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on monuments and monumentality: louis i. kahn

One should not be surprised to find, in fact one would expect to find an archaic quality in architecture today. This is because real architecture is just beginning to come to grips with a whole new order of artistic expression, growing in turn from the new set of tasks which society has set for the architect.
Louis I. Kahn, 1955

Between the wars it was rare for modern architects to receive large commissions requiring monumental treatment. Certainly there were projects, such as Tatlin's Monument to the Third International (1919) or Le Corbusier's League of Nations (1927) and Mundaneum (1929), which suggested some ways in which the new architecture could be adapted to deal with the problems of size and symbolic expression posed by large institutions. But the hold of traditionalism over official taste remained strong between the wars in the United States, the Soviet Union and most of Western Europe, especially where civic ideals were involved. Perhaps this was understandable given that these were situations in which the need to *preserve* values and to suggest continuities with the past was pressing. This was particularly the case under the totalitarian regimes, where ancient models enjoyed a skin-deep revival in the search for imperial symbols. As shown earlier (Chapter 20), there were many similarities between Nazi Germany and Stalinist Russia in the choices of an 'official' monumental manner. Francoist Spain in the late 1930s and 1940s offers another case of a dictatorship insisting upon an all too obvious replication of hallowed national prototypes such as the Escorial. Only in Fascist Italy in the 1930s was there a concerted attempt at developing a modern architecture with echoes from tradition for the purposes of state representation.

In the circumstances it was understandable that monumentality should have been temporarily regarded with suspicion by the liberal-minded, as if it was, in and of itself, an inherently anti-democratic characteristic. By 1943, however, Sigfried Giedion and Josep Lluís Sert were already discussing a new monumentality to emerge in the post-war period. In a pronouncement entitled 'Nine Points on Monumentality' they referred to monuments as 'human landmarks … intended to outlive the period which originated them', and as 'the expression of man's highest cultural needs'. They also discussed the role of collective symbols and the need for an urbanism giving 'more than functional fulfilment'. A decade later Giedion pleaded for the creation of symbolic centres to cities. CIAM meetings shifted gear from the 'four functions' towards a more nebulous and 'emblematic' characterization of urban form. Perhaps this change of mood was linked to the more 'permissive' view of tradition

Louis I. Kahn, Kimbell Art Museum, Fort Worth, Texas, 1966–72, detail

and precedent expressed by Giedion in the same period.

Between 1945 and 1965, the dissemination of the modern movement around the world meant that it became, by degrees, the rule of the established order rather than a fringe product of the avant-garde. While it was sometimes co-opted to express 'progressive' ideals (e.g. the United Nations or Brasilia), it had also come to terms with some of the traditional rhetorical functions of architecture such as the embodiment of the state or the preservation of institutions. Monumentality is a quality in architecture which does not necessarily have to do with size, but with intensity of expression. In any event, the problem was to handle public buildings with the appropriate degree of presence and accessibility: to establish the terms of a democratic monumentality. Le Corbusier, Mies van der Rohe and Aalto gave indications in their works of the late 1940s and early 1950s of ways in which this might be done (e.g. Chandigarh, St-Dié, Crown Hall, Säynätsalo). External social conditions and the internal evolution of modern architecture were not out of step when it came to questions of civic representation and monumental expression.

There was still the problem bequeathed by the nineteenth century, that no clear language existed to distinguish one civic function from another, or from lesser functions in a hierarchy. The increase in the number of building types fostered by industrialization conspired with confusions over 'style' to create a babbling urban order which no longer legibly portrayed the relationships of society in the cityscape. Ideal cities of the early modern movement certainly brought their own version of clarity, but tended to concentrate on living and working, leaving monumental expression for skyscrapers and freeways; in the Ville Contemporaine, management and circulation had been the elements handled most forcefully. The designs for Brasilia revealed an attempt at using the skyscraper as a major symbolic element in a monumental state ensemble, but as part of a vast panorama of almost surreal objects set up on a virtually continental scale.

After the Second World War Le Corbusier's architecture began to possess a new visual weight and heroic force, which was not unconnected with his own need to solve problems of monumental expression. At both St-Dié (1946) and Chandigarh he seems to have been preoccupied with some new vision of an acropolis, at any rate with ceremonial urban spaces combining formality and symmetry with counterthemes of asymmetry and dynamism. Rough effects of *béton brut* and the strong articulation of shadow allowed him to create an allusive symbolic language in the service of an institutional pattern. In Chandigarh, particularly (as we have seen), he transformed various ancient types and formulations (e.g. the basilica and the *diwan* into the High Court, the dome/portico combination into the Parliament) in an attempt at providing images of a suitably honorific character. Pastiche of these prototypes was avoided by grasping their basic principles of organization and meaning, and by integrating these into a well-tried architectural vocabulary. The Five Points were amplified and given a new sense of scale and dignity; *brises-soleil* in vast repeating rows proved suitable to the *gravitas* of the artist's intentions; and his impeccable sculptural control and sense of visual order ensured that unity and diversity were held in balance.

