Louis Kahn and the Dominican Motherhouse: Problems of Space

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Problems of Space

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Lou Kahn knew, *„No one ever payed the price of a book".* This „book" was only possible with the help of the many who contributed in various ways to its final being. Not all of them can be listed here, nor are those who are mentioned below in any way responsible for the errors, omissions and exaggerations in the text, for which I alone am responsible. My special thanks go to:

Table of Contents

SECTION V
Appendices

Louis I. Kahn und das Domincan Motherhouse: Probleme des architektionischen Raums
Zusammenfassung

Louis I. Kahn im Kontext

Die vorliegende Dissertation entwickelt sich um ein unvollendetes Spätwerk des Architekten Louis I.Kahn: das Projekt für das Domincan Motherhouse in Media Pennsylvania (1965-69). Louis I. Kahn (1901-74) gehört zu den wichtigsten Architekten des 20. Jahrhunderts. Als Baumeister, als Lehrer und als Teilnehmer an einem internationalen kritischen Diskurs, war Kahn eine Schlüsselfigur in der Transformation der modernen Architektur in den ersten drei Jahrzehnten nach dem zweiten Weltkrieg. In einer Zeit, als die amerikanische „organische Schule" unter Frank Lloyd Wright ins Leere lief und der europäische Rationalismus in eine Krise der inneren Widersprüche verfiel, waren Kahns reife Bauten und Texte provozierende Beiträge in der Suche nach einer Revision und Neuformulierung der gesellschaftlichen, formalen und räumlichen Prinzipien der Moderne. So wichtig sie im Kontext ihrer Zeit zu sehen sind, sind Werke wie das Salk Institute for Biological Studies (1960-65), die Bibliothek der Phillips-Exeter Academy (1967-72), das Kimbell Art Museum (1967-72), die Indian Institute of Management (1963-74) oder das National Assembly in Dhaka, Bangladesh (1963-84) auch architektonische Meilensteine („Touchstones"), deren Relevanz weit über die Grenzen ihrer Entstehung hinausreicht.

Das Domincan Motherhouse: für sich und als Fenster

Zum andauernden Prozeß der Einordnung von Kahns Werk in den kulturellen Kontext des 20. Jahrhunderts gehört eine umfassende Aufarbeitung seines unvollendeten **ouevres**, welches in seiner Qualität und seinem Umfang dem gebauten Werk nicht nachsteht. Erst durch ein tieferes Verständnis dieser unvollendeten Projekte - deren Hauptthemen oft denen des Gebauten ergänzend und komplementär sind - wird das Spektrum und die Reichweite von Kahns Gedankenwelt begreifbar. Das Domincan Motherhouse ist ein Projekt, das wie ein Fenster einen tiefen Einblick in die Entwicklung von Kahn´s reifem Werk bietet. Hier werden einige der für ihn so zentralen Themen auf fundamentaler Art entwerferisch „erforscht". Themen wie das Verhältnis von Individuum und Gemeinschaft, vom gebauten und natürlichen Raum, von der „ikonischen" Rolle des Raums in der Darstellung von Institutionen, von der Rolle des Kontext, von formaler Geometrie und Wahrnehmung usw., prägen diesen Entwurf. Die elementare Weise, mit welcher diese Themen umgangen sind, läßt den Entwurf weit über sich hinaus weisen, und Lichter auf andere Architekturen Kahns werfen.

Grundlagen, Methodik	Der Entwurf für das Dominican Motherhouse wurde nach intensiver dreijähriger Entwurfsarbeit kurz vor seiner Verwirklichung abgebrochen. Die daraus entstandene, ausserordentlich reiche Sammlung an Entwurfszeichnungen und Skizzen - insgesamt über 900 - sowie vollständige Akten, bieten eine seltene Gelegenheit in der Architekturforschung. Diese Zeichnungen und Akten bilden die Hauptgrundlage dieser Studie. In zwei mehrwöchigen Aufenthalten in der „Kahn Collection" an der University of Pennsylvania wurden diese und zahlreiche andere Projektzeichnungen gesichtet, fotografiert, gekennzeichnet und geordnet. Ergänzt wird diese Recherche durch Interviews mit ehemaligen Projektbeteiligten aus Kahns Büro, Vertreterinnen des Klosters sowie mit anderen Mitarbeitern, Studenten und Personen aus Kahns Umfeld. Durch eine umfangreiche Literaturrecherche konnte das Projekt in Kahns Gedankenwelt und in dem Kontext seiner Zeit besser eingebettet werden.
Eine „Kritische Narrative"	Die Studie entwickelt sich aus einer „kritischen Narrative" der Zeichnungen. Schritt für Schritt wird dem Entwurf anhand der Zeichnungen und Akten gefolgt und beschrieben. Beginnend mit Kahns ersten „vorarchitektonischen" Skizzen entfaltet sich ein Prozeß, welcher in einem vollständigen und komplexen Werk resultiert. Aus dieser Narrative heraus entwickeln sich die drei Hauptuntersuchungsfelder der Studie.
Erstes Untersuchungsfeld: Beschreibung, Darstellung	Das erste Feld ist baugeschichtlich, informativ und ästhetisch. Durch eine möglichst wenig spekulative Beschreibung und Darstellung des Projekts und seinen vielen Zwischenvarianten kann das Dominican Motherhouse in seinen vielen Facetten gezeigt werden. Diese Beschreibung ist zuerst auf Oberflächen, Form, Räume, Umgang mit Kontext und Programm usw. beschränkt. Zum Aufzeigen des Entwurfs gehört eine umfassende Neuzeichnung der wesentlichen Entwurfsvariante nach bemassten und eigens bemessenen Plänen. Durch eine Gegenüberstellung der Varianten im gleichen Maßstab, (bisher fehlend in allen Veröffentli-

chungen des Projekts) kann das Projekt und seine Entwicklung umfassend nachvollzogen werden. Diese Zeichnungen bilden zudem eine Grundlage für weitere analytische Zeichnungen.

