeated in 1918, he came back to Berlin and opened an architectural office. He started immediately to design the observatory, which was constructed from 1920 to 1921, and opened in 1924 only after the installation of the telescope and other equipment. The building, named the Einstein Tower, drew sensation in and out of the country.

After we have investigated the formal features of his sketches which are considered to have been drawn between 1918 and 1923, they can be classified as follows focusing on the formal features.

1) the preliminary stage (1918-20): He began with a simple, static, tall and pointy tower with attached building (Fig.2=2a,2b,2c). The basic sketch including plan and section of the observatory was sent by Freundlich in his letter on July 2nd, 1918, to Mendelsohn at the French front\(^7\). Mendelsohn tried at first like a Secessionist.
architect as if forgetting his bold sketches during the war.\(^8\)

(2) the 2nd stage (1920): Organic shapes with dynamic movement emerged. Mendelsohn reviewed about the proportion, as he commented in a letter on May 12, 1920\(^9\). The image of the pointy tower remained, but had stacking windows. The slender horizontal part emerged which is extended widely far in the back and emphasized at the entrance (Fig.3a= 3a,3b,3c). Fig.3b is one of sketches sent to his wife attached to the letter on June 18, 1920\(^10\), and showed more exaggerated contrast between horizontality and verticality.

(3) the 3rd stage (1920): The tower was changed to have horizontal nodes and the jutting out shaft at the front (Fig.4=4a\(^11\)). An expression of aerial dynamism like a bird’s wing at the back is observed as same as Fig.3c, and therefore these two are presumed as a series. The tower was further changed to the rectangular tower with the shaft with triple arches for each level\(^12\) (Fig.4=4b,4c).

(4) the 4th stage\(^13\) (1920): The rectangular tower had lost the horizontal nodes\(^14\) and became monolithic\(^15\) (Fig.5= 5a,5b,5c). Fig.5a displays no windows on the tower which is presumed as omitted simply for sake of the mass study. Fig.5b depicts twin vertical windows of curtain wall type, and is presumed as on the changing process to Fig5c, in which each vertical window is divided into four niches with windows as same as observed in the final stage.

(5) the final stage (1921-23): The overnight room (night quarters) is added just above the office room underneath and the rear wing became to be two stories. The entrance space was changed and had no more triple windows. It is presumed that some sketches were drawn after the final design for construction was completed or the construction was finished, in order to make impressive dynamic sketches for some presentation (Fig.6a and 6b). Some slight changes of form in several parts executed during the construction phase have been certified during the restoration work and reported.

3. Formal analysis
3.1 Keywords for the formal analysis
Mendelsohn wrote clearly about his own unique concept of architectural design, which was declared by himself as written between 1914 and 1917. The sentence has been referred to in some literatures, and is certainly important also in our context.

“The dynamic condition – movement of space – to be observed in the contour as space’s linear element, the rhythmic condition – relation of the masses – to be observed in elevation as their surface-projection, and the static condition – balance of movement – to be observed in ground plan and sectional area as construction elements.”\(^16\)

Three concepts for the formal design are presented here. They have profound meanings peculiar to Mendelsohn and certainly difficult to understand. The word "dynamic" has been regarded as synonym to Mendelsohn, however, also the words of architectural elements like "contour", "mass", "surface", "space", or the words for the expression of the character of form, "rhythmic", "movement", along with "dynamic" are important in order to interpret the design of Mendelsohn as explained in the following analysis. To suggest the outline in advance, for example, “contour” was expressed to give the profile to the mass of the building, “rhythm” was expressed in the series of the concave niches for windows on the surface of wall, or the total "static" architectural form was acquired balancing the "dynamic" forms featuring "movement".

Generally the architectural form of the Einstein Tower is so peculiar that it is sometimes believed to be inspired from his special intuitive sense. It is pointed out that he himself wrote about his mystic experience of inspiration of emergence of form indeed. But it should not be overlooked that he had an inclination to think theoretically about the architectural form as shown in the words mentioned above. We perform the formal analysis under such meaning.