This is not to suggest that a rugged sculptural treatment of the kind used at Chandigarh was an automatic recipe for good monumentality; the proposition is adequately disproved by the all too numerous examples around the world of concert halls, state monuments, parliaments, etc. in ungainly elephantine concrete forms surrounded by wildernesses of 'plazas', conceived between the

642 Pedro Ramírez Vázquez, National Museum of Anthropology, Chapultepec, Mexico City, 1963–4

643 Gerhard Kallmann, Michael McKinnell and Edward Knowles, Boston City Hall, 1962–8

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late 1950s and the early 1970s. But Le Corbusier's forceful late style could prove useful as a starting point for some sensitive talents who took over not only the external effects, but also the intellectual strategies for the transformation of precedent. The Japanese examples cited in the last chapter suggest ways in which architects like Mayekawa and Tange were able to blend together Corbusian suggestions with a reinterpretation of Asian timber traditions, in creating a civic iconography for new democratic institutions such as town halls.

Modernism may have dislodged the classical apparatus for monumental representation, but it also allowed such fundamental devices as the grand portico, the processional axis and the ceremonial platform to be reinterpreted in fresh ways. Utzon's Sydney Opera House was evidence of the way in which a twentieth-century architect could take inspirations from one tradition (the ruins of ancient Mexico) and transform them to deal with a totally different setting and context. In the post-war years there was often a pressure towards 'national' expression using modern means. In Mexico itself, for example, a bold horizontality of great mass and gravity was developed to deal with the problem of public institutions. The National Museum of Anthropology in Mexico City of 1963–4 by Pedro Ramírez Vázquez embodied the ideal of 'national inclusiveness' in a monumental reinterpretation of the patio dominated by a colossal stone column/parasol on the main axis with a sheet of water tumbling into a basin below: a combined image of tree of life, fountain of renewal, and national cultural unity. There were subtle allusions to pre-Columbian sources in the overall form, the dominant character and certain of the details of the building, such as the sun screens.

The Communist regimes in the Soviet Union and China both developed 'state' styles that combined a ponderous reuse of historical models with a light sprinkling of identifying features – hammers and sickles, stars, even traditional Chinese roofs in the latter case (e.g. the Nationalities Cultural Palace, Beijing, of 1958 by Zhang Bo). The Moscow State University by L. V. Rudnyev, S. J. Chernyshev, P. V. Abrosimov and S. J. Khryakov (1949) relied upon a skyscraper as its centrepiece but this was in a 'Stalinist Gothic' mode with a central spire rising to more than 820 feet (250 metres), the whole arranged upon a neo-classical plan. With the process of 'de-Stalinization' initiated by Khrushchev in 1956, Soviet architecture registered a slight change of direction. The Kremlin Palace of Congresses in Moscow of 1959–60 allowed for a version of the International Style in its lobbies,while the exterior colonnade was visibly a screen of slender, angled piers in front of a glass curtain wall. In other words, classical devices were here simplified in modern terms – a strategy which placed the Palace of Congresses in the same architectural world as many American official buildings of the same period.

In the North American city, the urban monument had to make its presence felt in the context of the downtown skyscraper. Devices were researched which might distinguish the public building from the private world of business. The Boston City Hall (1962–8) by Gerhard Kallmann, Michael McKinnell and Edward Knowles, relied upon a rugged sculptural language in rough reinforced concrete with red-brick ramps, floors and steps bringing the surrounding plaza in at the lower levels. The building tried to deal with the contradiction between authority and openness, combining visual weight with active interpenetrations of space. The main forms expressed the hierarchy of the enclosed institution clearly. The offices of the bureaucracy were on the top floors, legible in the repeated precast system of window elements, while the ceremonial functions (e.g. the mayor's office) were slung in amplified

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volumes at the middle level; the most public facilities being at the ground level where they were most easily accessible. The programme seemed to suggest a rectangular plan around a court, but this basic diagram was then brought alive in the dynamic terms of what Kallmann called an 'action architecture' exploiting dramatic interior spaces, ascending movement and framed views of the surroundings. The whole was composed into an overall shape of considerable simplicity; at the top levels there was a marked horizontal emphasis which gave something of the character of a cornice, and supplied a strong contrast to the nearby skyscrapers. The concrete piers and variations in visual texture were clearly reliant on the model of Le Corbusier's monastery of La Tourette; while the lower brick mounds suggested the impact of Aalto. The architects were intrigued by those public palaces in Italy of the Middle Ages and Renaissance where piazzas penetrate a lower storey of arcades. The City Hall pulled together modern methods of component standardization with a restatement of classical rhetoric: the piers were a sort of 'grand order' in concrete, while the structural ceiling grid was reminiscent of coffering. These devices were firm reminders of the fact that the thin skins and slender *pilotis* of the International Style had proved themselves inadequate to handling a building of such scale. Boston City Hall grappled with a wide range of issues central to the problem of monumentality, and presented solutions which, if not always totally resolved, were none the less propelled by serious thought.