Zweites Untersuchungsfeld:	Das zweite Untersuchungsfeld befasst sich mit dem Entwurfsvorgang, welcher durch die Zeichnungen und Akten manifest wird. Im Interesse einer „reflexiven Kultur des Entwerfens" werden entwurfsimmanente Themen wie Entscheidungsprozesse, das Verhältnis zwischen konzeptionellen Mitteln und Ergebnisse, Unterschiede zwischen „alten" und „neuen" Entwurfsmittel in Raum gestellt. Dieses Untersuchungsfeld wird in der Einführung durch Fragestellungen eingeleitet und im Hauptteil demonstriert: ohne Versuch auf eine Schluß-folgerung oder gar eine „Theorie", sondern als Gelegenheit zu Reflexion über eine Kultur des Entwerfens.
Drittes Untersuchunsfeld: „Probleme des Raums"	Das dritte Untersuchungsfeld betrifft Kahns Beitrag zur Entwicklung von Theorien und Para-digmen des architektonischen Raums im 20. Jahrhundert. Aus der Narrative der Zeichnungen kristallisiert sich Kahns Umgang mit einigen wenigen fundamentalen Problemen des architek-tonischen Raums. Eingeleitet von einer kompakten Zusammenfassung der Entwicklung von Raumtheorien von Mitte des 19. bis Mitte des 20. Jahrhunderts, werden in einem eigenen Abschnitt diese Aspekte von Kahns Raumverständnis behandelt. Dieses kann als Kritik der „orthodoxen" modernen Auffassung von Raum verstanden werden. Drei räumliche Themen werden jeweils in einem eigenen Kapitel untersucht, in dem ihre Entwicklung sowohl im Domincan Motherhouse als auch in Kahns reifem Werk gefolgt werden. Die drei ausgewähl-ten Themen sind topologischer, morphologischer und symbolischer Natur. Das erste wird recherchiert durch den Unterschied zwischen der modenen Analogie der Erschließung („cir-culation") und von Kahns Begriff „architecture of connections". Das zweite Thema wird unter dem Begriff der Reziprozität untersucht: hier hauptsächlich dem Verhältnis Innen-Aussen, architektonisch-natürlicher Raum betreffend. Das dritte Thema erweitert das Zweite, indem es die Rolle des Kontexts untersucht: der Unterschied zwischen „Raum" und „Ort" („Space" and „Place").

Fazit

Das erste Ergebnis der Studie ist eine umfassende Beschreibung im Text und in Zeichnungen von dem in der Kahn-Literatur „ikonischen", jedoch bisher nur schematisch dargestellten Domincan Motherhouse Projekt. Durch die Studie kann das Projekt in vielen seiner bisher verborgenen formalen, räumlichen, programmatischen und kontextuellen Eigenschaften ver-standen werden. Es entsteht ein Bild von einem komplexen und reichen Werke, das durch-aus zu Kahns bezwingendsten Idee-Schöpfungen zählt. Darüberhinaus wirft die Beschreibung des Entwurfsvorgangs ein Licht auf Kahns reflexive Kultur des Zeichnens-Entwerfens: wie Werke konzipiert, wie gezeichnet, wie wahrgenommen, wie sie Teil einer kollektiven Erfah-rung werden können. Diese Kultur wirft wiederum relevante Fragen für gegenwärtige Ent-wurfskultur auf. Schliesslich bietet das Projekt Zugang zu einigen fundamentalen Fragen des architektonischen Raums. Gegen den absoluten und neutralen Raum der Moderne, entfaltet sich Kahns relativer, „geladener" Raum als wesentliche Erweiterung und Revision hierzu.

Die Ergebnisse dieser Studie zeigen ein Werk, das obwohl unvollendet, dazu einlädt, seine Themen weiterzudenken: ob in der Form von weiteren Untersuchungen oder auch Architek-turen. Dieses schöpferische Potenzial des Unvollendeten hatte Kahn vielleicht im Sinne als er sagte, *„That which has not been built is not really lost. Once its value is established, its demand for presence is undeniable. It is merely waiting for the right circumstances."*

Section I
Introduction

Chapter 1. Introduction: „Uncompleted Things": Two Monasteries

„Die Gestalt ist ein bewegliches, ein werdendes, ein vergehendes. Gestaltenlehre ist Verwandlungs-
lehre."
Johann Wolfgang von Goethe, Tagebuch, 1796

„The value of uncompleted things is very strong... If the spirit is there and can be recorded, what is lost?
The drawing is important, the incomplete scheme is important, if it has a central gravitational force which
makes the arrangement not just an arrangement but something which gives a richness to the associati-
ons which are lost. Recording of that which has not been done must be made much of."
Louis I. Kahn, 1965, quoted in: Richard Saul Wurman, „What Will Be Has Always Been..."

