

## **How The Environment Could Teach. Louis I. Kahn's Architecture**

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### **Abstract**

The architecture of Louis I. Kahn changed radically in the 1950s. Such was the transformation that it is difficult to find its unmistakable mark in works so different like the miesian Parasol House (1944) or the palladian Fleisher House (1959). All these differences have been widely recognized by leading architectural critics, and some of them even venture to place that process of change while he was at the American Academy in Rome between 1950 and 1951. They are absolutely right in terms of time and place. But the real question arises when it comes to establishing the reasons for such a radical change in his short stay in Rome. The answer, however, is more difficult....

The three months that Kahn spent in Rome as a Resident Architect (RAAR) were really intense. Contrarily to what one might think, he was more a college friend than a Professor. His job allowed him to travel and also encouraged him to do so, so Kahn used to do it a lot. Some of these trips were nearby, but he also made a far journey that got him to Egypt and Greece. This Mediterranean journey is also widely known because of the great drawings he made. Some architectural critics even point out that this trip may have had a potential influence on his late work. But no one has dwelt upon it so far...

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**Keywords:** Louis I. Kahn, Contemporary Architecture, Greek Architecture

### **Introduction**

Louis I. Kahn's architecture changed radically in the 1950s. The transformation was so radical that it is kind of difficult to find its unmistakable mark in the works he made before and after this turning point. For example, we can find this change in two unbuilt houses that the architect designed almost symmetrically to that point: the miesian Parasol House (1944) or the palladian Fleisher House (1959).

On the one hand, the Parasol House project (1944), designed in collaboration with Oscar Stonorov, is a proposal for a competition promoted by a furniture company (Kahn 1987). The final result was a composition of five different typologies of houses that were based on the repetition of a single prefabricated element shaped as an "umbrella". This solution could be arranged as a large plane that shaped a continuous and homogeneous space (even in various levels) which also solved the structural problem. Thus, all load bearing walls allowed their structural functions to be overtaken, and the space could be designed just with lightweight materials which could move freely underneath. This means that even the same furniture could be some of these light partitions. The result was a limitless, ambiguous, light and functional domestic space that could be configured independently to the rules dictated by the grid of the "umbrellas".

On the other hand, the Fleisher House (1959) was a private commission. In this case, the house is developed from a large square subdivided into 12 which make up a large central void. In the central space, there are four other smaller squares which form a cruciform heart. Those last squares hosted the “servant spaces” of the house so the other twelve squares could be free of this kind of functions and just work like “served spaces”. However, the most important thing of this house is that all of them underline their spatial autonomy through the powerful appearance of its construction made by supporting perimeter walls. This means that there is a high and recognized spatial independence on each of them. So the entire house was set up as a spatial concatenation of autonomous units arranged in a grid in which each house owns its domestic space.

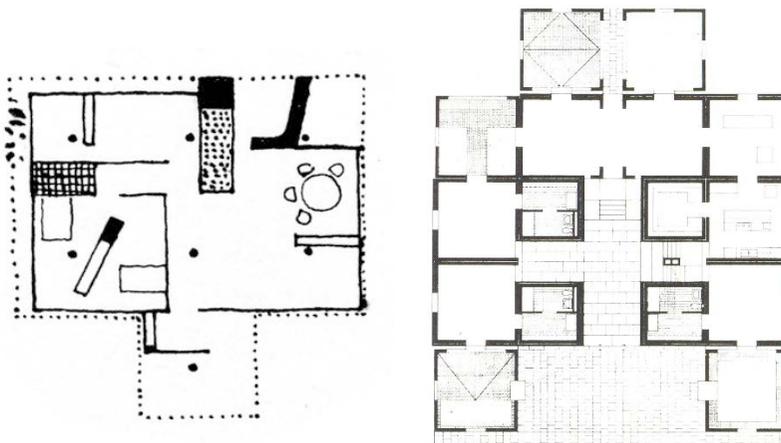


Figure 1: Parasol Houses, 1944 and Fleisher House, 1959  
 Source(s): Brownlee, David and De Long, David. 1991

If we compare both houses, we can see that the space of the Parasol House is conceived in a centrifugal movement, while the space of the Fleisher House is a centripetal one. While the first example promotes an unlimited, ambiguous and continuous space, the second promotes bounded, clear and closed spaces. If the first proposal asks for dematerialization, asymmetry and functionality, the other calls for gravity, symmetry, and monumentality.