Rough concrete was not the only material in which schematic devices derived from classicism could be restated. In his design for the New National Gallery in Berlin of 1962–8, Mies van der Rohe envisaged a glass and steel temple on a podium – a sort of shrine to modern art. The main effect arose from the way in which the steel supports were carefully proportioned and spaced in a way which suggested a latterday version of classical columns while the vast overhanging steel roof evoked the *idea* of an entablature. The rectangular ceiling grid recalled certain of Schinkel's designs for simplified coffering or trellises. In the interior the earlier Miesian notion of an abstract, 'universal' space was restated. In this case it was subdivided by columns and flexible planar partitions to bear pictures. Sculptures were left standing in the voids between. It was as if the trabeation, the overhangs and the thin planes of the Barcelona Pavilion had been cross-bred with the symmetry and spatial ideas of Crown Hall at the Illinois Institute of Technology (1950–6). Some features of the solution were even anticipated in Mies's unbuilt proposal of 1935 for the German Pavilion at Brussels (Chapter 20). The New National Gallery worked within the conventions of formality and *gravitas* which Mies had established for buildings of civic importance. Like Le Corbusier at Chandigarh, he was able to achieve monumentality by expanding a pre-existing

644 Eero Saarinen, TWA Terminal, Kennedy Airport, New York, 1956–62

645 Ludwig Mies van der Rohe, New National Gallery, Berlin, 1962–8

646 Lincoln Center, New York: left of plaza, Philip Johnson with Richard Foster, New York State Theater, 1964; centre, Wallace Harrison, Metropolitan Opera House, 1961–5; right, Max Abramovitz, Philharmonic Hall, 1962

architectural system based on rigorous intellectual and expressive rules. What stopped the historical allusions from being a game of mere quotation was the forceful expression of ideas in an abstract form brought alive by the tectonic emphases of structure. Certain essentials of classicism were rethought in a modern industrial material and in a new social context.

In the United States the expansive, optimistic, and, indeed, imperial undercurrents of the post-war years were manifest in many commissions for large-scale monuments. The influence of Beaux-Arts classicism certainly did not die with the introduction of modern architecture. At its deepest this tradition nourished an architect like Louis I. Kahn; but a more obvious, less expressive and often banal attempt at neo-classicism also emerged in the 1950s. This was no doubt part of a general mood of dissatisfaction with the restrictive minimalism of the American version of the International Style (a reaction expressed in other ways as well, e.g. in the 'modern Baroque' of Eero Saarinen's TWA terminal at Kennedy Airport, 1956–62). Thus architects like Edward Durell Stone (the American Embassy in New Delhi, 1954), Philip Johnson (the Sheldon Memorial Art Gallery in Lincoln, Nebraska, 1963), and Wallace Harrison and Max Abramovitz (with Johnson, the Lincoln Center in New York, 1961–5) indulged in grand axes, symmetry, expensive materials or tell-tale arches, to disguise an essentially bogus and skin-deep understanding of the nature of monumentality. These architects were well aware of the need to combine traditional schemata with modern technology, but were still unable to transcend a tendency towards 'camp'. Classical allusions were there in abundance; classical principles were almost entirely lacking.

Transformations of classicism were not the only viable ways for creating a new monumentality, as was well demonstrated by Utzon's Sydney Opera House, or by Hans Scharoun's Philharmonie in Berlin, which was in the 'Expressionist' free-form tradition. At Coventry Cathedral (1951–62), Basil Spence even attempted to design in an abstract Gothic manner, but his spindly supports and fussy details were expressive failures. What was lacking was not so much conviction, as an ability to translate that conviction into form. Nor were monumental tendencies in the late 1950s and early 1960s restricted to civic and religious programmes; especially in the United States there seems to have been a sort of inner will to grandeur affecting many architects and building tasks. The taut steel-frame skyscrapers gave way bit by bit to heavier-looking boxes clad in marble and adorned with massive slivers of stone not unlike pilasters. Even housing was overwhelmed by a wave of megastructural thinking. Thus the myth of 'total design' came together with elephantine forms in yet another attempt at giving a clear shape to the American city.

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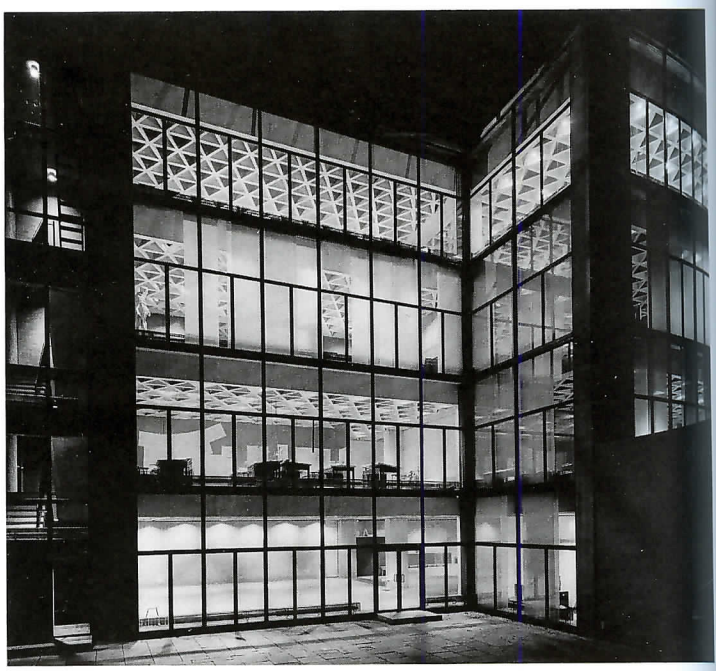
The master of monumentality in the United States in this period was, without a doubt, Louis I. Kahn. Monumentality was not, of course, his only preoccupation, but it was certainly a major one, and he evolved a philosophy and system of forms extraordinarily well suited to the expression of honorific themes and moods. Kahn was able to avoid some of the pitfalls mentioned in earlier examples; he was capable of handling problems of large size without degenerating into either an 'additive' approach or an overdone grandiosity; he knew how to fuse together modern constructional means with traditional methods; he was steeped in history but rarely produced pastiche; and his architecture was infused with a deep feeling for the meaning of human situations, which enabled him to avoid the mere shape-making of the formalists.