3.2. Components of the architectural composition
Mendelsohn wrote briefly about the Einstein Tower that it is “an organism, where one cannot take away a single part without the totality to break.”\(^17\). But we dare to decompose it into three parts, the podium, the main body and the tower, in order to investigate the formal features in detail (Fig.7). Such triadic composition is observed in the visionary sketches for the observatory in 1917 (Fig.1a). It has a

Fig.7 definition of three parts for formal analysis
(Here, the basement which is slightly visible over the ground line and buried in the ground is defined as the podium. The volume including the entrance, its successive part under the tower and the rear wing including the additional second story is defined as the main body. The vertical volume over the eaves height of the entrance is defined as the tower. The heights of three parts cover each other as is shown in the right of the figure. It is difficult to divide clearly into parts, partly because Mendelsohn’s image of composition has changed during the design process.
bulky outline as if he thought the observatory might be a large building. In this sketch, the tower with a large cupola does not stand out and buried into the main body, the main body is bulky and swelling, and the podium has a series of arches like a successive wave. The realized Einstein Tower certainly looks different from this sketch but the composition was carried over, corresponding to the practical request and function.

3.2.1. Podium

3.2.1.1. Affinity to the ground

The Einstein Tower has laboratory rooms in the underground which is scarcely visible from outside. This part has been referred to in some literatures simply as platform, but we assume it as the podium in our context of formal analysis, considering that Mendelsohn drew a lot of sketches containing such form like podium extending far wider than the width of the main body of the building. The basement of a building was often intentionally formed like a podium. In particular here, each sketch on the 2nd stage has a long horizontal wing behind the tower (Fig.3). Although it appears to have exaggeration, it reveals that he had certainly an architectural idea of an independent horizontal form like a podium.

It is considered that Mendelsohn seems to have picked up the idea of podium from the national monuments of those days, such as the Monument to the Battle of the Nations in Leipzig or Kyffhäuser Monument in Thüringen designed by Bruno Schmitz during 1890s\(^{18}\), namely at the last stage of Historicism. Such a monument had an extraordinary large podium extending around the monument soaring like a tower. Curiously, Kyffhäuser Monument has a similar composition to the Einstein Tower, containing a tower with a topping like a crown and triple arches at the entrance. Each one also has the widely extending podium which binds the whole structure of the monument to the ground.

The podium wall covered with grass, namely the top part of the underground floor, is inclined, as is seen at the podiums of such monuments. It looks just like a simple feature but it cannot be overlooked because Mendelsohn used often a tapered form for the podium and sometimes for the main body of the building. He must have thought the podium as a part of the building rooted to the ground and tapered like an Egyptian pyramid, which was often referred to as a medium to explain his architectural thought on the antiquity in his lectures at those days\(^{19}\). He also expressed the affinity to the ground even on the main body’s contour line swelled like a mound (see Fig.4a,6a). The affinity to the ground can be also regarded as one of the features concerning the organic character of Mendelsohn’s architectural form.

3.2.1.2. Rhythmic articulation of wall surface

The sketches, which he drew during WWI, had often large podiums with articulation by means of a series of windows, crenellation or a swinging wall, probably to avoid the monotonous appearance of the large wall. He explained it in the sentence mentioned above as “the rhythmic condition” or “the relation of the masses”. The series of three windows on the podium, which are added to take high side light into the three continual rooms for experiments on each side of the underground floor, can be interpreted as such. Although the rear wing with a series of five arched niches (see Fig.4a,4c,5a,5b,5c) are defined in our context as a part of the main body, such motif of articulation can be regarded rather as an expression of the podium wall, because similar series of arches are also often observed at the podium wall in his sketches during WWI.

3.2.2. Tower

3.2.2.1. Articulation of the tower

The tower was indispensable for the observatory from the beginning and was a consistent motif for this project. But the simple pointy void tower at the preliminary stage was change to the dynamic and organic form at the second stage, which represented the revival of the dynamism observed in the sketches of the observatory in 1917. While the cupola for the telescope was necessary to be geometrical, the void tower had a feature of movement with four curved windows stacked vertically at the front (see Fig.3a,3b,3c). It appears as if there are four stories in the tower but in reality there is only a long vertical void for a staircase. It contains a simple supporting frame for the telescope and other equipment, and a path for the light coming from the telescope at the top to the underground laboratory. Therefore the windows are only for the sunlight thrown into the vertical void space of the staircase. The number of windows is thought to be determined by Mendelsohn from the proportion of the building. As is explained concerning the articulation of podium, he might not have been satisfied with the simple static form of the tower and have given the tower the articulation to express his image of the dynamism.