These two examples perfectly illustrate the radical shift in architecture that Louis I. Kahn experimented between the 1940s and the 1950s. This transformation has been widely recognized by architectural critics. Even some of them venture to place that process of change while he was at the American Academy in Rome between 1950 and 1951. And they are absolutely right. But the real question arises when it comes to establishing the reasons for such a radical change in his short stay in Rome. A void that this text will try to fill, at least in part...

### **The Mediterranean Environment**

Fortunately, after many failed attempts in the last years, Louis I. Kahn arrived at the American Academy in Rome (AAR) on December, 1 1950. He went to the AAR to work as an “Architect in Residence” and in that year he was in charge of five Architectural Fellows (Amisano, Byrd, Daltas, Jova, and Dawson) and two Landscape Fellows (Hawkins and Patton). However, he was not a professor for them, at least in an orthodox way, because his duties were just “to act as an advisor” and “to accompany” the Fellows (both Architecture and Landscape) “on occasional trips” (Kahn 1987). And Kahn made a lot of trips.

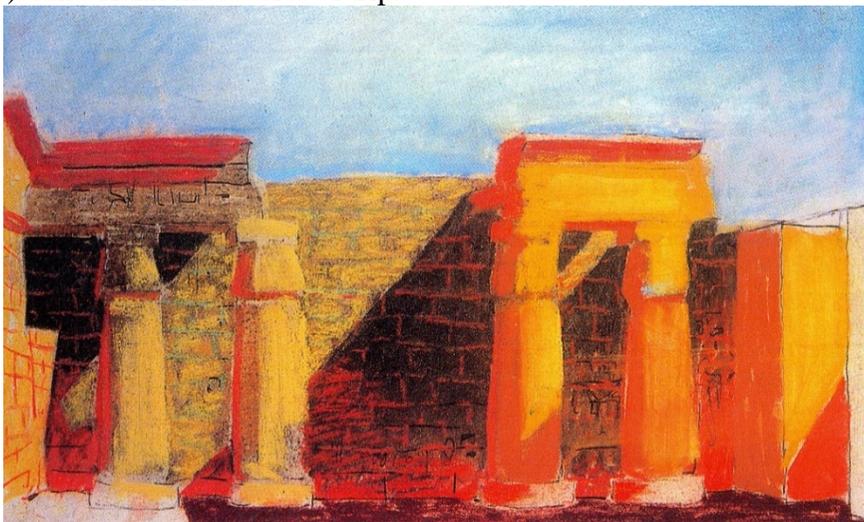


Figure 2: Mortuary Temple of *Ramesses III* by Louis Kahn  
Source(s): Hochstim, Jan. 1991

During his first month at the AAR, Kahn and the Fellows made many tours around the Ancient Roman Architecture of the city. Namely, they visited the Imperial Roman architecture guided by famous American archeologist Frank Brow (Brown 1961). Unfortunately, there is no document reflecting the places that they visited, but that year, from what we know, Brown focused on the great Imperial Roman architecture both in the city and its surroundings.. Besides, they also travelled to cities nearby Rome like Ostia, Tivoli, Tarquinia, and even Naples. Nevertheless, the most important trip for Kahn took place in early 1951 with other five Fellows (American Academy in Rome Archives).

Their first stop was Egypt, where they arrived on January 6, 1951. There, as one may well imagine, the group visited the most important places of its ancient civilization (Upper and Lower Egypt). Then, twelve days later, they took a plane to Greece. They just made two trips there, one around the Peloponnese, and another to the Delphi Sanctuary, because Kahn and the Fellows wanted to see Athens in depth. And after ten days in Greece, the group went back to Rome.

This was another important moment for Kahn because, at the AAR, he received a letter from Yale University through which he was hired to design the extension of its Art Gallery, so he immediately bought a ticket back the US. Anyway, he had enough time to make another tour to Tuscany, and he visited Firenze, Siena, Pisa, Lucca and Bologna with some Fellows. Finally, in the last week of February, he also stopped in Venice and Milan in his way back.

Consequently, we can state that the three months that Kahn spent in Rome were really intense, and also that he spent most of the time travelling, painting and studying the same old European architecture that had pushed him to become an architect thirty years before; the same architecture that walked with him for the rest of his life.

This trip collapsed the mental barrier that the International Style had erected in his mind [Kahn's] between the present and the past; in this case, literally, [...] the past that he had loved and he had soaked up in at the University of Pennsylvania returned tumultuously to him: Rome above all. (Scully 2001, 9)

## **Two Mediterranean Lessons**

Louis Kahn spent nearly all January travelling with some Fellows across Egypt and Greece. When he came back to Rome in late January, he found a letter from the Director of Yale University's Department of Art in his mailbox offering him the possibility of designing the extension of their Art Gallery.