„That which has not been built is not really lost. Once its value is established, its demand for presence is
undeniable. It is merely waiting for the right circumstances."
Louis I. Kahn, quoted in John Lobell, Between Silence and Light, 1979

An Iconic Plan,
Enigmatic Drawings

By the mid-1960s Louis Kahn´s long-delayed career was now in its fullest blossom: the recently completed Richards Medical Research Laboratories (1957-64) and First Unitarian Church (1958-63) had earned him the attention of an international audience; the Salk Institute for Biological Studies (1959-65) - his first fully mature work - was now nearing completion; career-crowning projects for the Indian Institute of Management (1962-74) and the Capitol of East Pakistan at Dhaka (1962-84) were gradually unfolding on his drawing boards while accolades, assignments and invitations began to pour into his office from around the globe. In the midst of those most prolific and expansive years, Kahn was presented - separately and within the space of a few short months - the opportunites to develop designs for two monasteries: the Dominican Motherhouse near Media, Pennsylvania (1966-69) and Saint Andrew´s Benedictine Priory in Valyermo, California (1966-67). **(Figs. 1.1, 1.2)** For a man who had worked so hard and with such modest rewards for the greatest part of his career, this must have seemed like some kind of late restitution: what full-blooded architect would not have been thrilled by the chance? Accordingly, and in spite of all uncertainties connected with both projects, he dedicated a great deal of his much-demanded attention to what would turn out to be the months and years of their developments.[1] In spite of the considerable efforts by the architect and his associates, though, both designs were destined to remain unrealized and to join those other „unbuilt offerings"[2] which make up such a large and important portion of his later **oeuvre**.

Among the unrealized projects of that later period, which include such seminal designs as those for the Mikveh Israel and Hurva Synagogues (1961-72, 1967-74), the Salk Institute´s Meeting House (1959-65), the Franklin D. Roosevelt Memorial (1973-74) or for the Bicen-tennial Exhibition in Philadelphia (1971-73), the monastery designs occupy privileged, yet enigmatic positions within the literature on Kahn. While both projects have been regularly published in monographs and periodicals, it is particularly the the subject of this study, the Dominican Motherhouse, with its shifting, eccentric „bricolage" floor plan, which will rarely fail to be included in any comprehensive essay or overview of Kahn´s work: playing - depen-ding on the author´s point of view - either the role of the apotheosis of his thinking about spatial organisation or that of an odd episode; the exception to the rule of the otherwise geometrically-so-disciplined plans.[3]

It is not only the conflicting views of its various interpreters which have made the Dominican Motherhouse such an enigmatic work: in spite of its multiple appearances in architectural publications, our knowledge of Kahn´s design has remained to this date sketchy at best. Typi-cally a single ground floor plan, occasionally an elevation study or two (more often than not of an incomplete intermediate scheme) will have sufficed to illustrate the project: no sections, no upper or basement floor plans, no perspectives or models; little to further explain the means of construction, the intricacies of the interior space or the interaction of the building with its site.[4] Curiously, though, this limited information has not prohibited the project from attaining something approaching iconic status within Kahn´s **ouevre** and within the history of late 20th century architectural paradigms. This capacity of the unrealized design to engage the fantasies of following generations of architects and historians - as it surely has - must

lie, then, more in the power of its evocative diagram than in our detailed knowledge of its programatic workings, its constructive and spatial nuances, its material intentions. More promise than evidence, it is perhaps the very incompleteness and openness of these schematic images which, together with the compelling „gravitational force" of their diagram, have served to inspire other architects to fullfill with their own designs the potential suggested by the unrealized scheme... or to begin to study the project itself in depth, as we wish to do here.[5]

A Favorite Image, an Ideal(ized) Program

The idea of monastic life and of the ritual communities to which it had given birth occupied favored places in Kahn´s architectural imagination, and a kind of Platonic „Monastery" seemed to have long cast its shadows on the walls of his rich visual memory. It´s not only that a willing eye tends to find „monastic" silence in the numerous layered, courtyarded and „cloistered" plans in his later buildings; Kahn himself admitted that he was repeatedly drawn to the image of the monastery as an analogy for modern institutional programs such as those for the Salk Institute for Biological Studies (1959-65) and the Indian Institue of Management.[6] Kahn, who would twice assign his monastery programs to the students of his Masters Course at the University of Pennsylvania, had earlier mused on the founding of the first monastery as a prime example for what he understood to be the way in which man´s institutions arise spontaneously from the seed of human desires: *„Why must we assume that there cannot be other things so marvelous as the emergence of the first monastery, for which there was no prescedence whatsoever? It was just simply that some man realized that a certain realm of spaces represents a deep desire on the part of man to express the inexpressable in a certain activity of man called a monastery. It´s really nothing short of remarkable that a time comes in the history of man when something is established which everbody supports as though it were eternally so."* [7] If he had previously imagined communities of biological scientists or students to interact in ways analogous to monastic life, how much like a dream-come-true it must have seemed to him, when in 1965 he was approached seperately by two real-life monastic congegations - a group of Dominican nuns and a group of Benedictine monks - to be given the chance to bring his treasured images into being.

The Monasteries as Explorations of Central Themes

Aside from any idealized visions of cloistered life and its origins which he may have harbored, it´s easy to understand Kahn´s great affinity for monasteries as a type. Indeed, one need not read long through his later texts to realize that both the Saint Andrews Priory and the Dominican Motherhouse offered him - at least theoretically - almost ideal frameworks for the continued exploration of those themes which had become so central to his mature thought and work: not only his idea about the plan as an „interpreter" of the institution, but of the discrete room as the beginning of architecture, the house as a „society of rooms", the interaction between public and private realms, the role of formal geometry as a principle of order, and increasingly, the interdependence of architecture and landscape. Later in his life, Kahn would define what he called the three major human „inspirations"- for him that which forms the very basis of our humanity as social beings - as being **„learning, meeting and the wish for well being"**.[8] These three „inspirations" lead, then, correspondingly to Kahn´s three major public typologies: those for study, for assembly and for that which Kahn called „the Availabilities". The microcosm of the monastery - a **„world within a world"**[9] - would imply for him the simultaneous existence of all three of these „inspirations", of all three typologies, within a single work which was at the same time a dwelling: how could he not be thrilled by the opportunity?