3.2.2.2. Contrast between horizontality and verticality

The tower suddenly adopted horizontal lines like cornices or the nodes on the surface of bamboo on the surface in the 3rd stage (see Fig.4a). Besides, the tower had a shape like the stacked drums in which each surface of the drums are recurved, and accentuates both the horizontality and the verticality. The reason why such peculiar form was introduced is not clear and seems to have not been discussed until now. Mendelsohn’s letter on June 17th 1920 to his wife suggests a hint, in which is written that he visited “Grosses Schauspielhaus” in Berlin with its architect Hans Poelzig, and that he received “the feeling of reinforced concrete” from the renowned
interior and admired particularly "the circular foyer"\textsuperscript{20}. It is interesting because the shaft at the center of the circular foyer is shaped like a stacking flower and has similarity to the tower of Fig.4a\textsuperscript{21}.

The circular tower had to be changed to the rectangular one from the functional reason (see Fig.4b,4c). The width of the tower is reduced slightly step-by-step. Mendelsohn wrote in 1925 about the idea of contrast between horizontality and verticality and referred to the Romanesque church "Doppellkirche von Schwarzeheindorf" in Bonn, which has similar rectangular tower with horizontal lines\textsuperscript{22}. As is observed on the façade of "Mossehaus" (1921-23) and others, he liked the streamlines stacked on the surface of urban buildings. This feature on the surface of Einstein Tower might be a beginning of such idea.

It is also suggestive in this context that Mendelsohn praised the "Monument of Iron" at the Leipzig Exhibition for Building Department in 1913 designed by Bruno Taut\textsuperscript{23}. It was because Mendelsohn was interested in the development of the steel structure, but he also referred to the curious golden sphere set on the top of the rational steel structure like a ziggurat. Although its outline as a building is different, the composition with stacked masses with a spherical form on the top resembles.

Mendelsohn’s design has been said to be influenced from remarkable buildings designed by other architects, for example, J. M. Olbrich, Peter Behrens, H. van de Velde, Walter Gropius, or the other outstanding buildings such as Hamburg Railway Station, etc.\textsuperscript{24} It should not be overlooked that such a unique and original design of the Einstein Tower was not an exception, although his talent of spatial imagination and modeling ability could not be denied. It seems that he created an original form and purified it through mixing diverse knowledge and information about progressive architecture and technology.

3.2.2.3. Monolithic feature with the curved surface

As is judged from the series of the blueprint drawings on each stage\textsuperscript{25}, the plan of the tower showed pure circle with a simple spiral staircase at the preliminary stage. Then the staircase became an oval spiral staircase, and then at last a rectangular staircase with straight steps, which was the response to the functional requirement.

Mendelsohn seems to have the intention to keep the organic image of the outside view and rounded the edges of the rectangular tower. The single row of four windows stacked vertically in the center was separated later into two rows at both corners of the front. Then the tower facade was chiseled with convex and concave contour is generated, which brought about a dynamic appearance (see Fig.5c).

The monolithic feature appeared once again upon the tower, after the horizontal lines were abandoned. In its stead a vertical line appeared at the back top of the tower through heaping up slightly the surface into Y-shape ridgeline without abandoning the monolithic feature (Fig.8).

3.2.3. Main Body

What can be named as the main body in other buildings designed by Mendelsohn is generally large and composed of various forms. The main body in this case is defined as the masses that include an entrance hall at the front, an office room and others on the ground floor and an overnight room on the first floor at the rear. It is therefore relatively small and designed as if replaced with the podium.

The rear wing of the main body is composed of two stories. The lower part has five arched niches encasing windows, which are also formed concave (Fig.9). They were inserted for the articulation of the otherwise monotonous wall surface. The wall is also inclined inwards for the sake of tapering as if indicating this as a podium. The upper part has smaller five arched niches formed as same, but its wall inclined outwards on the contrary in order to express the dynamic relation between the upper mass and the lower mass. The horizontal line of the eaves makes also a strong contour with the recurved edge.

As suggested above, this main body has features which are applied to the part supposed as the podium in early visionary sketches for other building types. Namely, the features of the clear horizontal contour line, the tapering of wall and the series of arches for articulation are observed often with some kind of variations. On the other side, the feature of the stacked windows at the tower is often observed in the part assumed to be the main body of the buildings, for example, the double villa on Karolingerplatz, Berlin (1922). Of course, because the Einstein Tower was designed for the debut work as an architect, Mendelsohn's design was on the experimental and developing stage without clear norm or law. However, a certain style of architectural form was crystallized and the triadic composition of the horizontal podium, the bulky main body and the vertical tower was generated there. When the main body became large such as the building of "Mossehaus", the motif of the corner windows of Einstein Tower were extended to the tall and bulky main body and transformed to a horizontal series of windows. The style which was elaborated in the try and error process at the Einstein Tower has evolved when new commissions of various building types were given to Mendelsohn.

