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**Figuration before form, diagrams and form drawing
in the work of Louis I. Kahn**

Abstract

Through exploring some of Kahn's works, the essay aims to demonstrate the deep connection between drawing-diagrams and the realized work, where form materializes through the figuration of its simple patterns.

To clarify this potential for listening, the essay addresses the dimension of drawing in the work of Louis I. Kahn. In his design research, the architect understands and uses the interpretive power of diagrams, which, in the book *Louis I. Kahn: Conversations With Students* (1998), calls "form drawing". A thought-form considered fundamental to the Estonian architect, who from the 1960s onward would use this diagrammatic tool as a measure for investigation in defining potential forms of architecture.

Keywords

Louis I. Kahn — Diagram — *Form Drawing* — Figuration — Form

Drawing and process

Regardless of the system of representation used, architectural drawing can never fully collimate with the experience of the built reality. Drawing, whether in its expressive dimension – the sketch – or in its descriptive dimension – the technical and digital representation – can exclusively identify a foreshadowing of the possible.

The materiality of drawing opens up new possibilities of representation to identify the potentialities connected with it. As Tomás Maldonado argued in his book *Critica della ragione informatica* [Critique of informatics reason] (1999): we need to overcome the rhetoric of 'technophobia' and 'technophilia', seeking to make the foundational statutes of the disciplines dialogue with the evolutions and dynamics of society, building a living and open environment capable of constructive co-evolution.

To identify the most appropriate tool to represent architectural design, one cannot operate in a predetermined manner but opt for a choice that is open to the many variations that arise from time to time. In this framework, besides being a collective and symbolic language, drawing also expresses a subjective dimension.

As Francesco Cervellini reminds us, drawing constitutes the main place of design formation, «the irreplaceable place of design formation»¹ (2016, p. 759) that offers an answer to the questions that architecture poses. A few years earlier, Roberto de Rubertis also reminds us that drawing is: «something more than a tool external to the designer, something other than an autonomous 'tool'. On the contrary, it becomes an integrated 'peripheral' of him [...] It becomes a temporary archive of memory»² (1992, p. 2).

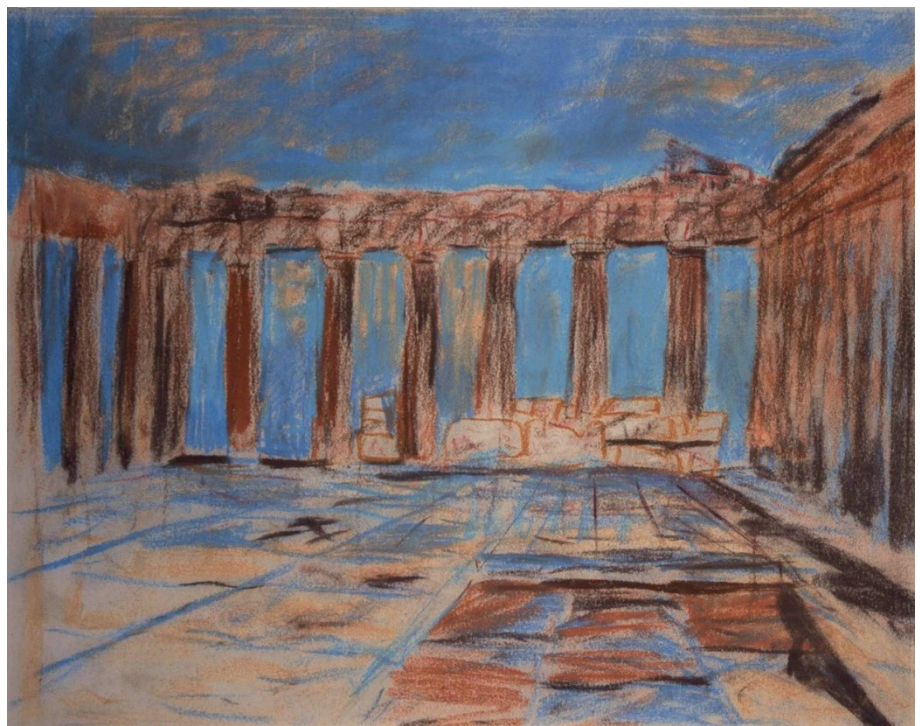
It is continuing in the words of Paolo Giandebiaggi (2019), who defines

Fig. 1

Louis I. Kahn, St Mark's Basilica, Venice, 1951, pastel on paper, 31.7 x 39.4 cm. Sue Ann Kahn / Art Resource, NY. (Mansilla, 2001, p. 30).

