

## Article

# Unknown Suns: László Hudec, Antonin Raymond and the Rising of a Modern Architecture for Eastern Asia

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**Abstract:** The purpose of this article is to disclose the strenuous efforts of László Hudec in China and Antonin Raymond in Japan and India to create a modern architectural stance by heralding an incipient space syntax. At the turn of the 19th century, for dynastic, political and economic reasons, Eastern Asia had very little modern architecture. It is a surprising fact that, out of happenstance, two European architects, Antonin Raymond and László Hudec, had to intervene to remedy this situation, to the point of becoming 20th century icons in Japan and China. Their fruitful careers spanned over thirty years and included locations like Tamil Nadu and the Philippines. The oriental territories were not an easy ground for the bold architectural achievements that they produced. Despite faraway strangeness and uncountable personal losses, in revolutions and wars, which eventually forced them both to leave for the United States of America and never to return, they were successful in the manner of establishing a broad avenue for modern Asian architecture which is still recognizable today thanks to their systematic approach. However, theirs is an endangered heritage and the intention of this article is to offer a just remembrance of the way in which such actions could be performed, how they predated by many years a syntactic approach to architectural composition and why their legacy should be preserved.

**Keywords:** modern architecture in East Asia; architectural design; László Hudec; Antonin Raymond; innovative architectural projects; space syntax; Asian traditions



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## 1. Introduction

A score of years ago one of the authors of this article was present when the late and famed architect Peter Smithson delivered a speech to a devoted audience of the Architectural Association of Seville.

When the turn came to explain his acclaimed project for the furniture factory Tecta in Germany, he produced a slide with a map of Europe. Then he showed that the latitude of the construction site near Kassel was very similar to that of London, roughly 50 degrees north. Then, with a smile of confidence, he uttered to the listeners' surprise: "This is a Known Sun . . ." and he went onwards explaining the particulars of his design.

With such a phrase, P. Smithson wanted to convey his great environmental concerns; he dared to work in this part of Germany because he deemed that the climate or at least the shadow casting of architectural forms were similar to that of his native London.

On the contrary, for Antonin Raymond and László Hudec, the eastern sun was a totally unknown one, no matter how hard they tried to appease its ruthless brightness.

Both Hudec and Raymond never chose such a challenge. For sundry vicissitudes, including exile and imprisonment, they were to settle and design for Eastern Asia. They soon realized that their duty and position was to adapt the innovations of modern architecture which they had known in Europe and America, such as Perret's, Wright's or Le Corbusier's

oeuvre [1], to the incipient but firm building activity of the great Chinese and Japanese newly opened ports. Subsequently they extended this huge task to all confines of Asia, like India [2], the Marianas and the Philippines [3].

In this article, the authors will try to disentangle the subtle nuances and mechanisms of such extraordinary construction. Our main research objective is to demonstrate the relevance of the designs that they produced out of the significance and relevance for modern architecture. How they were able to develop new structures and typologies was deeply ingrained with the architectural traditions of Asia.

When China and Japan opened up to European markets and culture in the 19th century and began an amazingly rapid process of technological development, their traditional architectural culture was also fundamentally transformed. The two Eastern Europeans who contributed the most to this process of modernizing the architectural image of the Far East, blending local traditions with European influences and creating the foundations of contemporary architecture in both countries, were the internationally recognized Czech Antonín Raymond and László Hudec, yet to be rediscovered by posterity since basically their contribution is largely forgotten [4].

The careers of Hudec and Raymond [1,5] share considerable similarities. They were born geographically close to each other (Czechoslovakia), although under different circumstances, and ended up in a cultural environment foreign to their own. The two architects had an active and productive career, enabling them to form ties with the members of the local cultural and political elite. They both strived to find their own form of expression in the 1920s and clearly turned towards Functionalism in the 1930s, exerting a major influence on their respective environments, while they enjoyed international attention thanks to periodicals and other publications. This led them to make a fundamental contribution to the modern development of architecture in the metropolises of the East. After considerable research experience in East Asia, we have reached the conclusion that their legacy has been obliterated and such indubitable heritage faces undeniable risks that we intend to avoid by outlining the fundamental characteristics of their oeuvres.

## 2. The Material Milieu

### 2.1. A Parallel between Antonin Raymond and László Hudec

Raymond and Hudec, since the beginning of their lives, shared many similitudes; for instance, their birthplaces are very close, one in today's Czech Republic and the other in Slovakia; their years of birth, with a slight difference of about five years, 1888/1893; their dream to excel in architecture; their formation at the architectural academy; the First World War and their active participation in it; and their destiny in Eastern Asia (Figure 1).



**Figure 1.** Comparison between Hudec and Raymond's trajectory from Europe to Eastern Asia (Hudec's trajectory in red, Raymond's trajectory in orange).

As we can see in the map above, their trajectories start from similar places, but Hudec is going east and Raymond west. Both converge in Eastern Asia, one in Shanghai and the other in Tokyo. The big difference between the two is that Hudec arrived in China unwillingly, after escaping from a prison camp during the War [4], and Raymond came to Japan (with his family and Frank Lloyd Wright) with the precise aim of designing the Imperial Hotel.

As regarding their professional careers, immediately after finishing his studies, Hudec was enrolled in the army. The only previous experience he had was working for his father. This was a blessing in disguise for him; although he had to start practically from nothing in Shanghai, he rapidly progressed and evolved.

On the contrary, Raymond's work experience before arriving in Japan was ample. He had always combined two professions, architectural practice and painting. He worked for different architects and painted together with his wife. It was because of his talent that he was invited by Frank Lloyd Wright to help him with the design of the Imperial Hotel in Tokyo [6].

## 2.2. *China and Japan in a Contemporary Review*

China and Japan are situated in Eastern Asia and are geographically separated by a relatively narrow stretch of ocean. Japan was strongly influenced by China's writing system of characters, architecture, culture, religion, philosophy, and law.

In the mid-19th century, western countries forced Japan to open for trading. Japan moved towards modernization (Meiji Restoration) and started to view China as an antiquated and isolated civilization, unable to defend itself against Western forces, in part due to the First and Second Opium Wars resulting in Anglo–French expeditions from the 1840s to the 1860s [7]. Japan's long chain of invasions and war hostilities in China between 1894 and 1945 as well as modern Japan's attitude towards its past are major issues affecting current Japanese and Chinese relations.

## 2.3. *Modern Architecture in Shanghai and Tokyo*

Like every other style in architecture, Chinese architecture is a style that has become ingrained in Eastern Asia since the beginnings of Chinese civilization. The structural principles are almost the same; differences reside mainly in the decorative details. Chinese architecture had a major influence on the architectural styles of Korea, Vietnam and Japan.

In the 20th century, after the opening of China to the world, western-trained Chinese architects have tried to combine traditional Chinese design with modern architecture. This had limited success in big cities, like Beijing or Shanghai, and later proved impractical because of the pressure for urban development, which demanded new types of buildings. The appreciation for low-rise Chinese architecture declined in favor of modern architecture.

It is important to outline the main characteristics of traditional Chinese architecture, in order to analyse the buildings designed by the architect László Hudec, among the pioneers who brought modernism into design. These features are, from the point of view of space syntax [4]:

1. Symmetry—signifying balance and order;
2. Enclosure—this involves designing the building around an open space, like a courtyard, the spaces opening to the yard directly or through verandas;
3. Hierarchy—the placement of the building within a complex, taking into account the entrances to the different buildings;
4. Horizontal emphasis—the emphasis on breadth and less on the height of the buildings;
5. Cosmological concepts—the use of concepts, such as Feng-Shui and Daoism, for the organization and layout of the constructions. (In Japan, China, India and other countries, the disposition of buildings in relation to the surroundings followed an adroit strategy of natural balance related to geomancy, like Feng-Shui or Vastu, and to the observance of deeply rooted environmental rules [8].)

Shanghai gained its international identity and flourished as a hub between the East and the West during the period known as Old Shanghai, which dates from 1846 to 1945. Shanghai was then a free treaty port, witnessing the establishment of international settlements. During its internationalization period, Shanghai gained its cosmopolitan reputation through the intermixture of global and local residents with diverse social, economic and cultural backgrounds. This intersection of cultures is reflected in the mixture of multinational architectures and the coexistence of modern and traditional styles.

Historically, although Japanese architecture was strongly influenced by its Chinese counterpart, there are some important differences between the two. For example, the wood used in Chinese buildings is finished with bright painting, while in Japanese traditional architecture the wood remains exposed; Chinese architecture is based on a lifestyle that uses chairs, tables and beds, while in Japan the floor serves all these purposes [9], though this changed slightly during the Meiji Period (1868–1912).