This was a great opportunity for an architect, and Kahn realized it right away. As a proof of that, he bought a ticket a few days later to return to his country in late February, being almost short on time to finish his duties as a Resident Architect in the American Academy in Rome.

Once again, fate would smile to Louis Kahn. And not only because this was a great opportunity for any architect, because this challenge was at the same university where he had worked as a professor years before, or maybe because taking this opportunity meant to increase the tight volume of work he had in his office at that time. All these reasons were true, but the main reason this building was special was because he could put into practice all the lessons learnt in Rome, which he couldn't have done twenty years before.

### **1<sup>st</sup> Lesson**

With the Yale Art Gallery, Kahn showed that he had found his traditional sources, because he introduced the ancient concept of mass that he had learned from the Roman architecture in this work. And we can state that, to a certain extent, this building set off the change for Kahn's architectural work.

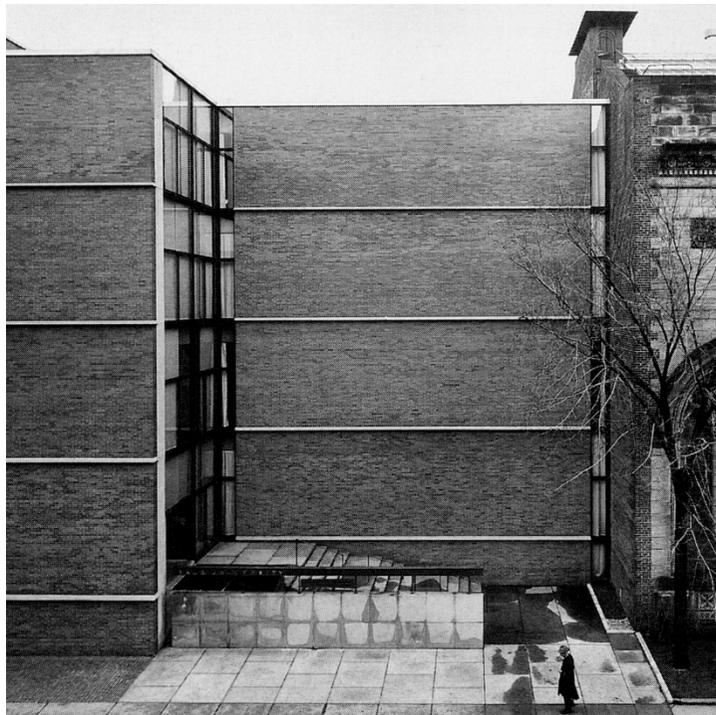


Figure 3: The South-East wall of the Yale Art Gallery  
Source(s): Brownlee, David and De Long, David. 1991

At this point, it would be interesting to speak about the large number of walls that there are still up in Rome and its surroundings. Of course, they are in different states of conservation and many of them are anonymous, but there are also other famous ones, for instance, the great Pecile wall in Hadrian's Villa. This thick wall is very similar to the Gallery because both have some horizontal rhythms of shades.

But if I had to point out an ancient Roman wall with a direct influence on the Gallery, it would be the back wall of the Forum of Augustus. I am persuaded that Kahn strolled around it over and over like any tourist could do nowadays.

This is not the time to analyze the idea of this wall –like how this wall separates two important Roman areas– but to analyze its material condition. This wall is mainly built in *opus quadratum* and made up of two grey stones called *peperino* and *pietra gabina*. But it also has three lines made of travertine marble which divide its façade in a horizontal way. Those two elements build up a façade very similar to the Gallery's as we can see by comparing them.

In addition, there are further similarities between these two buildings. If we approach the Roman wall from *via Tor de Conti* across the *piazza del Grillo*, we can see a hole on the upper side. And through this hole we can see the entablature and the first marble columns from the Temple of Mars Ultor.