Kahn's formation took place before modern architecture had established a firm foothold in the eastern United States. He was trained in the Beaux-Arts system at Philadelphia under Paul Cret and was therefore fully acquainted with the classical grammar, with devices of axial organization, hierarchy and composition, and with an attitude to design which took it for granted that one should consult tradition for support. In Kahn's education great emphasis was placed upon the discovery of a central and appropriate generating *idea* for a building which was to be captured in a sketch rather like an ideogram (an '*esquisse*'). The attitude towards the past was not slavish and Cret was not blind to the need for a new architecture of some description, but one incorporating old lessons. The young Kahn certainly sensed the decadence of most American architecture of the 1920s and 1930s, and realized the need for a change which might better accommodate the needs and the means of the times. He absorbed almost unconsciously a structural-Rationalist emphasis on construction, and in later life several of his strongest ideas relied upon poetic interpretations of basic structural ideas. Kahn also studied Le Corbusier's *Vers une architecture* and learned much from Sullivan and Wright, and later from Mies van der Rohe. But he was a slow developer, and his house designs of the 1940s were mostly unexceptional extensions of the International Style. The crystallization seems to have occurred in the early 1950s, prompted in part by Kahn's stay at the American Academy in Rome, and by his travels through Greece and Egypt. His sketchbooks of this period suggest he was trying to get back to basics – to probe the central meanings of architecture.

A key transitional work was the Yale University Art Gallery of 1951–3, in which Kahn responded to the many levels and textures of an eclectic urban environment with a subtle, inward-looking design. The interior spaces seemed to evoke an entirely different world from the brash mass-produced environment of standardized panels and suspended ceilings then prevalent in the United States, by subtle effects of light falling over the triangulated web of the concrete ceiling and by the direct use of materials, evident in the bare yet elegant concrete piers. The stair was contained in a cylindrical volume, and rose through a series of triangular changes of direction, thus hinting at the architect's later tendency to make strong formal distinctions between circulation and 'areas served'. The exterior took over the Miesian glass and steel façade, but gave it a new irregularity and softness; the side walls and qualities of interior space, meanwhile, were loosely evocative of Wright.

The Yale University Art Gallery was not a totally resolved work, and the sources were still not

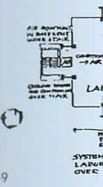


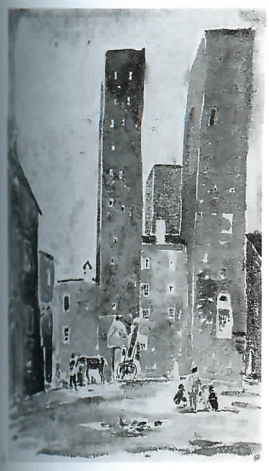
647 Louis I. Kahn, Yale University Art Gallery, New Haven, Connecticut, 1951–3

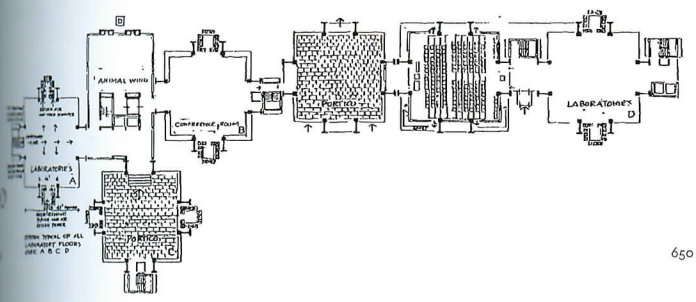
648 Louis I. Kahn, sketch of San Gimignano, 1928. Watercolour and pencil, 12 x 9¼ in (30.5 x 23.5 cm). Williams College Museum of Art, Williamstown