László Hudec, in one of his letters addressed to his family, writes his opinion about Japanese and Chinese temples and the differences between them: “The concept of Chinese temples is absolutely beautiful and on a large scale, but shameful in the detail of its workmanship—while in Japan the details are like arts and crafts but the layout is weak. It is true that their asymmetrical arrangement is much more picturesque than the strict symmetry of the Chinese temples but the trees in the courtyards make the latter less boring” [4].

Traditionally Japanese architecture is characterized by wooden structures, slightly elevated from the ground, covered by tiled or thatched roofs and with sliding panels, translucent and covered by paper, which are called, respectively, shoji and fusuma. Rash mats or tatami, heavily modulate the space at a fixed area of 1.65 m<sup>2</sup>, two tatami disposed in a square shape give 3.3 m<sup>2</sup>, which is the actual unit of measurement, the tsubo. Even today, these are key elements of the traditional Japanese house and garden [10]. These sliding panels or shoji are elements particular to Japanese architecture, used instead of normal walls, and thanks to them each space can be customized for different occasions. Until the 20th century, tables, chairs or beds did not exist in any house or space, traditionally, the Japanese people used the floor for sitting or sleeping.

Architecture in Japan has been strongly influenced by the climate and this is reflected in the way homes are built. Summers in most of Japan are long, humid and hot. This is also the reason why the traditional houses are raised from the ground for letting the air circulate around and beneath the house [11]. Wood is the preferred material because of its properties—cool in summer, warm in winter, and its flexibility during the earthquakes.

In the 19th century, gradual changes began. Japan has slowly incorporated western modern architecture into the design of buildings. Today, Japan is a trendsetter in the field of architectural design and technology. Modern architectural techniques were introduced in Japan with the advent of the Meiji Restoration in 1868. Two major events in the history of Japan radically changed its architecture. The first event was the Kami and Buddhas Separation Act of 1868, which distinguished Buddhism (a foreign faith) from Shinto and Buddhist temples from Shinto shrines, breaking an association which lasted well over a thousand years. This caused severe damage to the nation’s architecture for lack of state funding. The second event was the intense modernization Japan was undergoing in order to compete with other developed countries. For this, the first step was importing architects and styles from abroad. However, after a while, Japan taught its own architects who slowly began to design in their own modern style. Japan sent architects to the West to study and they returned home, introducing the International Style of modernism into Japan. International recognition came only after the Second World War with the work of architects like Kenzo Tange. In the four years of employment in the office of Kunio Maekawa (one of the most influential Japanese architects of his generation), starting in 1938, Kenzo Tange assimilated his practising experience. Maekawa had the privilege of working in the office of Le Corbusier in Paris [12] (being part of the team which designed the Villa Savoye and the Swiss Pavilion) and, once returned to Japan, spent five years at Antonin Raymond’s office.

In the 1880s, a sudden reaction against the rush toward westernisation, ignited the support of Asian models, even in architecture. This changed again after World War I when the architects Frank Lloyd Wright (1869–1959) from the United States and Bruno Taut (1880–1938) from Germany arrived to work in Japan [13].

#### 2.4. Interior Design Concepts for the Japanese Dwellings

The interior design of a Japanese house is very different from normal European interiors. It possesses its own rules, underlying deep notions based on tradition. In the past, a Japanese house consisted of an open space, even devoid of screens to make partitions for individual spaces. In time, particular areas and different functions (like eating, sleeping or dressing) became more and more present in the design. As a result of such new necessities, the use of self-standing screens started (first byobu, then shoji and fusuma). They were used to provide some degree of privacy, although they served less as sound barriers. These screens can be easily removed in order to open up the entire space [10].

The Japanese had a particular way of dealing with the interior and exterior of the house. Instead of seeing the interior and exterior as two distinct environments, they are considered continuous spaces. Therefore, they introduced the veranda (engawa), which plays the role of transitional space between inside and outside.

The traditional living space is designed for people who remain seated on the floor, not standing. The windows and doors are therefore placed low, so that the visual relation between the spaces is clear and everyone from the inside can see the garden or vice versa.

Although modernization has produced significant alterations in design, the traditional Japanese style has not vanished, and it is still in use. For example, even in westernized dwellings, it is likely that a room will be found whose floor is clad with tatami, and it is customary to remove one's shoes when entering the house.

### 3. Case Studies

#### 3.1. Antonin Raymond and László Hudec—A Comparison of Early Works

The architects both lived and practiced in Eastern Asia for a long period of time, sufficient to allow them to become involved with the local people and culture. They had the advantage of starting their architectural practice in Japan and China, in the proper period, when these countries opened up to modernization; they were “in the right place at the right time”. A timeline of their careers is offered in Figures 2–4.

In Raymond's case, he began just when Japan's pursuit of modernization slowly shifted from being based on the westernization model back towards native roots. Another important reason for Raymond's blossoming career was the fact that he benefited from the consequences of the Great Kanto earthquake and the following period of reconstruction [14].

László Hudec was much more interested in the use of modern materials, functions and technologies. This was the main reason of their encounter. When Raymond was finishing his design for the American Otis Elevator Company in Tokyo, Hudec had installed Otis lifts for the first time in Shanghai in his novel 22-storey Park Hotel. As Alessa Hudec De Wet recalls, Hudec met Raymond through the Asian representative of Otis. After the family's first trip in 1932 to Tokyo, a lasting friendship developed between the two and their families. From 1935 to 1941, the Hudecs spent their summer holidays in Japan in Raymond's house on a hill near Karuizawa [15]. This can be inaccurate in part because the Raymonds had to leave Japan in 1938.

On the other side, Antonin Raymond gained a deep insight into traditional building techniques, the use of materials and a wider view of Japanese culture. This allowed him to deal with the problematic issue of finding the perfect balance between traditional Japanese and western modern architecture, the necessary syntax for the creation of a modern architecture suited to Japan.