Situating the Monasteries

If for Kahn building was firstly and foremostly a means of serving or evoking the essence of a human institution, this serving is accomplished primarily through the shaping and ordering of spaces in relation to each other. Intertwined with their role in Kahn´s evolving thought regarding the nature of institutions, the monastery projects offer themselves as excellent case studies in his developing formal means of spatial configuration. Situated as they are, between the earlier geometric and structural stringency of projects such as the Trenton Jewish Community Center (1954-59) or the Richards Medical Center (1957-64) and the later „dense minimalism"[10] of the Kimbell Art Museum (1966-72) or the Yale Center for British Art (1969-74) **(Figs. 3-6)**, Kahn´s monastery projects belong to those works of increasing - at times truely Piranesiesque - complexity from the mid-60´s, such as the Meeting House for

the Salk Institute (1959-65), the Fort Wayne Fine Arts Center (1961-73), the Indian Institute of Management (1962-74), the National Capital of Bangladesh (1962-83) or the Philadelphia College of Art (1964-66). **(Figs. 1.3 - 1.7)** In those works, Kahn´s architecture seems to literally expand, loosening the strong Euclidian grip and structural determinism of the earlier projects to open itself to new realms of spatial complexity and ambiguity. It is in this „baroque" phase which Kahn begins to submit the wall to its most extreme transformations: paring it away, folding it, wrapping it within the „ruins" of other walls. His once-closed primary geometries, now opened, begin to engage in an intricate dialog with their surroundings and with the elements: infiltrated by vistas, weather, sun and shadow.

This, too, is the phase in which Kahn had stretched his means of organizing and composing the program in plan, moving away from his tested methods such as tartan grids, structuralistic linkage or regular disposition within a single volume to explore new, less explicit ordering systems. Concurrently, modernist circulation typologies were abandoned in order to develop new, „open" types, which he began to refer to in terms of an „architecture of connection". Whereas with the plans for Erdman Hall (1960-65) or the Indian Institute of Management (1962-74) **(Figs. 9.14, 1.8)** Kahn had begun to push his means of plan composition into new terrain, away from both Beaux-Arts and modernist paradigms, the intricate programs of the two monastery projects provided him with the opportunity to further expand his evolving definition of „Order" and to test some of his most radical ideas about morphological transformation, figure-ground ambivalence and about the juxtapositional, „democratic" plan types that he would later begin to describe as „a society of rooms."

Transformational Works

While there are both critics and architects who would embrace the restrained and reticent classicism of later masterworks such as the Yale Center for British Art or the Kimbell Art Museum and dismiss the expansive works of this „middle" period[11] of Kahn´s late work as episodic, as mannerist or self-indulgent[12], it is a premise of this study that without the discoveries made through these „fragmented" works, the dense multivalence of the later period would have most likely never been possible. Seen in this light, the works of this phase of Kahn´s mature work are to be studied not only for their own inherent qualities but for their transformational character as well. In discussing the formal transitions which take place in these works, it is important to bear in mind that the source of this ripening in Kahn´s attitude towards design in the period beginning in the late 1950s is grounded more than in his wish for increased formal complexity **per se**, rather in his deepening insights into architectural space in regard to the complexities of nature, human nature and society. (Themes which are abundantly evident in his later texts and which will be developed in the following chapters.) Embedded in the midst of this period, the monastery projects offer us unique case studies in the development of several aspects of Kahn´s formal and philosophical thinking as they reached maturity.

The Dominican Motherhouse, 1965-69

A closer study of the monastery designs - first in their previously published states, and here in the following sections, using the hundreds of unpublished archival drawings by Kahn and his associates - intimates to just what degree Kahn´s creative ambition was awakened by these projects, with their finely-grained programs and strongly-charactered sites. In developing their designs Kahn and his associates generated over the months and years of their continual „architectural research" a wealth of typological variations, a small world of nuanced spaces and a virtual catalog of explorations into such fundamental relationships as those between geometry and program, mass and void, figure and ground, iconography and abstraction, etc.. While the Saint Andrew´s Priory - in spite of its much shorter gestation period - presents an evocative and thoroughly convincing plan, its comparably thin file prohibits a truely extensive study of that work. The Dominican Motherhouse, the most radically conceived and by far the most fully developed of the two monastery projects has been chosen for these reasons as the subject of this study. While the imbalance in reference material available for the two projects has rendered the tempting prospect of a double study unfeasible (Saint Andrew´s Priory was developed in six months, with 58 sheets of drawings and prints in the Kahn Collection as opposed to the three years of development and 906 drawings for the Motherhouse), the two projects do invite - due to their nearly identical programs and their parallel gestation periods - comparison on several levels. The development and variations of

central spatial themes or the reactions to specifics such as site, materials of construction and climate move, then, into the foreground and provide insight into Kahn´s thinking on those specific themes. For this reason, Saint Andrews Priory will appear as reference object in this study in the form of an excursus and comparision in Chapter 7.

On Relevance

Beyond a specific relevance in field of architectural history, there are good reasons, for those of us interested in the process of making, for choosing Kahn in general and the Dominican Motherhouse in particular as case studies. Among the great architects of the 20th century, Kahn´s production was neither as canon-based and self-certain as Wright´s, as idea-laden and irreverent as Le Corbusier´s nor as seamless and elegant as Mies´. Designing was a difficult, sometimes messy and always all-consuming effort for him, with the genesis of his individual designs frequently lasting months and even years. For those of us involved in the difficult process of making architecture, this may make Kahn a nearer, more approachable mentor than those other masters. One of the very few top-echelon architects to devote himself seriously to teaching, he directed a great deal of his efforts to attempting to make his own hard-won insights into the process of making transparent for his students. Although often disqualified as „theory" due to their unsystematic and unorthodox manner, it is a premise of this work that Kahn´s texts and lectures, when taken together with the drawn evidence of his own work do indeed amount to something approaching the most cogent „Theory of Making" in modern architecture. (A premise which will be developed at length in the following chapters.) Aside from the value of this architectural **Denkraum** which Kahn has provided for structuring the process of design, we may further learn from his drawings themselves through a process which may only be called empathy: for in them we may recognize many of his questions or dilemmas as our own. In following the development of Kahn´s work not everything may seem at first „masterly": on the contrary, ideas are often quite simply, even naively, stated; the multiple variations on a theme may seem at first a sign of indecision; the stubbornness with which an idea is persued into its dead-end is often astounding; the moving forward, in the rule guided by reason, occasionally seems to yield to something approaching idling, to speculation and doubt.... The drawings are anything but slick and finished: through them, though (and this is one source of their great beauty), shines an enormous will of striving to find out „what the things what to be." They demonstrate to us - in a way which words alone can not - to what degree the accumulation of depth in a work is a matter of time, to what degree architecture is an act of will.