Fig. 2

Louis I. Kahn, Parthenon's Interior, Athens, 1951, pastel on paper, 28.6 x 35.6 cm. Architectural Archives of the University of Pennsylvania - Stuart Weitzman School of Design. (Mansilla, 2001, p. 83).



drawing as an «intersection of reflection and memory [that] is expressed in the course of ideation in four phases: preparation, incubation, lighting and verification» (2019, p. 98). An incubation (the sketch) precedes the more purely descriptive phases of the project (preliminary, final and executive design) and often follows the moment of preparation (the survey). A moment, that of the sketch, which intuitively gathers the information and stimuli that the project will potentially develop.

The drawing for Luis I. Kahn

As it is easy to imagine, for Louis Isadore Kahn (1901-1974), all the stages involved in drawing as a design process are well defined and present in his work. Suppose the more operational and descriptive stages of design

drawing are neglected. In that case, it can be said that the relationship that the Estonian architect established with drawing is an intimate one and, at the same time, one of potential research.

As evidenced by Jan Hochstim's (1991) catalogue of most of Kahn's paintings and drawings, the investigative dimensions of Kahn's drawings are multifaceted. One example is the influences of Louis Lozowick's 1930s lithographs in determining his early style of representing reality. This phase of his formation highlights the restlessness that characterized his early years of training and forced him to draw on different sources of inspiration (Montes Serrano & Galván Desvaux 2016). Also, considerable interest is his carnet de voyage and various drawings on board that testify to his travels in Europe from 1928 to 1929 and to Italy, Greece, and Egypt from 1950 to 1951 (Mansilla 2001) (Figg. 1, 2).

In these notebooks, the watercolour, pastel, and pencil drawings reveal rapid style changes, testifying to the simultaneous process between an evolving way of drawing and an understanding of the architectural shape of the individual objects represented. Reflections later reformulated in Kahn's subsequent architectures, showing how the work on the sketches achieved an extreme synthesis between modernism and the historical form that distinguishes his work (Johnson et al. 1996).

This second phase of his, related to travel drawing, provides us with an amazing body of work. Far from the rigour of his buildings, these sketches are veiled by an air of romanticism that closely resembles the work of artists who strongly inspired him, such as Henri Matisse (1869-1954) and Pablo Picasso (1881-1973).

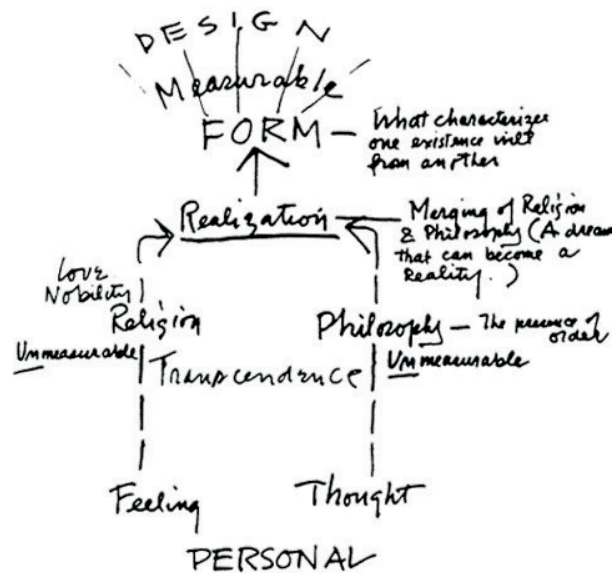
With this experiences-drawing, Louis Kahn laid the foundation for what will be a close connection to his design experience. A potential for listening, between drawing and design, continually fed by practice, in an attempt, on the one hand, to define a style of his own in the making and, on the other, to identify a way of researching what will be new architecture.

Only from the 1960s onward does the search for the 'form' of architecture for Kahn become a requirement. In the text *Beginnings: Louis I. Kahn's philosophy of architecture* (1984) by Alexandra Tyng – the architect's daughter – the development of Kahn's thought is also chronologically illustrated in relation to previously unpublished correspondence and notes.