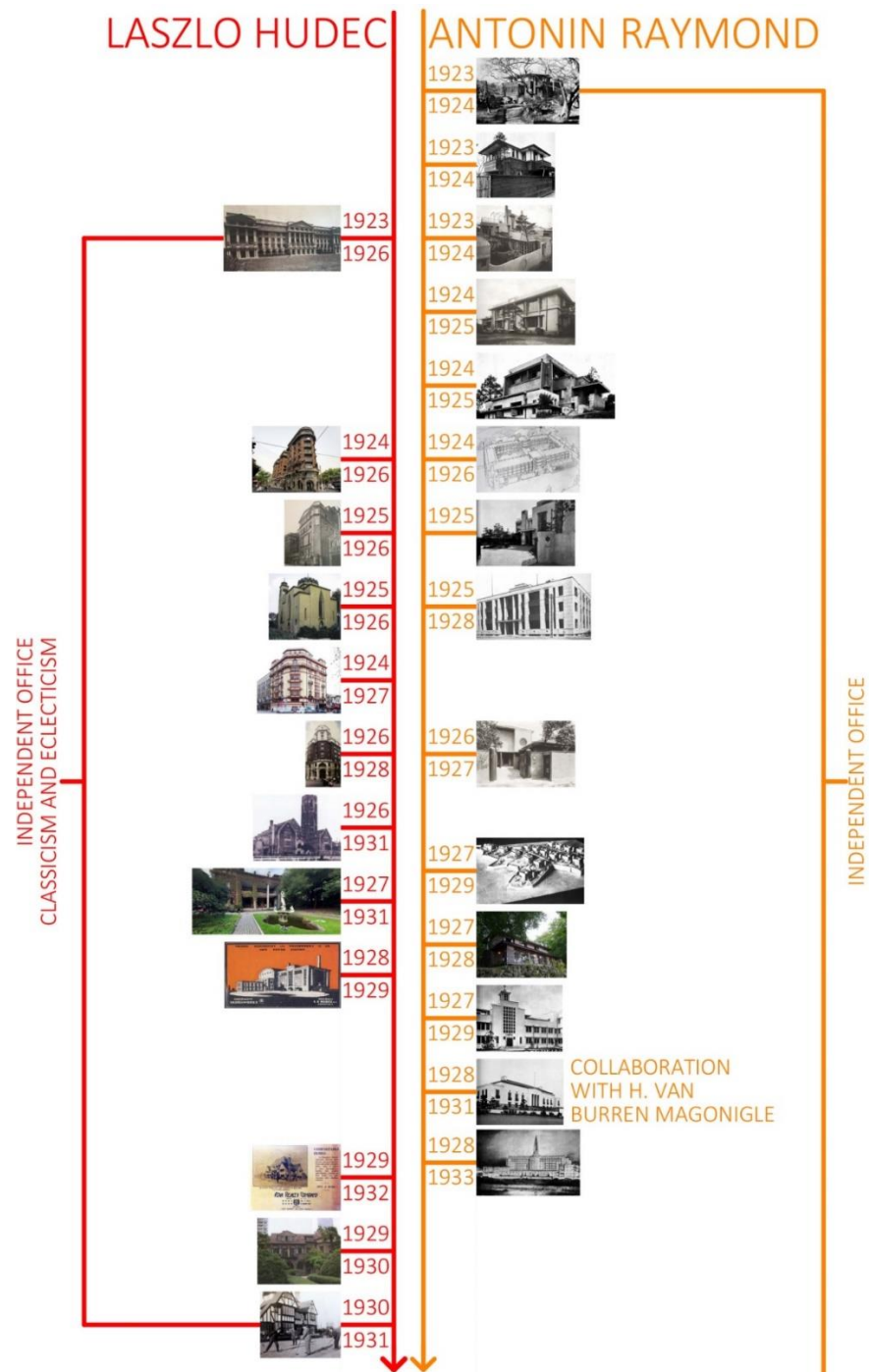
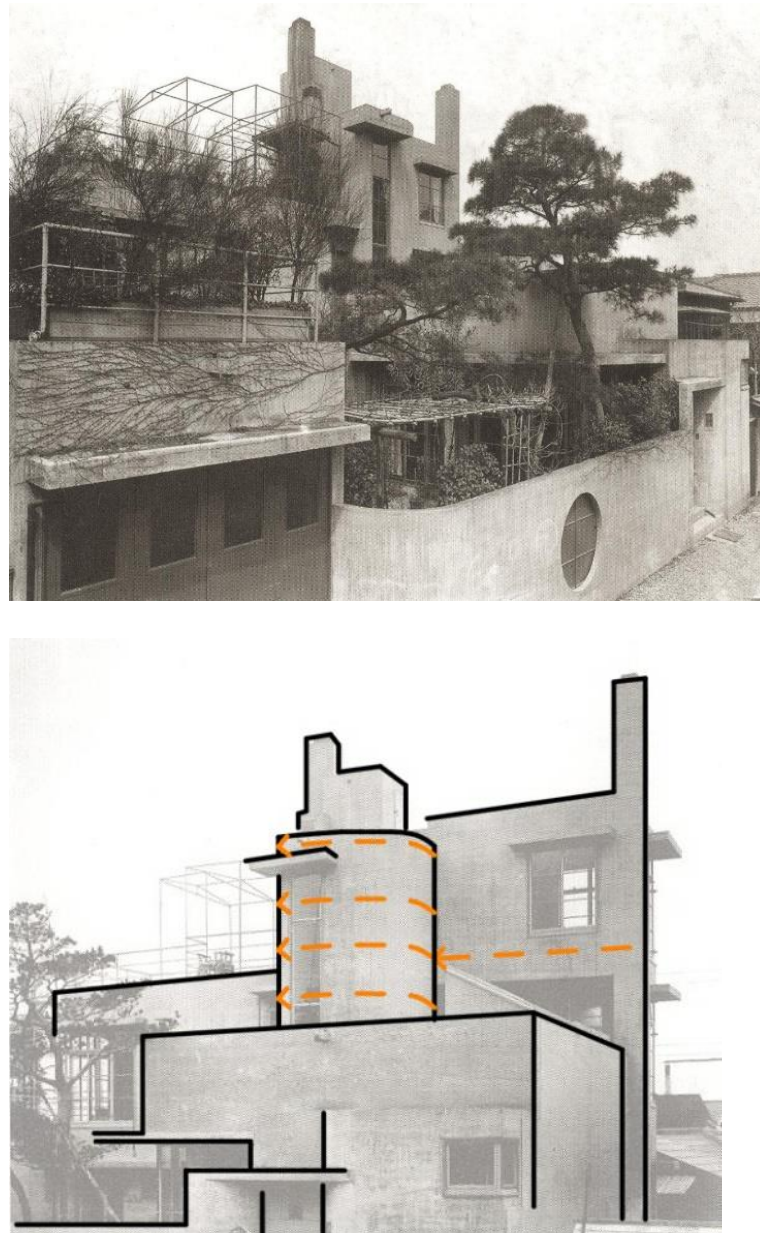


Figure 3. Timeline 02—Hudec and Raymond comparative designs.

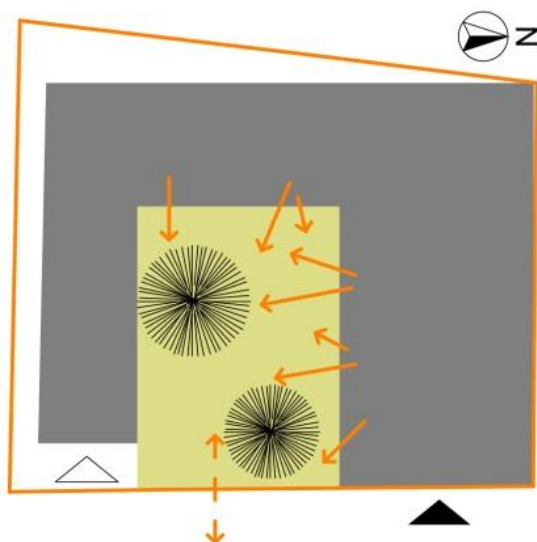






**Figure 5.** Reinanzaka house of the Raymond family (1924) and its concrete plasticity.

Built completely out of reinforced concrete, Reinanzaka House constituted a huge step forward and a liberation from Frank Lloyd Wright's mannerism, predating modern architecture. Like everything Raymond designed after the Kanto Earthquake of 1923, the house had an earthquake proof structure of reinforced concrete. The exposed concrete was not clad with cement mortar or any other finishes, which emphasized Raymond's belief that there is inherent beauty in concrete and that it has its own character if studied and understood [16]. He created a monolithic enclosure surrounding the house and garden. The configuration was striking because it was dissimilar to his former designs and also to local productions. For the organization and separation of the functions (the living areas from the servant's areas), he articulated three aisles under a U-shaped plan (Figure 6).