649 Louis I. Kahn, Richards Medical Research Laboratories, University of Pennsylvania, Philadelphia, 1957–65, plan

650 Richards Medical Research Laboratories







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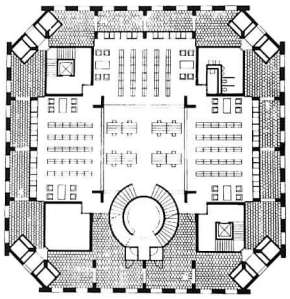
absorbed sufficiently for one to be able to speak of a coherent personal style. But the building still suggested a new archaic direction for American modern architecture. In the Richards Medical Research Laboratories at the University of Pennsylvania of 1957–65, Kahn pursued these qualities further. The laboratories required vast extract flues and flexible interiors, and the architect decided to express the distinction between the fixed and the variable, the serving and the served, by monumentalizing the service and stair-towers and treating the laboratories as attached cellular elements. The site was to one side of a main walkway through the campus, not far from a number of neo-Tudor buildings with varied tower silhouettes and windows with screens and panels, and it may be that Kahn was responding to this setting in making these moves. The plan was itself a subtle combination of the linear and the particulate, which also created harbours of space between the building and its surroundings, so that there was a gradual shift in scale from the context to the individual details. The geometry of the plan and the use of towers containing services and stairs as monumental devices intermediate in scale between small and large parts of a design suggest that Kahn may have been influenced by Wright's Larkin Building.

But any influences there may have been were now absorbed into the internal logic of a personal style, and the formal and functional logic of a particular design. The structural system of the laboratory spaces was precast concrete, and Kahn attempted to show how the building was put together by accentuating joints and connections. This was no mere structural exhibitionism, for the intention was to give a suitable scale and character to the social organization of laboratory work. The approach was the opposite of the one which clothes everything in a single envelope; indeed, revulsion against the 'neutral box' was a widespread phenomenon of the period. Kahn was here supplying a variety of formal devices, just as Le Corbusier had done in the Unité and at La Tourette, for the articulation of complex social programmes. Moreover, the Richards



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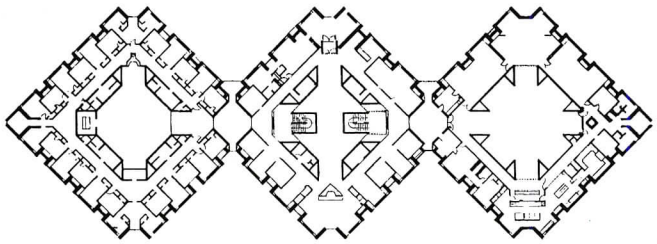

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Laboratories used brick and concrete in a direct, uncompromising way which appealed to the sensibilities a new generation.

However powerful its forms and ideas, Kahn's building was not totally practical as a laboratory. The principal difficulties arose from lack of sun protection in the façades, and (despite all the effort of the design process) from a lack of functional flexibility. But a work which does not function properly may still be architecture of a high order. On the basis of a clear organizing idea and logical system of servicing and structure, Kahn had been able to create a building combining a bold 'objectivity' with generalized antique qualities he had admired in Roman ruins and in the towers and townscapes of medieval Italy. When the first stage was completed in the early 1960s, Kahn's building seemed to be a firm reminder of timeless architectural values in an era otherwise beset by extremes of meaningless formal gymnastics or arid functionalism. Kahn attempted to put his own sense of the basics of architecture into words:

> If I were to define architecture in a word, I would say that architecture is a thoughtful making of spaces. It is not filling prescriptions as clients want them filled. It is not fitting uses into dimensioned areas … It is a creating of spaces that evoke a feeling of use. Spaces which form themselves into a harmony good for the use to which the building is to be put …
>
> I believe that the architect's first act is to take the program that comes to him and change it. Not to satisfy it but to put it into the realm of architecture, which is to put it into the realm of spaces.

Kahn's architecture was based in part on a social vision: this was a challenge to the status quo not through some Utopian expectation of the future, but through a mystical conservatism. For Kahn believed there to be archetypal patterns of social relationship that it was the business of architecture to uncover and celebrate. A good plan would be one which found the central meaning, as it were, of the institution that it housed. Related to this notion of a higher meaning in social forms was the distinction between 'form' and 'design'. Basically, Kahn believed that any architectural problem had an 'essential' meaning which far transcended a mere functional diagram. This organization would be found through a probing and detailed analysis of requirements followed by an intuitive leap which would uncover the 'type' of the institution. Only when this was discovered and embodied in a suitable symbolic form could the architect proceed to the stage of design – of giving the central, intuitive concept a material shape. A good design would be one where the 'form', the underlying meaning, was coherently expressed through all the parts.

This idealistic position with regard to the spiritual roots of both the social and the aesthetic realms motivated Kahn's major designs of the early 1960s and led him to clarify a simple set of 'type-forms' based on primary geometries – the square, the circle, the triangle, etc. – which were capable of a vast variety of interrelationships over certain kernel patterns of form and meaning. When one examines the plans of such diverse schemes as the Erdman Hall Dormitories at Bryn Mawr near Philadelphia (1960–5), the Indian Institute of Management in Ahmadabad, India (1962–74), and the National Assembly building at Dacca, Bangladesh (1962–83), one is struck by the consistency of the approach. Time and again the architect reverts to a basic organization in which the primary meaning of an institution is expressed in a central space of a concentrated social character based on square, circle or diamond, and related hierarchically to the surroundings by axes. Secondary spaces tend to be set out as a fringe