In this regard, a diagram-scheme (Fig. 3) explains the architect's position very well. This manifests as the result of two opposite desires, the 'Feeling' and the 'Thought'. Its realization, as a union of 'Realism' and 'Philosophy', leads to 'Form', as a 'Measurable Project.' A dream that becomes reality that needs to translate all the mental images of inspiration into tangible reality (Desvaux & Tordesillas 2017).

Concerning the form search, the dimension of drawing assumes a key role in interpreting his work. On the one hand are the drawings for 'Feeling', like the previously illustrated ones made in the early phase of his training and travels. On the other side are the drawings for 'Thought'. A thought that manifests itself through drawing, or as Franco Purini reminds us, «drawing is thought itself, indeed it is the fundamental form-thought of the architect, the elective place in which form appears, and in its purest and most enduring essence»³ (2007, p. 33).

The words chosen in his diagram are not used symbolically, but almost as theoretical constructs they are meant to represent. 'Form' is not strictly related to the physical configuration of the represented object, but indicates a guiding tool within which the project can unfold. Similarly, 'Realization',

**Fig. 3**

Louis I. Kahn, On the creation of Form, 1960. (Tyng, 1984, p. 30).

which precedes ‘Measurable Project’, does not indicate the physical restitution of something in the world of the real; but is limited to the meaning that allows a drawing to be transformed into something approaching an enlightened concept. Kahn’s definition of ‘Realization’ is closer to the sense of revealing something that was previously hidden and unknown.

Kahn clarifies the relationship between ‘Form’, as a guiding concept operated through drawing, and ‘Design’, which emerged most clearly in the early 1960s. In the second period of his design research, Kahn understood and used the interpretative power of diagrams, which, in the book Louis I. Kahn: *Conversations With Students* (1998), calls “form drawing”.

‘Form’ becomes impersonal, an inexpressible source, underlying the subordinate order that in the project is transfigured into the determination to want to be what architecture requires.

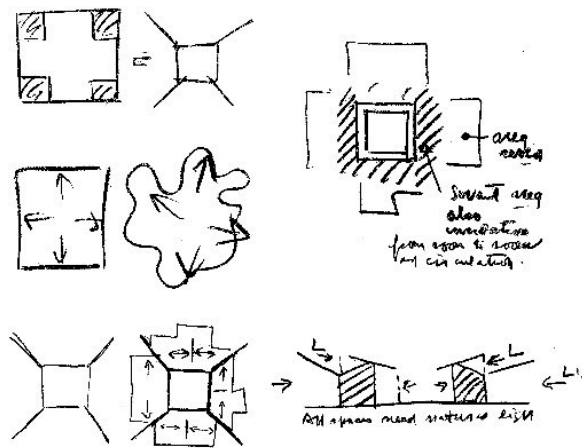
The architect’s habit of resorting to diagrams as ‘form-drawing’, or with form-thinking makes clear his desire to arrive at figuration through a series of steps, not consequential, that accommodate a series from time to time of problems internal to the project. With these diagrams, he interrogates architecture, asking it what it wishes to become.

‘Form drawing’ as form-thinking

Clarifying the use of *Form drawing* is the two examples cited in an interview published in 1961 in issue seven of *Perspecta* journal published by the Yale School of Architecture. On the one hand, a project that was never built, the *Goldberg House* (1959) in Rydal, Pennsylvania, and on the other, the events of the *First Unitarian Church* (1959-1969) in Rochester, New York State.

Using simple geometric shapes accompanied by textual annotations allows him to explore the layout of the various rooms. The example of the house diagrams appears symbolic of the project’s development, which foreshadows the space’s nature even before its form is fixed. The comparison between the square and the dynamic tension of the diagonal challenges the orderly system of the regular form.

Similarly, at the first meeting with the congregation, Kahn presented his famous *Form drawing* diagram illustrating the concept he had developed for the spatial configuration and functional diagram of the building. It im-

**Fig. 4**

Louis I. Kahn, Form drawing of the Goldberg House, 1959, Pencil on paper. Louis I. Kahn, University of Pennsylvania and Pennsylvania Historical and Museum Commission. (Kahn, 1961, p. 13).

pressed the assembly so much that, given its expressive and persuasive power, it succeeded in realizing the initial concept.