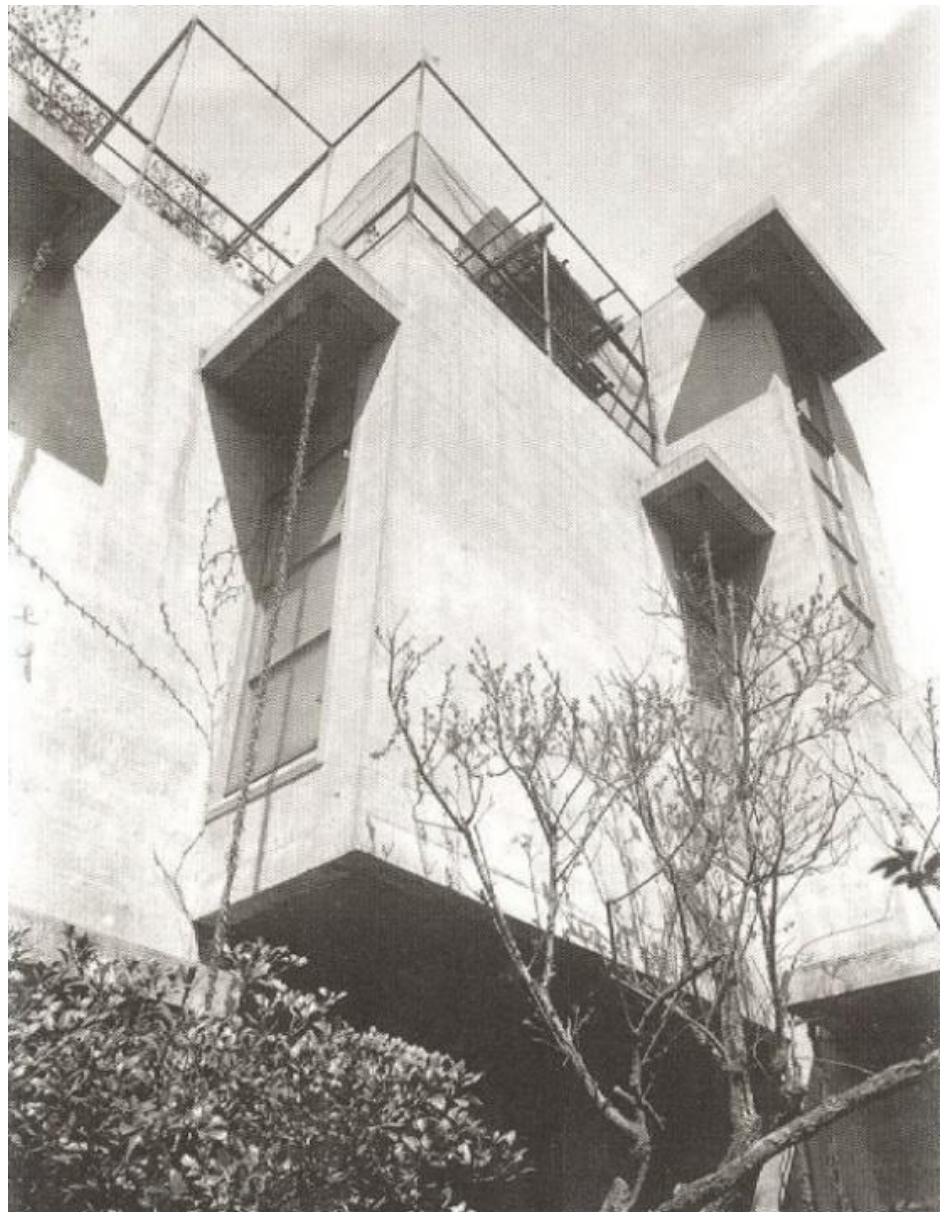


**Figure 6.** The U-shaped plan of the Reinanzaka house and openings towards the garden.

Raymond's own house was remarkable in a number of ways. It was one of the first occasions on which a concrete frame was enriched so as to recall traditional Japanese wooden construction, a mannerism which was to become the architectural touchstone of Japanese architecture after the Second World War [16].

Raymond explains that the flexibility and southern orientation of the living spaces, the position of the windows which provided good ventilation and natural illumination and the principle of using only natural materials without any processing, were all inspired by traditional Japanese examples. As every room had a proper orientation to the south and access to its own section of garden, the windows became quite important. There appeared some necessary details above the windows, "the overhang (eyelid)", which was not only aesthetic but had the main purpose of preventing direct sunlight in summer while admitting it in winter. Moreover, the design constituted a reinterpretation of the veranda (engawa), which has the combined role of a transitional space between inside and outside and a protection from the harsh weather. These concrete canopies or "eyebrows" situated over the windows became one of the principles of modern design [1]. In Raymond's attempt to integrate into his design elements extracted from the local vernacular, the rainwater was evacuated in a particular way, by means of ropes, instead of the usual western gutters prone to clogging. Apart from concrete, the house has metal fenestration and tubular steel trellises (Figure 7).

In 1933, the Raymonds decided to build a summer residence (Karuizawa) for themselves in order to continue developing some of the work in the midst of the hot summer of Tokyo. Raymond had a deep admiration for Le Corbusier's oeuvre. In the design of his summer residence, the main inspiration was Le Corbusier's unrealized Matias Errázuriz house for Zapallar in Chile (1929–1930). In fact, as Raymond says, "what better way to express an admiration for someone than taking one of his motifs of an unconstructed project and carrying it further on". Raymond's design borrowed the distinctive "butterfly roof and internal ramp circulation". "Except for the motif for the main room of the Karuizawa summer house, the building was conceived in an entirely original way. It has a very strong Japanese flavour, although it does not adopt any traditional Japanese forms." [17]. The Karuizawa summer house may be a key project to the intention of breaking completely from Wright's influence and embracing a new period, dominated by Le Corbusier.

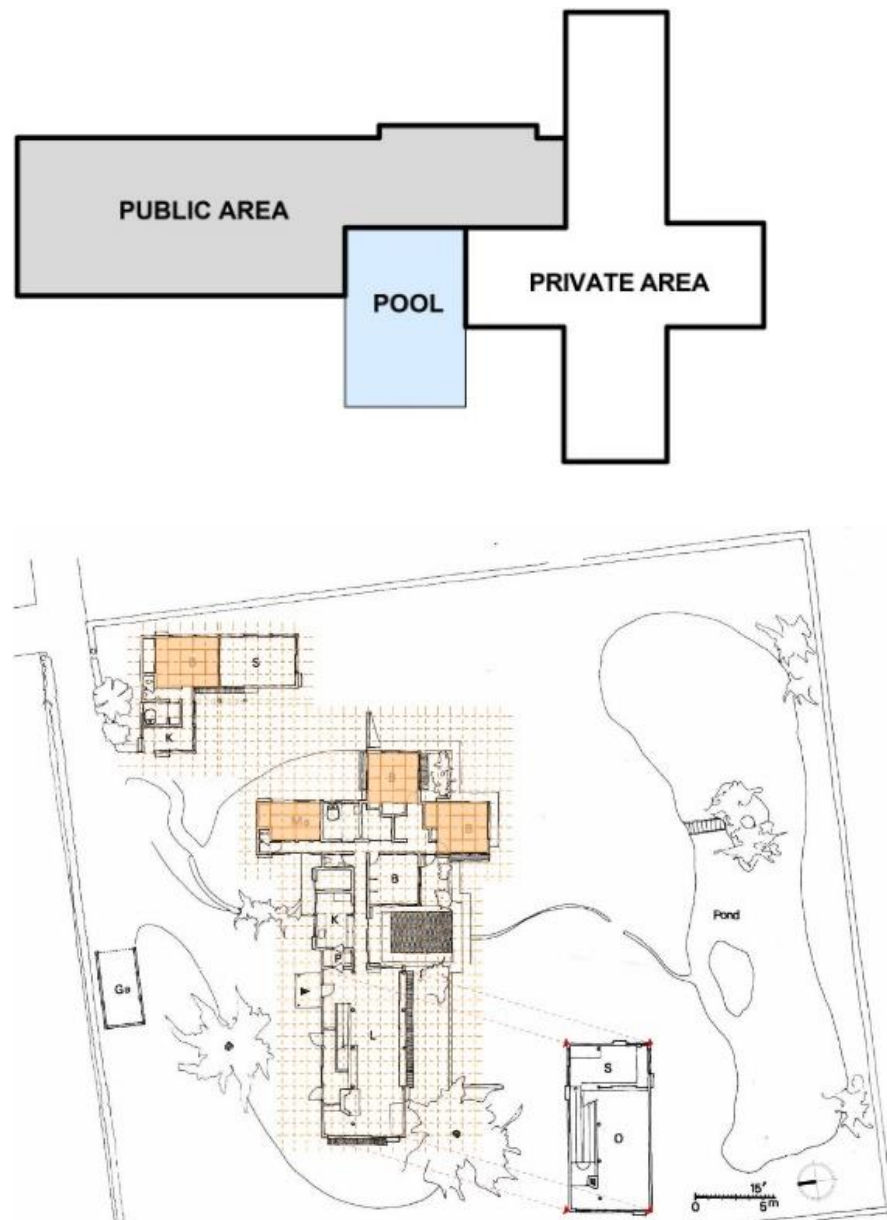


**Figure 7.** Reinanzaka house of the Raymond family 1924—detail of the concrete eyebrows and of the ropes for evacuating the rainwater, looking up from the garden.

Pointing out that on his turn other architects used to adopt or borrow details from his designs, in 1938 Raymond published his book entitled *Architectural Details*. The book was conceived with the aim of sharing his knowledge and information with all the interested architects “in the hope that they would use it” (like in his own case, when he was a student and first got his hands on a book presenting Frank Lloyd Wright’s projects).

Raymond built a house suited to his family lifestyle (one of the fundamental principles advocated by the pioneers of modern architecture). His main design principles, “honesty”, “simplicity”, “economy”, “directness”, “functionality” and “naturalness”, are guiding lines of the whole structure [14].

For the plan and interior organization of the spaces, Raymond followed the roles of Japanese traditional residential architecture regarding orientation. The plot has a pavilioned distribution. Raymond oriented the main house with the openings of the living room towards the south, facing the breathtaking view of the mountains and the pond (Figure 8).