around the primary generator, marking out variations on the theme and containing smaller and more private functions. There is often a strong sense of the diagonal, with 90-degree and 45-degree directions combined. But these patterns of geometry – so like ornamental designs – are far from being arbitrary. They suggest crystals or mandalas or some other symbolic geometry. They remind one that Kahn, like Wright, had a pantheistic vision of nature which he attempted to express in universalizing abstractions. The strategy behind these plans may loosely recall Kahn's Beaux-Arts training, in which ceremonial routes of circulation tended to be laid out along the primary axis of the most important symbolic space of a scheme, but the finished buildings possess a spatial drama and other-worldly character which cannot be accounted for by pointing to particular influences. Kahn stated that he wished to evoke the 'immeasurable' in architecture, to translate his intentions of reality into a 'higher order' in which space, structure and light would be fused.

But to achieve the 'immeasurable' Kahn had to use the 'measurable' qualities of materials and construction. He never lost a feeling for the tangible presence of the wall as a major part of architecture, even when he employed reinforced concrete which might have allowed an open façade. But his walls took on the character of immaterial planes of light, while the shadows were modelled as if they were positive figures. Openings were reduced to simple voids cut deep through the outer skin, or to vertical slits where walls approached one another without actually touching. Sometimes the fundamental geometrical themes of a design – circles, squares, and so on, were reiterated in the secondary elements of cylindrical towers or in the shapes of apertures. Construction was supremely important to Kahn, and he detailed his buildings with great attention to joints, connections and the texture or colour of materials.

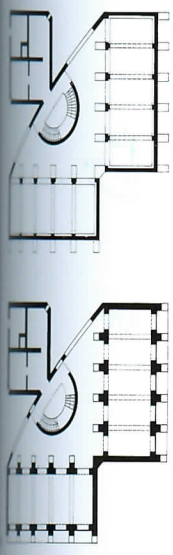
Kahn was just as interested in the spaces between buildings as he was in the buildings themselves. In fact his designs often involved sophisticated reversals of figure and ground, mass and void. At Ahmadabad, in the Indian Institute of Management (1962), the programme was translated into a dense citadel, a weave of 'streets', 'squares' and

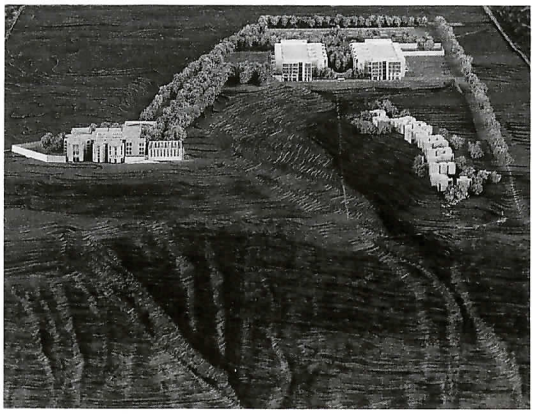
652 Louis I. Kahn, Library, Phillips Exeter Academy, New Hampshire, 1965–72, plan

653 Louis I. Kahn, Erdman Hall Dormitories, Bryn Mawr College, near Philadelphia, 1960–5, plan

653 Louis I. Kahn, Indian Institute of Management, Ahmadabad, 1962–74, typical upper-floor and ground-floor plans

654 Indian Institute of Management, rear view of dormitories





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655 Louis I. Kahn, Jonas Salk Institute for Biological Sciences, La Jolla, California, 1959–65, model of 2nd scheme, 1961–2

656 Salk Institute, view towards sea

657 Salk Institute, ground-floor plan

transitional spaces. The dormitories of the Institute were laid out in diagonal flotillas to catch the prevailing winds. The architect created a deep zone of transition between the outer edge and the interiors of individual buildings, to allow for shaded porticoes and walkways. The colossal cylinders of brick and concrete had something of the quality of the Roman ruins that Kahn had so admired. But it was a poetry of shapes which seemed to transcend the merely European tradition; Kahn, like Le Corbusier, was intrigued by the cosmological geometries of the Jaipur observatories, and these may have played a part in the distillation of his vocabulary.

In the project for the Jonas Salk Institute for Biological Sciences (1959–65), close to La Jolla, San Diego, California, Kahn had to design for a community of scientists involved in concentrated research. Another architect might have attempted to embody the forward-looking aspirations of such a programme. But Salk was no ordinary client and insisted that the human implications of science be explored. To Kahn the suitable references seemed to lie in such prototypes as monasteries or other forms of intellectual retreat. Three main clusters were planned standing apart from one another in the virgin landscape with views towards the Pacific: the community meeting and conference areas (the 'Meeting House'), the living quarters (the 'Village'), and the laboratories themselves (the only part built), contained in parallel blocks with a water garden between them. The laboratories were on an open plan and could be altered at will to fit the needs of different experiments. They were spanned by perforated beams deep enough to accommodate an entire 'service floor' for adjustable ducts and tubes. The lowest storey was placed below ground level to bring down the height of the ensemble and was lit through sunken courts. The laboratories were linked by bridges to small studies which had views into the garden or out towards the sea; a distinction was made between the society of shared endeavour and the private world of thought. These studies were substantially furnished cells – or perhaps cabins – for contemplation. On the exterior they were expressed by teak-panel embrasures set into smooth concrete planes with refined joints and incisions which picked out shadows. The concrete was the same colour as the travertine used on the floor of the outdoor space, and the overall effect combined nobility with finesse. The diagonal fins in naked concrete clearly owed something to Le Corbusier, but the idea of the building had an internal life of its own.