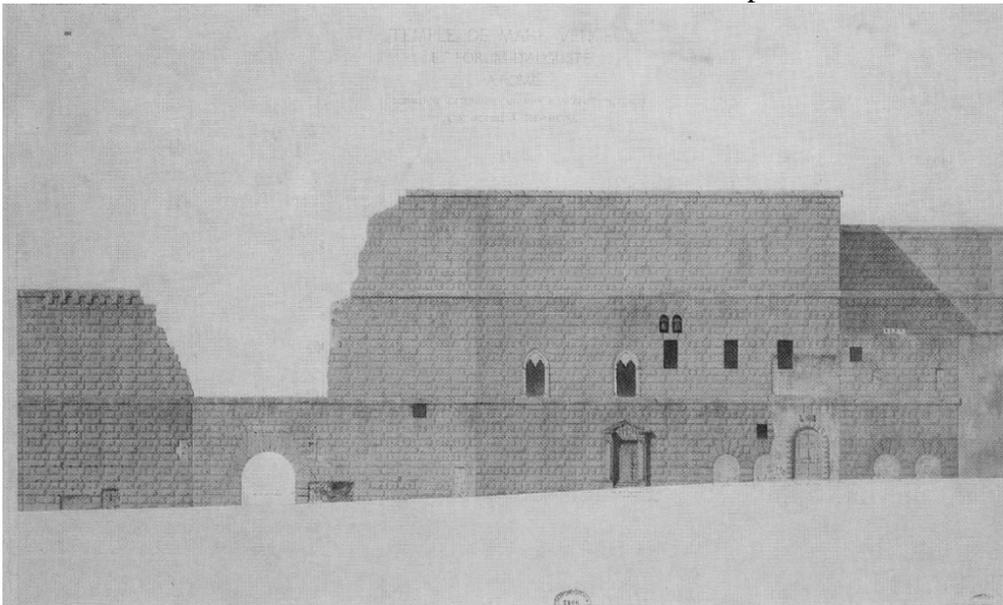


Figure 4: The back wall of the Forum of Augustus

Source(s): Jacques, Annie et al. 1985

In other words, if we think about these elements abstractly, just as pale grey structural elements, we can identify an image very similar to the

Gallery. As a proof of that, we can compare an image of the Forum with the north-eastern corner of the Gallery. Both of them are made up of two different elements. On one side, we have a big blind and grey wall with white horizontal stripes. And on the other side, we have white architrave architecture with voids between its elements, although in the Gallery these voids are pieces of glass, as we can see on the two left side pictures. So in this respect, we can state that they are very similar.

The similarities between the Gallery and the Forum don't end here. If we analyze the plan of the Forum of Augustus, we can see how the big wall is non-structural because it just supports itself. In a similar way, if we analyze the rest of the building, we can see how this temple is built with architrave architecture independently to the wall. And if we look at the plan of the Gallery, we can observe that it is just a wall and some kind of temple. Therefore, in both cases, the walls are just an enclosure element and they don't belong to the structural system of the entire building. The result is as if a white Greek temple had been added to a grey Roman wall

## **2<sup>nd</sup> Lesson**

So far, we have studied the Roman density introduced by Kahn in the Yale Art Gallery from its wall. But this was not the only place where he radically deleted the lightness of the International Style because he also transferred the previous Roman density into the structure. We can see it on the vertical structure -the pillars-, which simply increased in size. However, the horizontal structure -the slab- was a different thing.

We can clearly see the new shift of the slab on the last version of the Gallery. This new solution included both the construction system and the mechanical requirements necessary for the proper operation of this kind of building. The final solution was the acclaimed and well-known tetrahedral ceiling plan. Despite this form, this slab does not work like a spatial structure, but like a conventional system of inclined "T" beams. Nevertheless, the most important thing of this floor slab is not how it works but how it is built, or rather, what is not built.



Figure 6: The tetrahedral ceiling plan of the Yale Art Gallery  
Source(s): Scully, 1962

Actually, the slab of the Yale Art Gallery is built with two elements - inclined “T” beams and inclined shapes- which configure a hollow tetrahedral space without its base. This form is then repeated along the two directions, so finally the slab is formed by a horizontal element based on triangular geometry, its hollowness being its main characteristic. In this way, Kahn designed a hollow structure, and therefore this slab transmits the feeling of lightness. But this is not real because, in fact, this slab is 60% heavier than the necessary one. So the sensation it transmits is “apparent” and unreal, something which he could have observed in Rome and especially in the Baths of Caracalla where “there was the will to build a 100-foot high vaulted structure where people could bathe. Eight feet would have sufficed. It is wonderful, even in ruins” (Kahn 1961, 34-35).

Nonetheless, this system provides enhanced sound quality and also allows the passage of all necessary facilities through their interstitial spaces (parallel beams). And although this is not so well known, it also attempts to be cheaper because it combines multiple systems in one and is left in view.