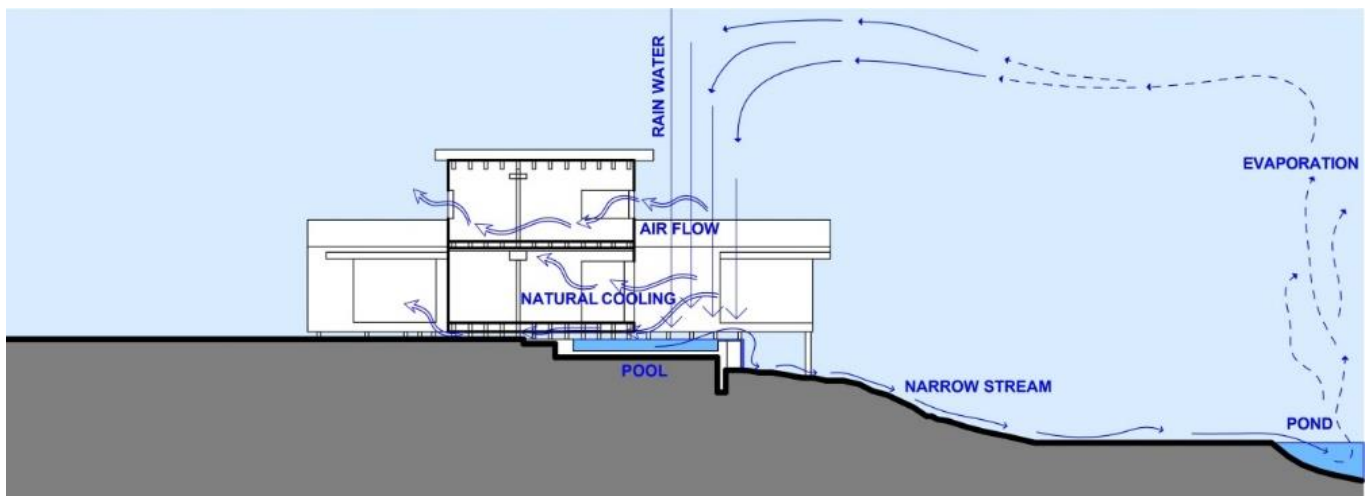
**Figure 8.** Karuizawa house—public and private area and the pool, plan and views.

The house is composed of two main areas—the public area (living and dining room, kitchen and studio) and the private area (which included the bedrooms and the maid’s room). These two main zones are articulated by the pool, which serves as natural barrier between them two, creating a source of relaxation and fresh and moist air which invigorates the atmosphere during the humid summer.

The house stands upon elevated ground, artificially created from the soil extracted to make the pond (Figure 9). The circle of life is recreated by the fact that the water overflowing the pool is being let to the pond. In fact, the whole level difference allows better drainage of the ground below and around the house, for which the pond functions like a reservoir (Figure 10). The fact that is entirely supported by a series of short wooden posts facilitates the natural ventilation beneath the house.

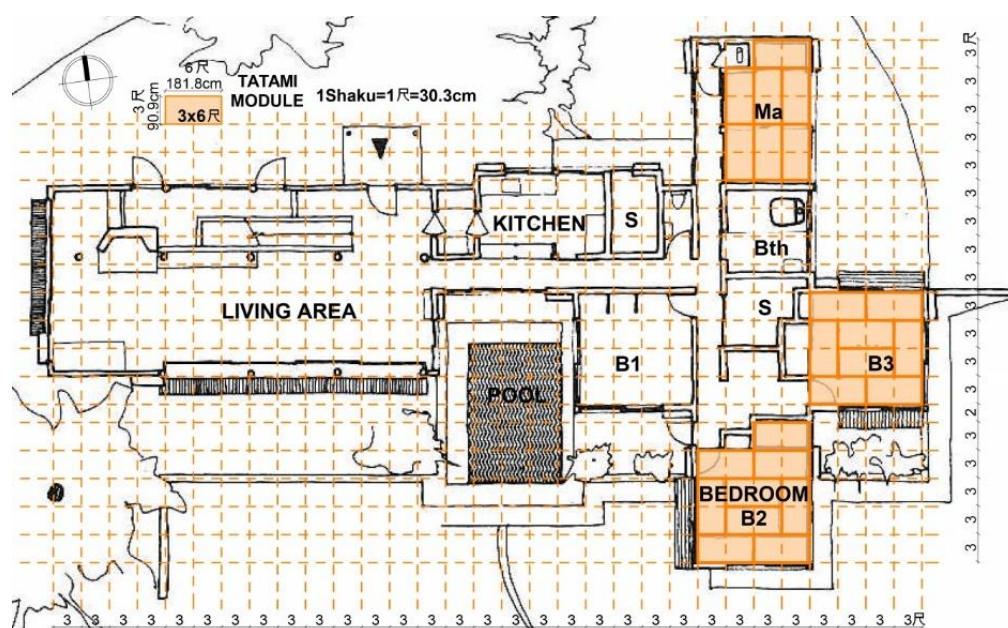


**Figure 9.** Karuizawa summer house—lightness and transparency.



**Figure 10.** Karuizawa summer house—section, natural ventilation and water cycle = eco-friendly, sustainable house.

Raymond was eager to introduce the traditional Japanese syntax of the tatami in his design. In the summer house there are three tatami rooms in the main building, almost the entire private area. By placing a grid based on a three-by-three shaku (Japanese foot) module over the plan [18], we can observe that Raymond used the tatami as a syntactic resource for the overall composition of the Karuizawa house, highlighting the conversation between western and traditional Japanese (Figure 11).



**Figure 11.** Karuizawa summer house—study of the tatami module over the plan.

This house “marked the new era in his design” in Raymond’s own words. Actually, with this house, he completed a stage, summarizing all the knowledge gathered previously and it was the living result of the many years spent trying to find the perfect balance between western modern principles and Japanese traditions. The need to combine western and Japanese elements in his designs was not only due to practical issues but more an aftermath of his long studies and admiration of the Japanese roots and traditions. He began to develop this discovery from an early stage in his career. The Karuizawa summer house testifies to the strong impact this research had on him and his wife, Noemi Pernessin, who practically used them as the main inspiration for their ensuing designs. In the last period of their life they reconstructed the Karuizawa house in New Hope, Pennsylvania [19] under a loose key that permitted calling it a farm and that was sadly demolished recently.

For Raymond, the secret key to successfully blending modern with traditional Japanese architecture was the “wise handling of material that speaks to us”. In this case he linked concrete from lava aggregate and wood from neighbouring forests. The structure of the building included only these two materials, an exposed concrete elevated base with a round lumber framework of sand-polished columns and beams [9] (traditionally, Japanese architecture is characterized by wooden structures, slightly elevated from the ground) [20].

A clever remark was made by Raymond when he saw architect Albert Kahn’s own house on one of his business trips to America which he conducted in order to obtain a commission from Henry Ford to build a large assembly facility in Japan.

His work at that time was creative and modern in every way. I was, therefore, amazed to find that both his office and his home were designed in an entirely eclectic way. It was difficult for me to understand how those two things could be reconciled in one personality, as both aspects could not be the expression of a truly sincere conviction [10].

A similar situation is Hudec’s experience; both of his houses were designed following the local trend of eclecticism and classic revival. He was somehow more aiming towards the comfort of the family in the detriment of the modern form and the development of new trends in the history of architecture. Hudec might have been influenced by his wife’s wishes and classic stylistic preferences (as we can see in the numerous drawings and details of the furniture designed for Gisela’s bedroom) and another reason could be his financial business skill, since he was very good in making investments and gaining profit after selling the property. The styles chosen for their family houses were not defining the architect’s vision of a perfect, modern work of art, but may rather reflect the overall preference of

future possible clients, proving that Hudec was more interested in business than creating outstanding designs. An exception was Hudec's Sun Ke's house [15]. It seems that the architect designed it in a freer, creative mood, perhaps because the house was originally meant for him, and some traces of shifting towards new modern trends were just around the corner. Since he did not have to please any client, he felt the freedom to indulge himself in experimenting with his own ideas. Since he got a very good offer from Sun Ke, he sold the house before it was completely finished, just another proof of his ambition for profits that may enhance his practice (Figure 12).



**Figure 12.** Sun Ke House—neo-Gothic (first row) and Art Nouveau (second row).

Hudec's second residence built in 1930 was one of Hudec's last projects belonging to his first period in his independent career, described as a constant continuity of classicism and eclecticism, for a variety of clients, of different nationalities (westerners and Chinese) and cultural backgrounds. The designs he made in this first phase of his career were all eclectic. This required extensive and vast knowledge. His theoretical background acquired in his university years helped him greatly. He was aware of Frank Lloyd Wright's activity and, like Antonín Raymond, he disagreed with the way he was imposing his designs and ideas, no matter the taste or real need of the client. Raymond and Hudec always designed their projects for and with the clients, analysing and filtering the requirements depending on environmental characteristics and wishes.