4. Design methods observed in the Einstein Tower
While making formal analysis for each component, the overall characteristics of design are found. Remarkable items are explained as follows.

4.1. Symmetry and asymmetry in motion

The total form of the Einstein Tower shows clear symmetry. It contributed to make an organic architectural form with an impression of movement. Mendelsohn’s early sketches showed often such symmetry.

One of the sketches of 1917 for an observatory (Fig.1a) looks symmetric, while the other (Fig.1b) looks asymmetric which is composed of several masses. The former is printed first in the book “Structures and Sketches” in 1923 just under the symmetrical sketch for a visionary theater. Both of them resembles each other in composition and appear to be symmetric. Besides, these two sketches evoke association to the automobile of those days. Some kind of automobiles came already into use, and Ford Model T, for example, was given to the public in 1908. If ventured to compare, the former sketch for an observatory appear to be an automobile which has four wheels covered with windbreakers on each side, a metallic main body with a tall front grille for a radiator which was typical for an automobile of those days, and a cabin covered with a rotated convertible top. It can be said that the association to the shape of the automobile was also a source for imagination for him to design the Einstein Tower.

He designed this building symmetric and added a visual image of movement in such way. The side elevation became asymmetric on the contrary. If it were also symmetric, its main appearance would look static and fail to convey the image of movement. Futurist Umberto Boccioni’s bronze sculpture “Unique Forms of Continuity in Space” in 1913 could have influenced Mendelsohn as is already said, which has a shape of a walking man against the wind with sculptural expression of the wind flow. The outline of the double rows of stacked windows of the tower has such expression of movement, as if the wind is blowing from the front. The spatial form of the terrace in front of the entrance is concave as if sucking the air, and the backside of the main body is convex and spreading like the hem of a skirt as if displaying the wind flow. There can be found the characteristic composition in motion with the overall symmetry and the asymmetry of the side view.

4.2. Composition on the Perspective view

Mendelsohn drew freehand his sketches in two-point perspective setting roughly the viewpoint on the height of human eyes. He was fond of the two-point perspective method, which is particularly certificated in the sketch of Fig.4c on the stage when horizontal nodes were inserted at the tower. It is difficult at some degree to draw freehand the curved cubic form realistically, but his sketches show the complicated architectural figure impressively throughout his design process of the Einstein Tower. From the 2nd stage on, they seem even to become three-point perspective drawings. The total architectural form was examined by Mendelsohn at a single sketch in three dimensions and displayed the integrated dynamic movement.

The sketches for the Building at Kemperplatz in Berlin designed in 1922 show already the effective use of the two-point perspective method. It is located at the corner of the block and horizontal lines on the surface are extended far to the right and the left, and vertical lines are also accentuated on the process of design. Although such accentuation tended sometimes to fall into exaggeration, it was productive for the development of Mendelsohn’s own architectural style. The vertical and horizontal accentuation of the Einstein Tower is said certainly to be the excellent outcome of such talent for the perspective method.

4.3. Expression with light on the surface

It is noteworthy that a large photo named ‘detail’ of the side wall is in the book “Structures and Sketches” published in 1923 (Fig.10). It seems that Mendelsohn selected this photo, because it shows impressively his design theory in relation to the effect of light. It shows the scene taken from the left front of the building and displays the plastic work of the wall. It contains the concave niches for the entrance and the several types of window. There can be observed the contrast between the dark concave niches and the shining surface of the wall under the natural light. It should be reminded that Mendelsohn used to draw sketches since early years applying clear contrast between the lighted wall planes and those painted black as shadow. The concrete surface has undulations in this case and the shade on the surface changes its appearance by gradation. In addition, the gargoyles, elements taken from the Gothic church, throw the delicate shadow upon the curved surface.

He wrote on light as follows also in the sentences declared by himself as written between 1914 and 1917.

“Light must first set mass into motion, raise it to a transcendental expression of dynamic and rhythmical excitation. First of all light must round out mathematical precision and spatial consciousness into the self-sufficiency and legitimacy of architectonic creation.”