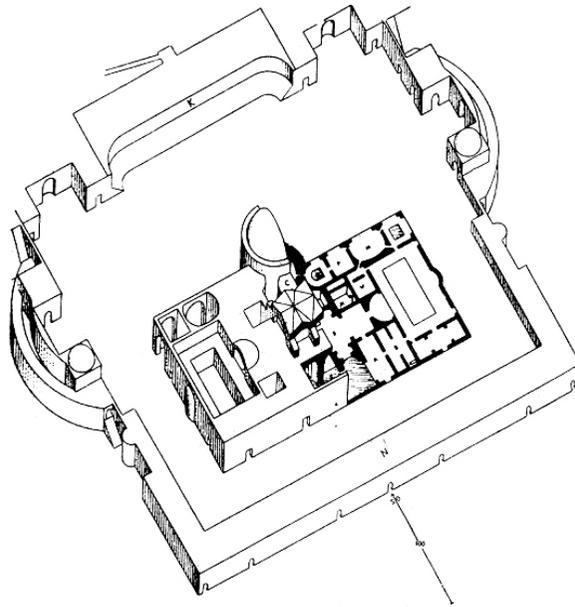


Figure 7: The Baths of *Caracalla*  
Source(s): Choisy, 1899

In fact, we can compare this constructive newness with the *hypocaustum* slab built in Ancient Rome that he could see during his trips there a few months earlier (i.e. The Baths of Caracalla). The reason is that this slab also combined two different systems -structure and facilities- in one single element. Similarly, this Roman slab was also a very thick, small-density element because it was hollow so as to allow the passage of the facilities -in this case the heating- as it is the case with the slab of the Yale Art Gallery.

However, the last comparison favors the facilities system over the structural one. But we can also compare the slab of the Gallery with the Roman architecture prioritizing the structural system, for example, with the domes or the vaults built in the Pantheon or in the Basilica of Maxentius, respectively. In both cases, their weight is lightened with coffers and by using a lighter material progressively, without losing the feeling of mass and gravity. Just the same sensation that you have when you are in the hollow slab of the Yale Art Gallery.

So we can state that the hollow slab of the Yale Art Gallery is linked with the essence of the Roman construction, where a single element, in this case a slab, is used for structure, facilities, etc. issues.

## Conclusion



Figure 8: First Unitarian Church (1959-67)  
Source(s): Brownlee, David and De Long, David. 1991

After more than fifty years, we can state that the new character exhibited by the Yale Art Gallery had a great impact in the whole architectural world. The mass of its wall and the density of its slab was a great breakdown with the International Style's ideals of lightness and transparency.

However, this breakdown was especially significant in Louis Kahn's career as explained at the beginning of this paper. If we look at the next projects that followed the Yale Art Gallery, we can see that this building opened several researches, all of which would follow him for his entire career, as we can easily see from the mass of the Trenton Bath House (1954-55) to the Kimbell Art Museum's (1966-72), or from the density of the Adler House (1954-55) to the Philips Exeter Library's (1965-72).

Nonetheless, these two lessons -mass and density- were not the only ones that Kahn learnt from Rome and the Mediterranean architecture. For example, we can link the space of the Pantheon with the Exeter Library (1965-71), the plan of his Mausoleum with the First Unitarian Church (1959-69), or details of the Ara Pacis with the wood of the Fisher House (1967). But these new lessons will be presented another time...

**References:**

- American Academy in Rome Archives. New York.
- Brownlee, David and De Long, David. 1991. Louis I. Kahn: in the realm of architecture. Los Angeles: Museum of Contemporary Art.
- Brown, Frank E. 1961. Roman Architecture. Nueva York: George Braziller
- Choisy, Auguste, 1899, Histoire de l'Architecture. Paris: Gauthier - Villars,
- Hochstim, Jan. 1991. The Paintings and Sketches of Louis I. Kahn. New York: Access and Rizzoli.
- Kahn, Louis I., quoted in Huxtable, Ada Louise, "What is your Favorite Building?," New York Times Magazine, May 21, 1961: 34-35
- Kahn, Louis I. 1987. The Louis I. Kahn Archive: Personal Drawings. New York: Garland
- Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical Museum Commission. Philadelphia.
- Jacques, Annie et al. 1985. Roma antiqua. Envois des architectes français (1788-1824), Forum, Colisée, Palatin. Rome: École française de Rome
- Scully, Vincent. 1962. The Earth, the Temple and the Gods: Greek Sacred Architecture. New Haven: Yale University Press.
- Wurman Richard.1986. What will be has always been. The words of Louis I. Kahn. New York: Access and Rizzoli.