He felt at home with a wide array of architectural styles, always choosing the one that best suited the taste of his client. He worked like an extremely adroit tailor who makes bespoke clothes, in all sizes and designs, from any material and in any quantity. His ultimate aim remained the same throughout his career: "to satisfy his clients as best as he could". [...] Hudec believed that the architect must serve the client and the community [4].

Later on, he was to apply his novel ideas in Dr. Woo's house, which was recognised as an early and enduring influence by the Chinese architect I. M. Pei. On this occasion, Hudec's approaches were much more systematic (Figure 13).



**Figure 13.** Former residence of Dr. Woo.

### 3.3. *The Grand Scale in Hudec's Work*

In the early 1930s, Hudec's star was about to shine brighter with the construction of Shanghai's tallest skyscraper. He played a significant role in developing modern architecture in Shanghai, side by side with other prestigious architects of that time, who were slowly beginning to shift their neoclassical stylistic preferences in the direction of Art Deco or the so-called "modern". Shanghai became in the 1930s one of the major centres of Art Deco (still extant and well preserved), with a very large number of buildings around the Bund area. Shanghai's art deco is unique because of the traditional Chinese design elements that were incorporated.

His two designs developed almost in parallel, the Grand Theatre and the Park Hotel, which were situated in a centremost area, on the northern side of the racecourse, adjacent to each other. Figures 14 and 15, show the racecourse and the Shanghai Race Club, a building that we can visit today, designed in neo-classical style (1934) with effective eclectic details.



**Figure 14.** The racecourse with the Shanghai Race club and Grand Theatre, viewed from the Park Hotel.





**Figure 15.** View from the racecourse towards the Grand Theatre and Park Hotel.

The 22-storey hotel (91.4 m) was designed once again for the Joint Savings Society (after the previous success of the JSS headquarters). It was at that time and for many decades after the tallest building in the entire eastern hemisphere, from London to Tokyo. Until 1984, for more than a half century the new structure was to remain the highest residential construction of Shanghai and Asia [15]. It was a dream come true, not only for the architect but for the Shanghainese citizenship who were enthusiastically aiming toward modernization. Since the American skyscrapers equaled and symbolized the modernity and financial power of the city, Shanghai became very proud of its own achievement. Hudec's recognition extended to internationality, and he remained known until today as "the man who changed Shanghai".

Shanghai lies on very difficult alluvial soil on the River Yangtze Delta, composed of sand and mud. This was always problematic for the builders, because after a short time, all the constructions started to sink or lean. Building in height seemed almost impossible. It was only in the first decades of the 20th century that European engineers invented new technologies and methods of foundation suited to Shanghai's impractical soil condition, with the aim of reducing to a minimum the subsidence problem. In order to receive the permit to erect the hotel, the architects had to present a satisfactory foundation design that would prevent such constraint and reduce the sinking to a minimum.

The plan offered three special solutions: a deep foundation pit to be excavated, impermeable metal partitions to surround it, and the insertion of a dense system of piles. Four-hundred 33 m-long piles of Oregon pine were driven into the ground at a close distance in order to increase the friction coefficient between the piles and the soil to ensure an adequate transmission of the building loads [4].

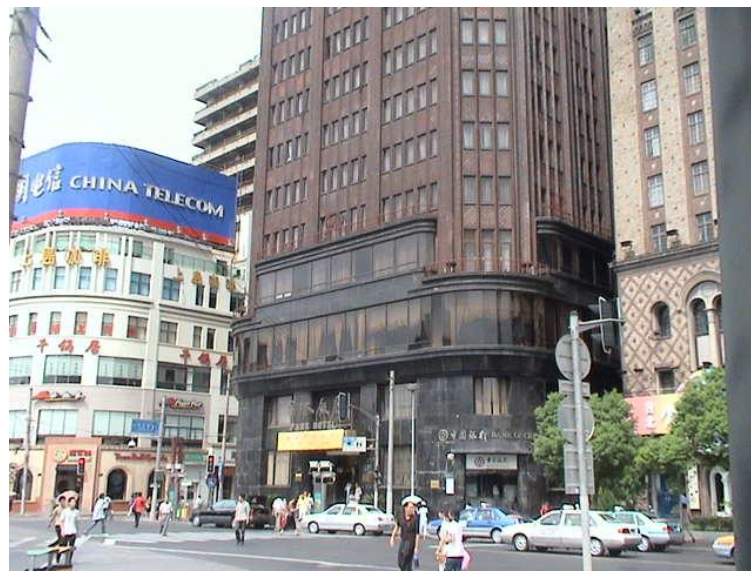
Besides the already mentioned system of piles, Hudec and his team adopted another method, developed in 1920 in Germany, called Larssen pile profiles, which consisted of piles made with sheets of steel driven into the ground in order to stabilise a structure. Pile foundations had been previously employed in Eastern Asia since the early 1920s but never before for such a high building as the Park Hotel.

The building features 22 storeys above ground and two storeys below ground. Resembling the skyscrapers from New York, from the ground until the upper 21st floor, the layout and form is constantly changing, gradually decreasing, thus creating a truncated pyramid shape towards the sky that begins at the 15th level. The whole composition and syntax is based on a characteristic tripartite scheme used by the architect in most of his high-rise buildings:

### 3.3.1. Urban Connections and Entry Floors

The base of the hotel showcases modern details, such as an emphasis on the horizontal, dark finishes of polished black granite from Shandong and Qingdao, rounded corners and continuous windows following the same major curve of the road (a detail he previously included in 1928 for his neighbouring design, the Honisberg Garage, by virtue of the same architectural language which later became known through Erich Mendelsohn's work in Wrocław).

Thus, the architect managed to integrate the appearance of the lower levels of the hotel (Figure 16) with his previous design for the Honisberg Garage; it almost seems like the two buildings were meant to coexist. Unfortunately, the garage was recently demolished in order to accommodate a major expansion of the hotel.



**Figure 16.** Lower levels of the Park Hotel.

### 3.3.2. Central Part of the Hotel Building

The middle section, entirely Expressionist in style, is clad with dark brown brick and ceramic tiles. Vertical elements that convert into rear pillars articulating and dividing the façade present at the same time a decorative and functional role; these elements provide grace and cause the building to look sleeker than it actually is.

Between the modern rectangular-shaped windows, the vertical brick faces are laid 45 degrees from the horizontal (a resource visible in the building of the Christian Literature Society for China). The ceramic enameled tiles covering the facades are rotated again by 45 degrees, creating interesting textures which vary in subtle accordance with the angle of the sun. Although Hudec resorted mainly to German Expressionism, his meticulous design with oriental furnishings proved a sensation, since buildings so hefty and monumental were yet to emerge at the time.

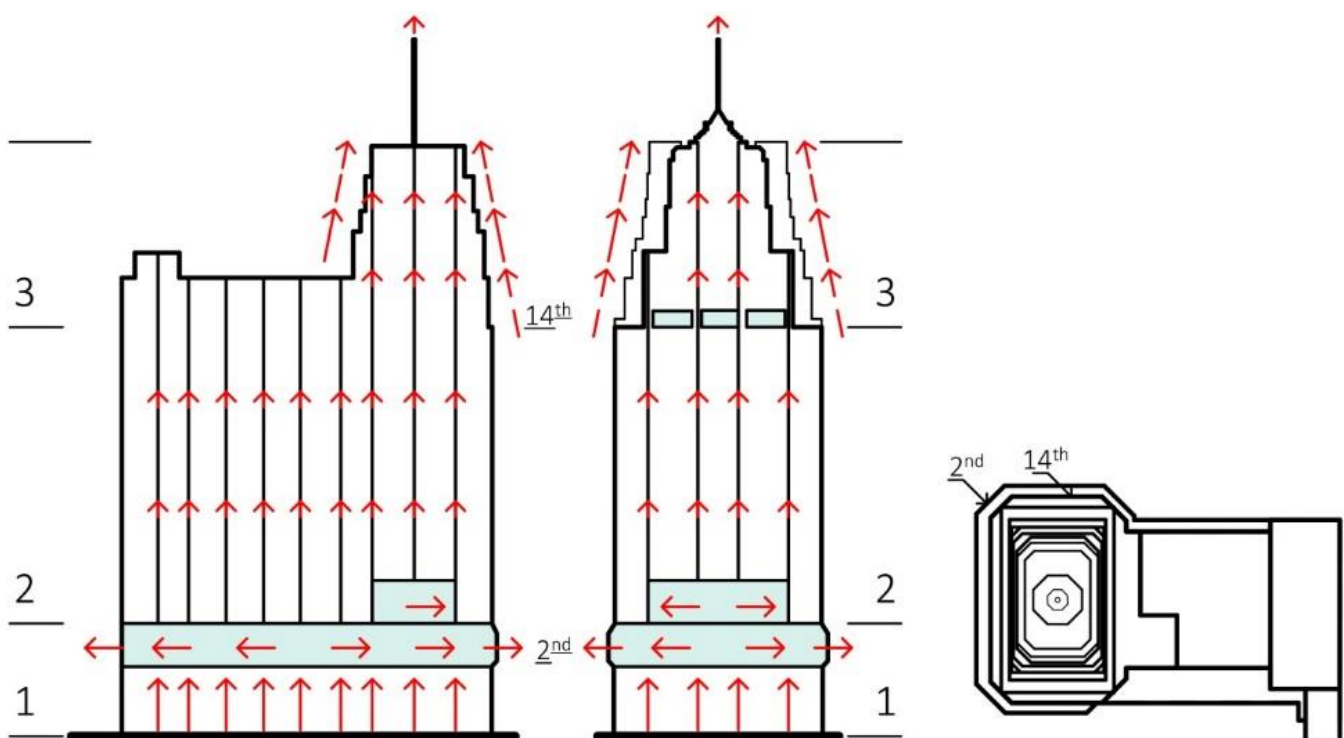
### 3.3.3. Adjustments and Influences for the Hotel and the Theatre