These words show the new sense of architectural expression of the wall surface instead of the traditional ornaments of the 19th century. This is what Mendelsohn had struggled since the beginning of his career as an architect. He raised a high target to change completely the appearance of the building, while denying all the tradition and customs of architectural design.
As Kathleen James pointed out in detail, the theory of relativity by Einstein was introduced from Freundlich to Mendelsohn, and Mendelsohn was impressed by the idea on the relative existence of light and material. He applied the theory to the architectural design and speculated that the masses and spaces should be in motion. The expression of the surface with undulation can be understood as the result of his own theoretical contemplation in association to the new scientific philosophy. Although the artistic expression by Mendelsohn has, of course, no direct relation to the theory of relativity in strict scientific meaning, such association stimulated his artistic genius and gave birth to the new formal idea unprecedented in the architectural history. However it cannot be overlooked that some sources of formal models as explained above were necessary to stimulate his thinking on the architectural form.

Mendelsohn made a tour to USA in 1924 and published a pictorial book “Amerika” in 1926, and inserted a photo of a night scene, where the traces of automobile lamps render streamlines, shining white, crossing complicatedly and making visionary scene. He became soon to manipulate such artificial light in the architectural design of urban buildings including, in particular, department stores with glass façade. It suggests that he was sensitive to the effect of not only natural but also artificial light.

4.4. Dynamism with linear expression

The famous sketch (Fig.6b) on the last stage appears as if drawn with a calligraphic brush and is, indeed, a rare one even among Mendelsohn’s sketches. This sketch shows the same architectural composition as the realized building with the unhesitatingly strong touch. It was inserted in the first page of plate pages after a few theoretical pages of "Structures and Sketches" published in 1923 as if representing all his early successful architectural works. Therefore it is assumed to be the art work for presentation and not a working sketch drawn during the design process. The picture itself contains movement not only in the perspective composition but also in details. Therefore it must be a reproduction of the image in the mind of Mendelsohn.

We can compare this with the drawings left from the educational works by Johannes Itten at the spotlighted Bauhaus in Weimar around 1920. Itten had his own peculiar theory of painting that a picture should be drawn after a mystical exercise of body and reflect the energetic movement of human body evoked from his emotion. This is rather an attitude of mysticism influenced from the mystic appearance of the theory of relativity as is commented by K. James. Mendelsohn might have recognized the advantage of the sketch as a medium independent from the real building. It is in particular why his method of such a linear expression is to be considered as a feature of typical Expressionism.

5. Conclusion

As explained above through formal analysis of sketches in design process and the realized building, the developing process of design for the Einstein Tower was clarified precisely in chapter 2, the various formal features elaborated by Mendelsohn are found through the interpretation of the whole architectural form as a composition of three components, namely, the podium, the main body and the tower in chapter 3, and the characteristics of Mendelsohn’s design method concerning symmetry, two-point perspective, effect of light on curved surface and linear expression are summed up in chapter 4. The work renowned as a typical work of Expressionism was indeed an artistic production of a kind of mutation and found scarcely no successor, but it seems as a rich melting pot for the formal ideas of Mendelsohn. That is the result of this research work through the formal analysis to review the expressionistic architectural work of the Einstein Tower. His later works seem to be able to interpret by means of the formal motifs, the framework of design, the expression method and the thought on architecture found in this formal analysis. We expect this research work contributes to reevaluate a portion of the rich meanings of Expressionism.

Notes


6) Almost all sketches presented in the referred publications, mainly Zevi's "Erich Mendelsohn : The complete works", are examined in this research, but few are represented by the similar ones or too obscure to interpret are omitted in this paper.

7) Hoh-Slodczyk, op.cit., p.33.

8) Three types of drawing containing plans and sections are drawn and left as blueprints. See Hoh-Slodczyk, op.cit., pp.34,35,37. She named plan 1 and 2 in relation to this stage. She classified the plans up to 6, but our classification differs according to the different viewpoint for formal analysis.


10) Hoh-Slodczyk, op.cit., p.39. It is interesting that this sketch with exaggeration was sent to his wife as a renowned cellist, because Mendelsohn often compared architecture and music. He wrote, for example, "...wo horizontal und vertikal aufeinandertreffen, entsteht – ebenfalls wie in der Musik – ... 'Harmonische und kontrapunktische Führungen die Arhitektur'" (1925), in: Heinz-Neuweg & Philipp (ed.), op.cit., p.54.

11) This sketch and the corresponding plan are titled as "preliminary studies 1919". See in Mendelsohn, "Structures and Sketches", p.11, and all authors have treated this sketch as a work in 1919. However we presume this as it was in this stage of 1919, because formal features such as the horizontal nodes on the tower or the rear wing expanding like a hem with skirts are the apparent feature of the formal development on this stage.