On Architecture as an Art of Spatial Configuration

Finally, the design for the Dominican Motherhouse is of relevance for the very generic nature of its method. In the development of Kahn´s monastery - from the very beginning conceived of as a simple, load-bearing masonry structure - technical and constructive aspects play only secondary roles. There is no pressing need for virtuoso long spans such as at his Yale University Art Gallery or the Kimbell Art Museum; no major form-giving technical demands such as at the Richards Medical Laboratories or the Salk Institute. The constructive challenges and handcraft opportunities which played such a major role in the realization of the Indian Institute of Management and the National Assembly at Dhaka are not present at Media, nor is the budget which allowed for the material richness and density of the Yale Center for British Art or the Exeter Library. The size and nature of the project make serialism and prefabrication such as at the Tribune Review Building or the Olivetti Factory uninteresting, etc.. With the Dominican Motherhouse, Kahn´s main playing field - and our interest - shifts to those most fundamental elements of architectural design: the simple acts of enclosing and configuring spaces - as represented by the shifting and ordering of rectangles against each other on paper. The resulting design is extremely rich and complex: its complexity and meaning, though, lie not in its use of technology nor its illustration of a particular „big" theory, but in those basic acts of placing, measuring, juxtaposing, of finding distance... in other words, of finding depth and magic in doing what is necessary.

For this reason, the Dominican Motherhouse inflects beyond itself toward certain fundamental problems of making architectural space. The following chapter outlines the means for the demonstration and analysis of this making at work in that project and its consequences for Kahn´s mature work.

Chapter 1: Footnotes

1. The official project dates are given in the Louis I. Kahn Collection, Architectural Archives of the University of Pennsylvania (hereafter refered to as „Kahn Collection") as follows: Saint Andrews Priory (Catalog Number 715): earliest date: 16 November 1965; date of contract: 19 May 1965; last dated drawing: 29 November 1966; termination of project: 6 February 1967. Dominican Motherhouse (Catalog Number 700): earliest date: 26 March 1965; date of contract: 7 August 1967; last dated drawing: 15 December 1968; termination of project: 18 March 1969.

2. My thanks to Robert McCarter for this term. (Discussion with author, 2004).

3. For representatives of the former view, see, for example, Vittoro Gregotti in, „Louis Kahn: Modern Connection„ Rassegna 21, 1985, p.4; Maurizio Sabini, „Between Order and Form: Fragments and Idea of Architecture", Rassegna 21, 1985, p.14; Christian Norberg Schulz in, Roots of Modern Architecture, A.D.A. Edita, Tokyo, 1988, p.169; Robert McCarter in his Louis I. Kahn, Phaidon, London, 2005, p. 288-295. For representatives of the latter view, see: Rafael Moneo in, „End of the Century Paradigms", El Croquis 98,1999, p.198-203; Michael J. Lewis in Brownlee and DeLong, Louis I. Kahn, In the Realm of Architecture, Rizzoli, New York, 1991, p. 384-389).

4. The „iconic" and by far most commonly published drawing is the ground level floor plan (and occasionally, the North and South elevations) of the intermediate scheme from April 22,1968. (See, for example, in the Bibliography: Giurgola, Norberg-Schultz, Gast, Saito, McCarter, A&V Special February 2001....) The most comprehensive overview of the project to date in a widely available publication remains H. Ronner and S. Jhaveri´s **Louis I. Kahn: Complete Works 1935-1974** (2. ed., Birkhäuser, Basel & Boston,1977) in which 9 pages (pp. 302-311) are dedicated to presenting the various design stages of the monastery using both Kahn´s sketches and his associates´plans. (With certain likely errors in the chronological order: see Chapter 5.) This is one of the few publications which include information on the site and the building´s section. **Volume 4 of the Garland Architectural Publication of the Louis I. Kahn Archive** (Alexander Tzonis, general editor, Garland, New York, 1987, p. 316) contains 85 drawings and sketches for the Motherhouse project which have been accredited to Kahn himself, but no drawings from his associates. The most informative description of the project´s development and the client-architect relationship to date is Michael J. Lewis´ essay in Brownlee and DeLong´s **Louis I. Kahn: In the Realm of Architecture**, Rizzoli, New York,1991, pp. 382-389, while David Brownlee´s essay „The Houses of the Inspirations" in that same publication remains an authoritative source for the positioning the Motherhouse project among Kahn´s related works of the 1960s. While Robert McCarter´s comprehensive monograph, **Louis I. Kahn** (Phaidon, London, 2005, pp. 288-295) makes a convincing case for positioning the Dominican Motherhouse among Kahn´s important works, the plan and elevation drawings which have been prepared by McCarter´s students for that text are more schematic „hybrids", coalesced from various planning phases and aimed at giving a gene-ral understanding of the project, than they are stringent reconstructions of the actual final schemes. To the enigma of the Motherhouse project belongs both the final reason for its termination and the terminating party: with Lewis and McCarter stating that Kahn elected to withdraw from the project (Lewis in ibid, p. 388, McCarter p. 293), while in fact it was the sisters who terminated the contract. Chapter 5 includes an extensive description of the reasons for the termination of the project.