The upper section, purely Art Deco and Expressionist, bears finishing akin to that of the middle floors (dark ferrous brick and enameled tiles). The stepped pyramid of the upper part, which reminds us of Saqqara, emphasises the verticality and slender silhouette of the entire building. The windows use the same grid-like disposition. The attic recesses floor by floor until the top, where an observatory terrace was placed (Figure 17).



**Figure 17.** JSS Building (Park Hotel)—main view, detail of the façade decoration from the middle part and detail of the upper part.

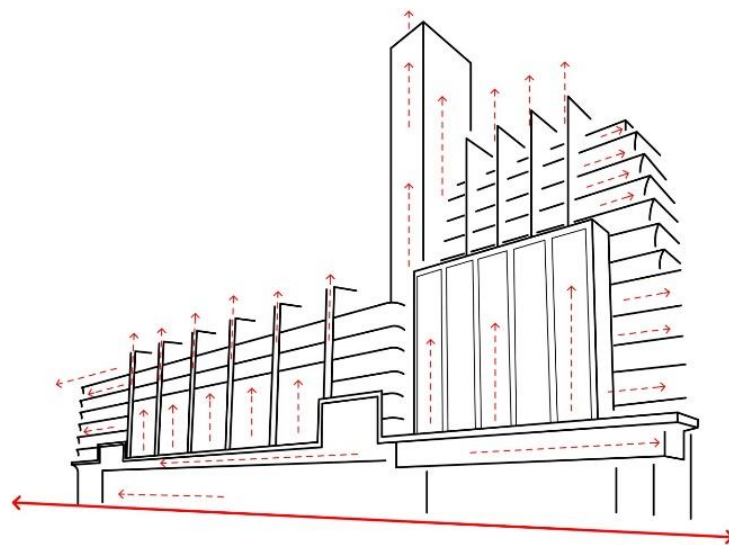
In Figure 18, we present a succinct analysis of the façade’s grammar and the vector-like interplay of tension lines. Such careful composition reveals the sheer evolution of Hudec’s architectural thinking towards a modern idiom.



**Figure 18.** JSS Building—tripartite scheme and gradually decreasing plan, scheme of tension lines.

In 1931, Hudec was commissioned with the refurbishment of the Grand Cinema built in 1928. Initially, the design was meant to become a temporary facility. However, Hudec persuaded the clients to go ahead with the construction of a new, modern movie theatre, which resulted in his most significant design made for the world of entertainment.

The site was near to the Park Hotel, as the two buildings positively contributed to the definition of the cityscape of 1930s Shanghai. Art Deco and Modern in style, straight and curved tension lines mark the whole aspect of both the exterior and interior of the Grand Theatre (Figure 19).

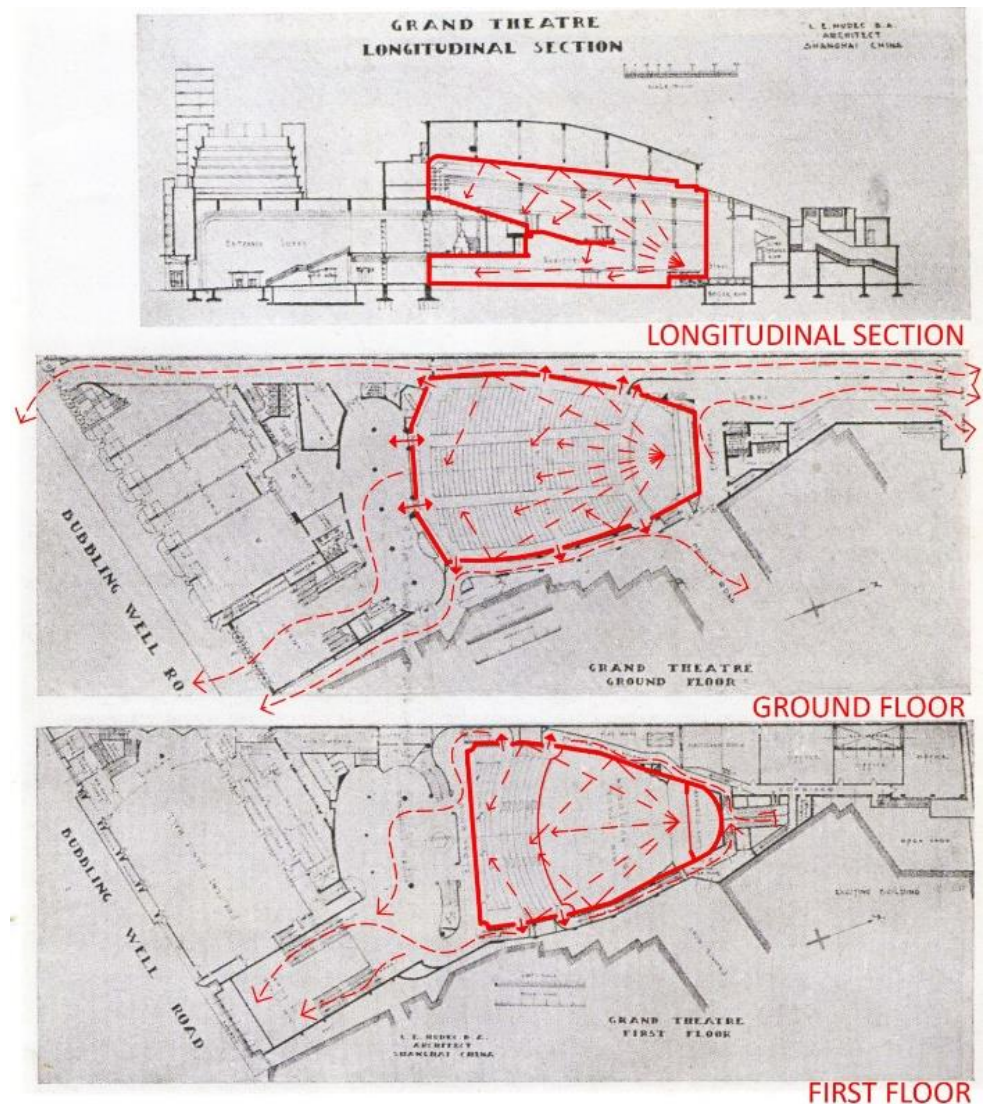


**Figure 19.** Grand Theatre—(top) main view from the former race course, (bottom) compositional study of the façade's grammar, Art Deco and International Style.

Perhaps facing fewer constraints that in the case of the Park Hotel, Hudec envisaged here a true liberation of forms towards a futuristic expression, one that encompassed the fascination of the Orient and advances in technique and which signified a real progress for Chinese architecture.

The architect's dexterity in fitting all the required spaces into such a difficult, quasi-triangular plot (long and asymmetrical) can be seen in the way he contrived to project the entire building.

The structure of the central hall's gallery was a sort of challenge for the engineers, but the result was satisfactory. Taking into account its dimensions, it constituted a real novelty in the Far East. The shape of the main hall and the reinforced concrete arch gallery ensure proper visibility and adequate acoustics from all the seats (Figure 20).