As is also evident in the drawings, the design of the First Unitarian Church had several evolutionary stages. The first began in July 1959 moment of the commission, and ended in December 1959 when Kahn presented his first diagram drawing, entitled by the architect himself “First Design” (Fig. 5). In the act of describing it, the architect himself tries to give the reasons for its conception and first draft: «A square, the sanctuary, and a circle around the square which was the containment of an ambulatory. The ambulatory I felt necessary because the Unitarian Church is made up of people who have had previous beliefs» (Kahn 1961, pp. 14-15).

In the second phase, after the rejection of the first design, Kahn considered separating the school buildings from the church (Fig. 6). The third phase began from the spring of 1960 until June 1961 (Fig. 7), when the congregation approved Kahn’s final solution (Dogan & Zimring 2002).

Despite the different spatial solutions identified, it seems puzzling how faithful the final design (Fig. 8) is to that concept identified at the beginning.

Both cases examined show the synthetic ability to prefigure form before identifying the final form of the building.

As László Méri states in his essay *I limiti della razionalità. Intuizione, logica e trance-logica* [The limits of rationality - Intuition, logic and trance-logic]: «in Western culture, a purely rational form of intelligence, based on logic, has gained a dominant role [...] this kind of thinking [...] has undoubtedly proved its *raison d’être* and power»⁴ [Méri, 2005, p. 8]. Likewise, however, it can be said that there are other forms of knowledge. In the drawing, the descriptive and prescriptive dimension, as a privileged quality, has predominated in our society. Whereas, the investigation of the characteristics of indeterminacy of form, which allow us to move in reading realities oscillating between what is and what could be and which are not governable only through predetermined rules or given prescriptions, has often been sidelined.

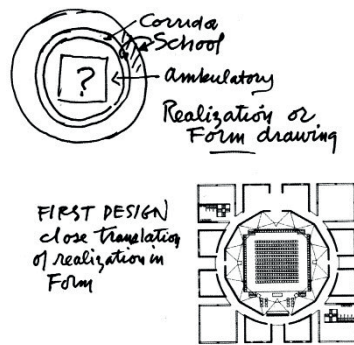
When associated with the qualities of indeterminacy, drawing – or rather than the project sketch – allows one to participate in that abstraction of form that shows the potential of the architecture that will be or can be (Valentino 2020).

The value and purpose of the sketch for the project

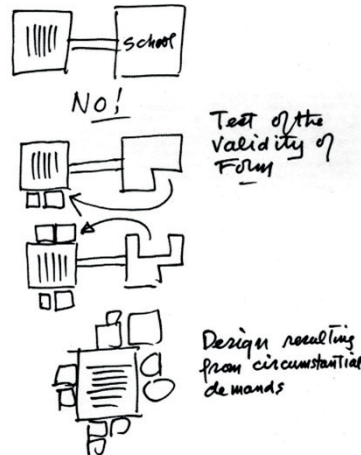
As illustrated above, in the first period of research and education, from 1931 to 1960, Kahn focused on the potential of drawing as a thought-form

Fig. 5

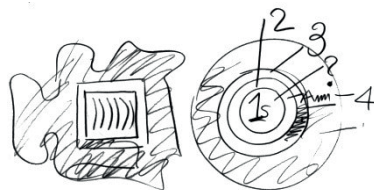
Louis I. Kahn, Realization or form drawing and FIRST DRAFT, 1959. Pencil on paper. Louis I. Kahn Collection, University of Pennsylvania and Pennsylvania Historical and Museum Commission. (Dogan & Zimring, 2002, p.50).

**Fig. 6**

Louis I. Kahn, Spatial alternatives, 1959. Pencil on paper. Louis I. Kahn, University of Pennsylvania and Pennsylvania Historical and Museum Commission (Dogan & Zimring, 2002, p.50).

**Fig. 7**

Louis I. Kahn, Explanatory diagram of the relationship between spaces, 1961. Pencil on paper. Louis I. Kahn Collection, University of Pennsylvania and the Pennsylvania Historical and Museum Commission.