Comparisons have sometimes been made between the Salk Institute and ancient Roman complexes such as Hadrian's Villa at Tivoli or Diocletian's Palace at Spalato, but this 'source hunting' does relatively little to explain the sublime order of the result. Kahn was steeped in history, but he also broke with it, aspiring towards a basic presence, a metaphysical state which he referred to obscurely as 'ground zero'. There can be no doubting the sense of antiquity or of the archaic in certain of Kahn's realizations (Salk included), but this was achieved by modern means, in which space, structure, materials and light were endowed with a resonant abstraction.

While the plan of the Salk Institute suggests an axial composition, the intentions and experience of the building are not so simple. As in several of Kahn's works, one approaches the site on an indirect path through the 'filter' of a grove of trees. The first impression is of a precinct separated from the outside world by a moat and by a central gate with steps. As one draws closer, the eye is launched towards the infinity of the Pacific horizon 'framed' as if by a proscenium. A thin, translucent line of water splits the platform down the middle, drawing sky and light down into the space. The route is then diverted off-axis by a stone bench blocking the way. The receding planes of concrete dissolve in light.

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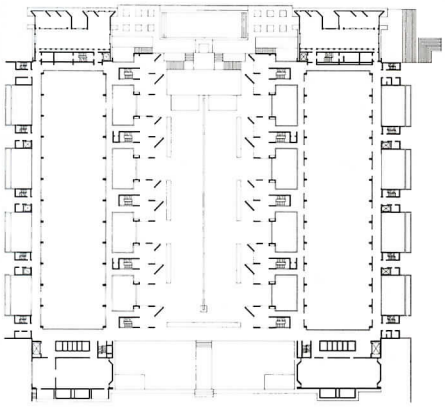

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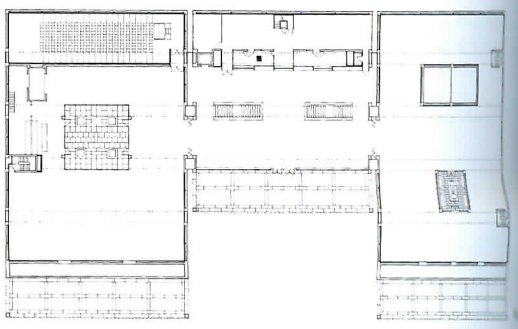
Shadows are almost tangible. It was Luis Barragán (that master of absence) who persuaded Kahn to plant no trees and to work with a void. With its low benches, its reflecting pools, its proportioned paving, and its air of ritual, the 'outdoor room' at the Salk Institute takes on the character of a philosopher's stage where ideas may be exchanged and the mysteries of nature studied. Steven Holl, an American architect of a younger generation, has caught the cosmic atmosphere of this space:

… there is a time of day when the sun, reflecting on the ocean, merges with light reflecting on the rivulet of water in the trough bisecting the central court. Ocean and courtyard are fused … Architecture and nature are joined in a metaphysics of place …

The abstract order of Kahn's buildings was usually achieved on the basis of simple structural ideas. The Kimbell Art Museum at Fort Worth in Texas (1966–72) was arranged as a series of parallel concrete vaults acting, in effect, as long beams liberating the space beneath. The curvature of the vaults was based upon a cycloid geometry (rather than the more obvious semicircle) and this added extra tension and vitality to the profiles. The plan was formal, virtually classical (suggesting the influence of such prototypes as Palladio's Palazzo Chiericati). But the interior space was anything but compartmentalized, flowing in a stately way from bay to bay, and allowing long diagonal views across the standardized structural system. Here and there, small light-courts were punctured through the



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658 Louis I Kahn, Kimbell Art Museum, Fort Worth, Texas, 1966–72, ground-floor plan

659 Kimbell Art Museum

660 Kimbell Art Museum, interior, photographed in 1972

repeating vaults, while to the garden side the infill walls were absent from the last bay, so generating a species of vaulted portico. As at Salk, the architectural effect arose from the dignified pace of the primary geometrical themes, from the control of proportion and ratio, and from the evocative combination of a limited number of materials – in this case travertine, concrete, stainless steel, water and glass. But the essential magic of the Kimbell Art Museum resided in the fusion of structure and light. Each vault was bisected at the top by a narrow gap running the entire length. Daylight was spilled through the crack on to upturned stainless-steel reflectors, then dispersed as a silvery glow over the polished concrete undersides of the naked roof structure. Light, in Kahn's view, was an absence of shadow, a force capable of bringing matter to life. He referred to architecture itself as 'spent light'.