5. These architects may include, among others, Allison and Peter Smithson, Aldo van Eyck, Oswald Matthias Ungers, James Stirling, Rafael Moneo... but also, more subliminally influ-enced, later generations: Tadao Ando, David Chipperfied, Steven Holl, Sejima and Nishizawa, etc.. For a brief discussion of some designs which may have been moved by the Dominican Motherhouse´s „gravitational force", see the concluding chapter.

6. Kahn on the Indian Institute of Management: „...*The dormitory and the school are re-ally one: they are not to be separated. The plan comes from my feelings of a monastery.*"

("Remarks", Perspecta 9-10, 1965) While at work on the design for the Salk Institute, Kahn indicated his wish to travel to northern Italy, *"to see again the wonderful monasteries which have a bearing on what I am doing for Dr. Salk in San Diego."* (Letter, Kahn to William Jordy, Jan. 8, 1960, Box LIK 15, Kahn Collection). It is not insignificant that Kahn´s fascination with monasteries was shared by his hero Le Corbusier, who, since his youthful journey to the orient, carried the image of the monastery Certosa del Galluzo in his memory as a model for his own ideal communities: *"Ils (les Immeubles-Villas) sont nés dún souvenir aprés un déjeu-ner, dúne Chartreuse d´ Italie (bonheur par la sérénité) et crayonnés sur le dos dún menu de restaurant."* (Le Corbusier, Oeuvre Complète,1910-29, Editions d´Architecture Zürich, p.40) To those monasteries which must have haunted Kahn belongs certainly Le Corbusier´s own (Dominican!) monastery, La Tourette, finished just five years before the start of the Domincan Motherhouse. At least one discussion of La Tourette seems to have taken place between Kahn and the sisters: meeting minutes, 12 November 1966, Box LIK 10, Kahn Collection.

7. Louis I. Kahn, in: Ronner and Jhaveri, op. cit., p. 312.

8. Louis I. Kahn, "Remarks", lecture, Yale University, 30 October 1963, in: Alessandra Latour (ed.), Louis I. Kahn, Writings, Lectures, Interviews, Rizzoli, New York, 1991, p197.

9. Louis I. Kahn, Conversations with Sudents, Architecture at Rice 26, 2. ed., Dung Ngo, editor, Architecture at Rice Publications, Houston, 1998 (First ed. 1969)

10. (For lack of a better term....)

11. Although the works of the 1960s and 70s - with their overlapping and often years-long gestation periods - deny a strict ordering into "phases", I use the term "middle phase" here to refer to those works with a tendency towards free juxtaposition and expansion and whose conception lies between the more "structuralist" projects of the late 1950s-early 1960s and the tendency toward "classical" compactness in the last projects.

12. Among others, Aldo van Eyck, otherwise an acute observer and staunch admirer of Kahn´s work, criticised in his lectures at the ETH Zürich in the 1970s Kahn´s increasing "man-nerisms" and his departure from his earlier structural discipline in this phase of his work. (The architect Walter Nägeli, a former student of van Eyck, in conversation with the author.) Experience shows that van Eyck was not alone in his skepticism: in an informal poll among colleagues, the "baroque" Kahn (of Domincan Motherhouse, Dhaka) would most likely find less acceptance than the "classical" Kahn (of Kimbell, Yale, Salk...). If, by aiding in a better understanding of those more "difficult" works, this study helps to at least partially tip the scales, then it will have accomplished one of its goals.

Chapter 2. A Critical Study: Goals of this Work, Notes on Form and Method

„I have little to tell you; indeed one says more and perhaps better things about painting when facing the motif than when discussing purely speculative theories in which, as often as not, one loses oneself."
Paul Cezanne, letter to Charles Camoin, Aix, 28 January, 1902

The following study has had as its goal the exploration and analysis of the Dominican Mother-house project on several levels of its existence: phenomenological, historical, interpretive and theoretical. The following chapter gives an overview of the major goals of the study: describing them in an order which roughly corresponds to the major sections of this work.

"A work in Work"

It is a premise of this study that Kahn´s mature work - which spans the period from the end of the 1950s until his death in 1974 - represents a continuous research-through-designing on a very few central architectural themes. At the end of this reseach remained for Kahn the search for the resolved or „clarified" dwelling space: a dichotomous space charged by the poles of individual and society, man and nature, present and history.... All specific architectural themes, be they constructive, technological or iconographic, are secondary and supportive to the making of this space, serving to clarify the ontological basis which was the goal of the works. Each new project was seen by Kahn to be an attempt, an incomplete and imperfect „offering to architecture": an opportunity to explore those unchanging aspects architecture and its spaces which circumstance allowed. Regarded in this context, the true span of Kahn´s **oeuvre** takes on a meaning much greater than the sum of its individual works.

The unrealized projects from the last two decades of Kahn´s life form an impressive „work in Work", which in terms of its scope and quality may be considered as equal to that of his built works. Seen in this light, a deeper and more thorough understanding of these unbuilt projects is necessary in order to attain a truly comprehensive and critical understanding of Kahn´s contribution to architecture: a process which - even over thirty years after his death - is still far from complete. The following study sees itself as a modest contribution to this process.