**Figure 20.** Grand Theatre—longitudinal section and plans; shape, acoustics, visibility and evacuation of the auditorium.

Carrier's air conditioning equipment (which amounted to 25% of the total construction costs) and fire control systems were installed in the entire building. By that time, it was the sole cinema in Shanghai equipped with synchronous interpretation devices integrated into each chair. For that reason, barriers of language were almost broken and everyone, even locals, could attend the latest foreign-language American and European films using individual earpieces. The programme changed in order to reflect the developments of the Chinese film industry only after the Pacific War, in 1949.

With the Grand Theatre's refined statement (Figure 21) and the landmark of the Park Hotel, Hudec returned to the spotlight, this time in the international scene of modern architecture, side by side with leading architects of the period, gaining recognition through sundry publications.



**Figure 21.** Grand Theatre—the entrance lobby and glittering pillars.

The September 1934 issue of *L'architecture d'Aujourd'hui* introduced the Grand Theatre in a lengthy article along with some designs by Le Corbusier, the Moscow Theatre designed by the Vesnin brothers and the famous London Zoo pavilion of Lubetkin and Tecton. The issue of May 1935 of *Der Baumeister* published the designs of the Park Hotel and the Grand Theatre side by side; the two buildings stand next to each other and together defined the skyline of Shanghai at the time. In December 1935, Dexter Morand wrote about the Grand Theatre in the Spanish journal *Obras*: “This new cinema is neither European, nor American, but Asian and Chinese. It testifies to the high standard of film theatre construction achieved in this country and is on a par with European cinemas. The layout and decoration of Shanghai’s Grand Theatre (Figure 22) are as modern as any European or American design could be. Its appearance bears the marks of Modernism often seen in Europe” [4].



**Figure 22.** Recent view of the Grand Theatre.

#### 4. Discussion

As seen in the projects and design intentions formerly described, Raymond's trajectory towards modern architecture was much more straightforward as compared with Hudec's long and winding road.

However, Hudec and Raymond's visions on how an architect should behave, converge as follows:

Independence and freedom are two important aspects, vital to an architect or artist, in order to protect their creative work from anything that might compromise it. A real architect must be an independent artist. He must have freedom and strength to stick to his principles [15].

Besides that, however, an architect has to be able to design beautiful and economical architecture even in the worst situation possible. "It is the architect's job to create beauty in every house, no matter what the economic level is" [15].

Discussing the relationships between architecture and engineering, we have to stress that both Hudec and Raymond enjoyed a similar polytechnic academic formation. The two central European universities, Budapest and Prague, belonged to the Austro-Hungarian realm and, as such, they were putting a great emphasis on the proper education, a preparation in engineering for their students. However, due to their different cultural context of living and designing, the two architects ended up having different orientations. Hudec is perhaps more of "the engineer" type and Raymond closer to "the artist", as can be perceived in their ways of thinking and designing.

Although this slight difference existed, both of them had considered vital the collaboration between the architect and the engineer. As Raymond stated, they must:

"[ . . . ] work closely [ . . . ] from the beginning (of the project), in order to find not an extraordinary solution, but the simplest, the most direct and most economical solution of the problem". [21]

Soon, he realized that in order to eliminate any kind of constraints due to future possible confrontation with engineers, an architect had to become one with himself in order to achieve his aims, and more, in the technological present era, an architect needs to know the properties and technological processes of different materials:

The aim of the architect is to put once more his feet on the ground, to work naturally and from insight, to avoid external artistic and abstract influences, to become once more an "architect" which means "master builder". Designers, whether they are architects or designers for the industry, have, as a rule, little idea how their designs are to be executed [21].

This was enhanced by the context of Japan, where previously the profession of an architect did not exist and the carpenter or Daiku had the role of an architect and engineer at the same time [22].

Hudec, on the other side, regarded himself as an engineer rather than an architect. The technical aspects, structure and construction techniques were pivotal in the process of defining the architectural form, being equal in importance, always seeking for unity and interaction between them: "You will only be a good architect if you understand materials and construction. [ . . . ] Here buildings have either steel or reinforced concrete frame structure, walls are not considered structural elements but seen just as partitions" [4]. Such was his approach to modern structures, mainly because he had imbibed the Chinese traditions of complex wooden frames that harks back to the 13th century and treatises like the *Yingzao Fashi*. Later, this tome on wood construction was an explicit influence on Jorn Utzon.

The conscious pursuit by these architects of the oriental essence of building, the so-called Dao of architecture, led them to a spatial renovation that paradoxically coincided with some postulates of modern architecture, as recognised by Walter Gropius on a famous postcard to Le Corbusier in which he admitted, among other statements, that, "the Japanese house is the best and most modern I know of and truly prefabricated" [23].

By accepting the modularity and versatility of the oriental construction procedure which is based on the Jian or Ma system of intervals [10,24], as we exposed regarding the Karuizawa summer house, they paved the way for an early space grammar applicable not only in Asia but in the whole world, as Bruno Taut had justly foreseen during his stint of nearly three years in Japan. A fact later confirmed by Schindler, Bawa [25] and even Bernard Rudofsky in his acclaimed essay “The Kimono Mind”.

Moreover, such a semiotic paradigm reached contemporary linguistic theories when Roland Barthes published in 1970 the book *Empire of Signs* about his experiences in contemporary Japan.

In his celebrated lecture “The Destruction of the Box”, addressed to the AIA in 1954, Wright expressed his admiration with a vision of Laozi contained in *The Book of Tea* by K. Okakura.

He claimed that only in the vacuum lay the truly essential.

The reality of a room, for instance, was to be found in the vacant space enclosed by the roof and the walls, not in the roof and walls themselves.

It can be argued that in a similar fashion to their former icon, Frank Lloyd Wright, they adopted the following vision of Laozi about architectural space:

“Pottery needs to be hollowed so that it is useful, (otherwise it is just an irregular brick) a house needs to have some holes (e.g., door and windows) to be useful, (otherwise air and people cannot enter or exist). Thus, a certain level of nothingness is necessary to make an object useful” [26].

That is, they clearly understood that the void was, so to say, more important than the solid, a game-changer for architectural design, since Aristotle had postulated that the void was irrelevant compared with matter [27]. Conscious of this fact, they applied themselves to molding new materials, especially concrete, to embody their novel intuitions.

## 5. Conclusions

Hudec and Raymond are justly called pioneers of modern architecture because they were among the first western architects who came to Eastern Asia (a cultural context completely different to their native one), developed as modern architects and managed to guide, transform and implement a new way of thinking and design based on oriental philosophy [28].

Once in Japan, far away from his native Europe, Raymond had to adapt his design processes. He tried to define what he considered to be the principles of a true modern architecture, everything based on the synthesis between his own pre-Japan experience and what he had learned since his arrival in Tokyo: space, structure, modulation as the essential philosophy of Japanese traditional architecture.

Antonin Raymond, found himself in a relationship with Japan that offered him the best conditions for developing his stark and audacious principles [29]. Nature beckons beauty, and beauty, in the traditional Japanese houses, was to be found in pure simplicity and essence. It was only after years of experience and observation of the Japanese houses inside nature that he realized the easiest way to achieve beauty in architectural design. He used to say that it is through increased simplicity and elimination that the man of taste finds elegance.

Complementarily, Hudec’s modernism lies in his architectural ability and complexity, as a man always ready to change his life drastically when confronted by dire events or facing necessity. He gained architectural experience in Shanghai (not as the leader of the architectural movements but as an actor always prepared to follow and to adhere to new trends and styles if his commissioners wished for them, constantly adapting to the fashion and introducing the latest western technologies in the Far East), had more pronounced diplomatic experience than Raymond during the Second World War (providing humanitarian aid, helping his compatriots and Jews escape from Nazi prosecution) and gained teaching experience in America (giving lectures on archaeological themes).



Hudec was not as avant-garde an architect as his trendsetting European contemporaries, who were concerned with reforming and creating new guidelines and manifestos in architectural design. However, thanks to his dexterity in articulating modern functions, spaces and shapes with the world's most advanced technologies, he became one of the leading architects of fashion in Shanghai, enjoying local and international recognition through his designs that deeply reflected the city's growth and cultural character in the constantly changing Chinese society.

Although they are now unfairly forgotten and their works lie mainly in neglect, we believe that Raymond and Hudec should be praised for their stylistic audacity that heralded a new understanding and appreciation of architectural space and contributed to the creation of a viable future for the development of Asia. This is the main reason why we have conceived the present article.

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