Kahn's capacity for effective monumental expression was revealed to the full in his design for the National Assembly Building at Dacca in what is now Bangladesh. For this architect, government was among the fundamental types of social order: the 'form' (in Kahn's sense of the word) would have to reflect the meaning of the institution. One is scarcely surprised to find that variations on a circular theme were among the first to appear on paper, since the circle was the shape the architect used to express a coherent social grouping, a sense of unitary purpose, and a notion of 'centre'. In the plans of the overall layout of the Capitol, the Parliament was placed at the focal point, other buildings spreading away from it in descending echelons. The full panoply of Beaux-Arts rhetorical planning devices – primary and secondary axes, a sense of climax, variations in size and shape – was employed to reinforce this sense of the Parliament as the 'head' of the social order. There were echoes and schematizations of 'old friends' from several phases of the classical tradition: the Baths of Caracalla, Palladio's formal villas with their central blocks and symmetrical arms, even the plan of Garnier's Paris Opéra; but these were transformed into an entirely different spatial idea. Kahn absorbed what he needed from the monumental traditions of East and West to make a symbolic diagram of the state.

The Assembly at Dacca was placed on a vast brick platform surrounded by water, and was constructed in naked grey concrete with an overlay of thin white marble lines. These corresponded to the formwork divisions but they also had the effect of sharpening the image and picking out light. Kahn

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himself described the building as a 'multifaceted jewel'. The Assembly Chamber was circled by a family of other functions – press galleries, members' rooms, etc. – smaller variations on the central formal themes. The main entrance was underneath the mosque; this had four cylindrical towers and was skewed slightly off the main axis to face Mecca, a deviation which served to reinforce the power of the prevalent geometrical order by contrast. The effect of these surrounding volumes when projected into space was of a jostling series of cylinders and oblongs grouped around the central mass.

Rather as Le Corbusier had also done at Chandigarh, Kahn amplified his earlier architectural system to achieve effects of massive grandeur. For the former this had meant working with the generating image of a protective parasol; for the latter it implied a centralized citadel with protective layers of vertical planes punctured by huge, shaded openings for ventilation. Where the exterior seemed solid, the interior dissolved away, the slots of structure being filled with light. With the deep cuts of shadow, the glaring force of the sun and the rudeness of the materials, the effect was entirely as if the buildings had been standing there for centuries.

The National Assembly Building in Dacca embodied Kahn's reaction to an Asian society's search for new institutions in a post-colonial stage of its history. Beyond the transient events of politics, it sought out a primary framework relating government to an idealized order. The plan condensed several ideas relating to Kahn's interpretation of the state: a central space for debate and eventual consensus; a main axis running from the entrance, through the middle and out the other side again over the president's platform (from which an 'edict' might be transmitted to the outside world); a cross axis linking the orientation of the Parliament Chamber to prime minister and president; tertiary axes binding lesser functions; and the line to Mecca subordinating the institution to the co-ordinates of Islam. All these gestures were held in tense equilibrium in a form combining the qualities of a crystal with the resonances of a cosmic diagram or mandala. Kahn's plan distilled features of centralized organization from both Eastern and Western traditions: it was like a 'figure–ground' reversal of a centralized Mogul tomb (e.g. the Taj Mahal or the Tomb of Hummayum), as if the niches and corridors had been rendered as matter, and the solid masonry as space. The marble veins could be interpreted as a mimetic version of the reed and bamboo bindings of the typical Bengali hut, an association perhaps felt appropriate to a 'house of the state'. Whatever the sources and inspirations, they were absorbed into a modern work which aspired towards a timeless level of architectural order.

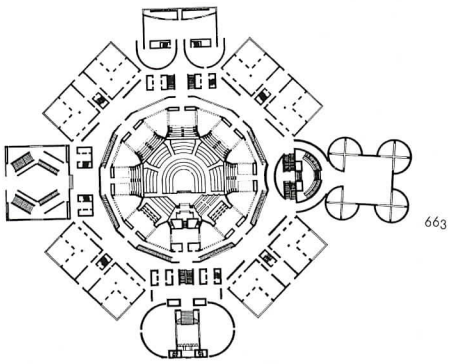
At Dacca, Kahn drew together new and old, regional and universal, in a building of haunting presence and magnificence. Without the underlying armature of his philosophy, his ruminations on the

661 Louis I. Kahn, National Assembly Building, Dacca, 1962–75, aerial view

662 National Assembly Building

663 National Assembly Building, plan

664 National Assembly Building, interior of mosque



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nature of man and architecture, and his ability to give these feelings a suitable and communicable symbolic form, the 'archaicizing' external textures would have been mere superficialities of patina, as skin-deep as the glossy intellectual packaging being employed by the devaluers of Mies van der Rohe at the same time. Kahn was able to make a convincing monumentality because his architectural system tended in that direction already and because his sensibility was open to the most ancient lessons of the great monuments of the past. Like Wright, Kahn believed in a 'Cause Conservative', invoking 'the elemental law and order inherent in all great architecture'; and (again like Wright) was able to achieve this spirit, not by copying the externals of past styles, but by probing into their underlying principles and attempting to universalize them in the service of modern aspirations. For Kahn, the aims of architecture did not change, only the means.

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