13) Three drawings containing detailed plans are known in relation to this stage. Hoh-Slodczyk, op.cit., pp.42,43,46. She named them as plan 4 (Aug.1920), 5 (Sept.1920) and 6 (Sept.1920).

14) Mendelsohn wrote also in a letter to his wife on June 28, 1920, "Linie muß sterben, muß Massenumriss werden. Linie darf nicht Energie, nicht Bewegung vorgeben, wenn die Massen fehlt, Architektur ist Massenherrschaft.", Hoh-Slodczyk, op.cit., p.40.

15) Mendelsohn himself used often the word "Monolith". For example, see 'Das Problem einer Neuen Baukunst', in: Klotz (ed.), op.cit., p.19.

16) Erich Mendelsohn, 'New Architecture', in: "Daidalos : Berlin architectural journal", vol.5, p.14-15, 1982. The original German article ‘Gedanken zur neuen Architektur’ was published in “Wasmuth’s Monatshefte für Baukunst”, op.cit., p.3, which was translated into English at first as ‘Reflections on new architecture’ in Mendelsohn, "Structures and Sketches", p.3, but the translation in "Daidalos" is reproduced here as it seems more adequate in expression to the German original sentences. These sentences are especially impressive and important, and therefore referred to sometimes until now, but reinterpreted here from the other viewpoint. See, for example, Dennis Sharp, "Modern Architecture and Expressionism", London, 1966, p.120.

17) In: Mendelsohn, 'Die internationale Übereinstimmung des neuen Baudenkens oder Dynamik und Funktion', in: Klotz (ed.), op.cit., p.3.


22) See again Heinz-Neuweg & Stephan (ed.), op.cit., p.54. It is remarkable that this church is composed of a tower and a horizontal structure with an aps surrounded with the arcade, which are based on the large podium. It can be associated with the later stages of the Einstein Tower.


24) Morgenthäler examined the formative years 1910-1918 of Mendelsohn and indicated that his sketches were influenced in style by Jugendstil including Secessions like J.M. Olbrich and J. Hoffmann on one hand and by the railway stations. See Hans R. Morgenthäler. '"Why should we be laymen with respect to art?" The Formative Years 1910-1918', in: Stephan(ed.), op.cit., 1999, pp.10-25, in particular, p.13. Olbrich's influence is also pointed out in the work of Lucke Walde Hat Factory. See James, op.cit., pp.84-5; Regina Stephan, '"Thinking from day to day, where history takes great turns, leaving hundreds of thousands unsatisfied', Early Expressionist Buildings in Luckenwalde, Berlin, and Gleiwitz', in: Stephan(ed.), op.cit., pp.38-55, in particular p.45. It is known that Mendelsohn has told himself in the retrospective lecture of 1948 in Los Angeles that he was impressed in his young years by Behrens' Turbine Factory, Gropius's Model Office and Factory and van de Velde's Model Theater in the Werkbund's Cologne Exhibition in 1914, and also the iron constructions of Hamburg Railway Station etc. and made his own sketches stimulated by such buildings. See Beyer(ed.), op.cit., 1967, pp.162-3.


27) For example, James, op.cit., p.42.


29) ibid., p.8.

30) "Daidalos", op.cit., p.15.

31) James, op.cit.


Source of figures
Mendelsohn, "Structures and Sketches", Fig.1a,1b,6b,7,8,9; Zevi, "Erich Mendelsohn : The complete works", Fig2a,2b,2c,3a,4a,4b,4c,4a,5a,5b,5c,6a; Zevi(ed.), "Erich Mendelsohn" (Studienpaperback): 3a; Huse (ed.), "Mendelsohn. Der Einfensteinur:" Fig.3b.

和文要約
エーリ・メンデルゾーンによるアインシュタイン塔の設計過程において残されたスケッチを吟味し、形態特性をもとに時系列的につかみ、かつ彼の理論的作家を参照しつつ形態分析を行った。そして、全体形を基部、塔部、全体部に分け分析し、基部においては水平性と大地との連続性、塔部においては垂直性と空における水平分野の対比、全体部においては選像のリズム表現、曲面的な形体表現における陰影表現等、多様な特性を抽出し、またその最終的なモリス型形態が多様な参照作品の影響を受けつつ純化する、新しい形態探索の過程の結果だったことを明らかにした。また、その設計手法に示し、独自の対称性の追求、点透視図法のスキル、ある表面の陰影デザイン、線的表现という特性を抽出し、その意義を明らかにした。

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