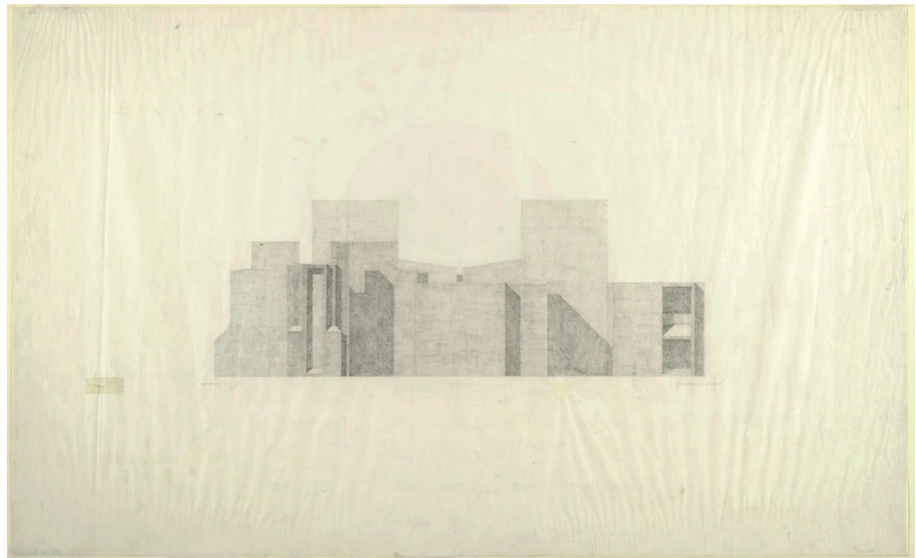


that makes the ontology of architecture tangible; in the second phase, from 1960 to 1974, he investigated the more spiritual aspect of drawing for design.

The same author in *The Value and Aim in Sketching* (Kahn 1931) reminds us of the importance of sketches in addressing design problems. They do not constitute a crystallization of thoughts on paper but are to be understood as questions awaiting answers for design action.

In the last phase, Louis I. Kahn makes instrumental use of the sketch. That is, he translates it into a device of inquiry. An instrument that starts from what might be called a design process and proceeds by diagrams. Diagrammatic drawings are very far from the theory of diagrams that has always belonged to the culture of the Modern Movement, where the design of space is resolved through functional diagrams. Instead, Kahn's diagrams – *Form drawings* – become a procedure for graphing spatial relationships between parts. An ongoing interrogation of the potential of architecture. Reading through the sketches of the architect's two works-the – the Goldberg House (1959) and the First Unitarian Church (1959-1969) – enables us to demonstrate the deep connection between the use of drawing-diagrams and the completed work, where form materializes through the figuration of its simple patterns.

Form drawing is, for all intents and purposes, a fundamental thought-form

**Fig. 8**

Louis I. Kahn, First Unitarian Church and School, Rochester, New York, Final version: elevation, pencil on paper, 1961, 41 x 69.9 cm. MoMa New York (407.1964). Last accessed October 20th, 2021 <<https://www.moma.org/collection/works/565>>.

for the Estonian architect who takes on the operational dimension to investigate potential forms of architecture. A primal condition immediately brings a figuration, which in the later stages of drawing allows a gradual approach to the final shape.

Today, in an age heavily influenced by the representation of architecture through computer tools, the device of the sketch still opens up possibilities for investigation. As Kahn's lecture shows us, some occasions should be sought to increase the spectrum with which the potential of drawing dimensions unfolds.

Note

¹ The text is a translation by the author, the original one in Italian is as follows: "il luogo insostituibile di formazione del progetto" (Cervellini 2016, p. 759).

² The text is a translation by the author, the original one in Italian is as follows: "qualcosa di più che uno strumento esterno al progettista, qualcosa di diverso da un 'utensile' autonomo. Diventa al contrario una sua 'periferica' integrata [...] Diventa un archivio temporaneo della memoria" (de Rubertis 1992, p. 2).

³ The text is a translation by the author, the original one in Italian is as follows: "il disegno è pensiero esso stesso, anzi è la forma-pensiero fondamentale dell'architetto, il luogo elettivo nel quale la forma appare, e nella sua essenza più pura e durevole" (Purini 2007, p. 33).

⁴ The text is a translation by the author, the original one in Italian is as follows: "nella cultura occidentale, una forma puramente razionale dell'intelligenza, basata sulla logica, ha conquistato un ruolo dominante [...] questo tipo di pensiero [...] ha senza dubbio dimostrato la sua ragion d'essere e la sua potenza" [Mérö 2005, p. 8].

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