A First Goal: Illuminating the Work

Making Real

The first goal of this study has been a comprehensive documentation and exposition of the project for the Dominican Motherhouse in its various stages of development: from Kahn´s earliest pre-architectural sketches in 1966 to the detailed final scheme of early 1969, when, on the threshold of its realization, the project was brought to a sudden halt by the clients. By reconstructing and describing the intermediate and final schemes using previously unpublished material from the Louis I. Kahn Collection at the Architectural Archives of the University of Pennsylvania, the exisitng gaps in our knowledge of the project could be filled in so that both the final project and the intermediate schemes may finally be better understood in many of their previously hidden formal, spatial and functional nuances. This „making it real" for the benefit of publication is an assignment for which in this case Kahn and his associates never had the time: the pressing business of a busy office taking precedence over the documentation of an unrealized pet project.

The Critical Language of Description

While this detailed showing of „how it is what it is" has its obvious value in documentation and the accumulation of knowledge as a basis for further analysis, this has been one, but not the main impetus for undertaking this part of the study. The greater interest lies here, rather, in the sense of this showing´s potential **critical** value, if we are to define critique in terms of Susan Sontags´ seminal argument for a descriptive, non-speculative critcism of art: *„...What kind of commentary on the arts is desirable today? For I am not saying that works of art are ineffable, that they cannot be described or paraphrased. They can be. The question is how. What would criticism look like that would serve the work of art, not usurp its place? What is needed, first, is more attention to form in art. If excessive stress on content provokes the arrogance of interpretation, more extended and more thourogh descriptions of form would silence. What is needed is a vocabulary - a descriptive, rather than a prescriptive, vocabulary - for forms. The best criticism, and it is uncommon, is the sort which dissolves considerations of content into form....*

Interpretation takes the sensory experience of the work of art for granted and proceeds from there. This cannot be taken for granted, now. Think of the sheer multiplication of works of art available to every one of us, superadded to the conflicting tastes and odors and sights of the urban environment that bombard our senses. Ours is a culture based on excess, on overproduction; the result is a steady loss of sharpness in our sensory experience. All the conditions of modern life - its material plentitude, its sheer crowdedness - conjoin to dull our sensory faculties. and it is in the light of the condition of our senses, our capacities (rather than those of another age), that the critic must be assessed.

What is important now is to recover our senses. We must learn to see more, hear more, feel more.

Our task is not to find the maximum amount of content in a work of art, much less than to squeeze more content out of a work than already there. Our task is to cut back the content so that we can see the thing at all.

The aim of all commentary on art now should be to make works of art - and by analogy, our own experience - more, rather than less, real to us. The function of criticism should be to show **how it is what it is**, *even* **that it is what it is**, *rather than to show* **what it means**....“[1]

A Current Role for Theory and Critcism?

Although Sontag´s appeal cannot be the last word in a critical discourse (as a humanist discourse must always include space for the projective, the speculative, the ideal), it does help raise the question of what a „progressive“ role for **current** architectural critcism and theory might be. For the greatest part of its history, architectural theory has had a primarily normative function: the codification and dispersal of a relatively firm body of knowledge for discourse and practical use. Even the upheaval of the modern did little to change this: its theories seeking for the most part to replace the certainties of the past with its own „new“ certainties. With the collapse of utopian modernism, the emphasis of theory has tended to shift to the realm of hermeneutics, away from the question of the applicable or descriptive and toward the question of **meaning**. It is against the background of the previous decades´ architectural criticism and theory - so much of it excessively hermeneutic and speculative - that the detailed descriptions in the following study have been undertaken. The rigorous single work monograph being chosen for offering the most appropriate format for the extended and detailed attention to a work´s form and surface, for the possibility for the unfolding of Sontag´s „descriptive, rather than prescriptive, vocabulary for forms.“ This is not to propose that theory´s only possible role is to describe, but that the demonstration of a descriptive and exploratory method takes on an increasingly fruitful or even „progressive“ role in a context in which codification is no longer possible and hermenuetics have tended to work their way into a stalemate.[2] Of course, every act of putting a work in context is unavoidably a subjective and speculative one. In consciousness of this fact, the following study has, as much as possible, been structured to priviledge verbal and graphic exploration and description - and only after the project has been accordingly revealed „as it is“ with drawings, with text - to attempt to situate it within a broader context of thought.

A Second Goal: Illuminating the „Process“ of Designing

A second goal of this study, inseperably intertwined with the first, has been to trace and illuminate the path leading to the work as it was forged by Kahn and his associates. In this respect the Kahn Collection offers an opportunity perhaps unique in the study of modern architecture: the chance to follow, virtually step-for-step, one of its protagonists in the process of developing a complex and mature work. The reasons for following Kahn on this path are manifold, but grow primarily from my own experience as a designing architect and as a teacher of architectural design. Again, the first goal of the following description lies less in the attempt to construct historical continuities or to extract something approaching a normative theory or methodology of design, and more in a thorough, when possible, non-speculative, description of Kahn and his office in the act of designing itself: to extrapolate from Sontag, „to show how it has become what it is.“

In a concrete design project, ideas and ideals which may be general, abstract and long-term meet specific, circumstantial parameters and attempt to become manifest through them. This takes place through the daily handcraft of the architect - through acts of conjecture and

refutation as manifested in concrete acts of ordering, juxtaposing, testing, rejecting, etc.. Astonishingly little has been written in the past decades regarding this part of architecture, although it occupies such a large portion of our efforts as architects. While much theory has been written leading **toward** architecture, little has been reported from the locus of its making: the drawing board. This may be due to lack of evidence for study - projects as comprehensively archived as the Dominican Motherhouse are indeed excedingly rare[3] - or because the monumental failed attempts during the 1950s and 60s to codify a systematic and rational „theory or methodology of design" may have lastingly discouraged further inquiry into this area of architecture´s reality.[4] Until now, at least, most attempts at constructing even an an operational „theory or methodology of design" have remained mute in regard to the reasons behind those small daily acts of ordering, forming, juxtaposing, testing, rejecting, etc. which become so apparent in the scores of drawings for the Dominican Motherhouse.

The „Space" of Designing

There are various good reasons for the student of architecture to embark upon this journey, even when the prospects of arriving at something approaching a synthetic theory or methodology of design are nil. In the absence of a vital vernacular tradition in which to work, a non-reflexive culture of designing is most likely to lead, at the mildest, to a conformist eclecticism, at the worst, to tragic retreat into a private expressionism. For those interested in the capacity of architecture as a bearer and communicator of cultural meaning, such a journey is worthwhile, if only to dispell certain myths regarding the act of designing. It is a premise of this work that contrary to a popular myth (one which is quite often perpetuated by architects themselves) in which an image, intuitive spark or theoretical concept may - in a process of representation - be quite literally and frictionlessly translated into a design for a building, the best works of architecture (to which Kahn´s belong) are are more „exploration" than „representation", more „accumulation" than „expression"; they are the result of a slow process of seeking and drawing connections between different scales and different layers of a project´s reality in attempt to establish what may be described as a linked and comprehensible „chain of decisions".[5] This chain may be traced and the rational, goal-oriented components of a design process may in retrospect be retrieved from the „space" of a design project. We seek and expect this kind of coherence or transparence in a work of architecture - in all of our artfacts, in fact. This is what we can learn - and further - teach from the analysis of a work and its development. Even if the act of designing ultimately resists codification in a normative theory or „process", it is possible - and indeed necessary to structure the space in which the design unfolds. Toward this end, the open-ended **Denkraum** - or „space" of designing - in which Kahn created his late work is offered here as an exceptional case study.

Finally, another reason for the extended excursion in the following section has to do with attempting to gain a more complete picture of Kahn himself at work. Decades of repeated interpretation have tended to cement certain clichés regarding Kahn, many of which belie the complexity of his development and vision by presenting him as a Platonic „monolith". To follow him and his associates on their search - one which is partially projective, partially probing; a process which is partly empirical, partly based on images and experience; one which is contradictory, complete with false starts and dead ends - is to gain a more full understanding of the dimensions of reality which were at work in Kahn´s architecture.

Towards a „Critical Narrative"

The form chosen towards this second goal attempts to weave the various threads of the project´s realities - Kahn´s long-term goals and projections as expressed in his own texts, the circumstances of context, site, budget, individual personalities, etc. - together into a „critical narrative". In doing so, an attempt has been made to structure the text so as to remain as close as possible to the special reality of „designerly thinking". The rare opportunity of Kahn´s rich compositional drawings being both an ends and a means. For this reason, the major portion of critical evaluation and analysis has been undertaken in a seperate, third section.

A Third Goal: To Situate the Work in the Thoughts Behind It
The Architect´s Craft of Enclosure, Configuration, Representaion and Space
A Third goal of this study has been - in exploring an unbuilt, mature work of the mid-1960s -

to better situate this and related works of this period in Kahn´s **oeuvre** as well as in a context of the work of his contemporaries and beyond. If the reception of Kahn´s work has often been marked by misunderstanding, the „fragmented", juxtapositional projects of this period - which the Dominican Motherhouse exemplifies - have probably been the most misunderstood of all. The fact that - with the exception of the National Assembly at Dhaka (if we wish to include that work in this catagory) - none of Kahn´s complex and freely-juxtapositional projects were realized has lead - understandably - to their being overshadowed by the built work.[6] If we are to subscribe, though, to Vittorio Gregotti´s estimation of the Dominican Motherhouse project as representing the apotheosis of Kahn´s mature philosophy and method [7] (it is certainly the most **extreme** demonstration of that method) then a closer examination of this still-enigmatic project and its gestation holds the promise of more thoroughly understanding the true span of Kahn´s contribution to architectural thought.

Building upon the narrative of the drawings, the third section of this study dedicates itself to a graphic and descriptive spatial analysis of the Motherhouse and other mature works. The primary area of questioning deals with Kahn´s contribution to the modern discourse on architectural space. If in the early 1950s, when his attempts to define „order" and „space" were primarily limted to the parameters of structure and geometry, by the 1960s Kahn had expanded his range to actively emphasize space´s social, perceptual and contextual dimensions. It is hoped that, by demonstrating a few elemental spatial themes in the development of the Dominican Motherhouse and then further expanding the scope to view those themes at work in his mature **ouevre**, this study can contribute to a more complete understanding of Kahn´s work within a modern culture of architectural space.

Sources, References, Notes on Method

The primary source of reference for the following study have been the the original project drawings and files of Kahn and his associates, which are permanently housed in the Louis I. Kahn Collection in the Architectural Archives of the University of Pennyslvania. The extent of the Kahn Collection, established in 1976, is almost overwhelming: consisting of over 6,500 sketches by Kahn, 40,000 office drawings, 100 models, 150 boxes of files and correspondence as well as Kahn´s sketchbooks, travel drawings and notebooks, his personal library and memorabilia.[8] All told, the Files for the Dominican Motherhouse consist of 906 original drawings and prints, 1 model, 49 photos and 91 pages of correspondence, notes, calculations and project minutes. The drawings and files were viewed by the author in two extended visits to the Kahn Collection in the Fall of 2004 and the Spring of 2006.

A second reference source has been the archive of the Dominican Motherhouse in Elkins Park, Pennsylvania.. Though the convent´s project file is quite small in comparison to those in the Kahn Collection, certain important documents found there - drawings, minutes and letters - helped to fill in what had previously been gaps in the development of the project´s story. (The documents from the Motherhouse archive have been noted in the text.)

The Drawings

The drawings used for this study may be grouped according to authorship in three catagories:
- original drawings from Kahn
- drawings (or prints) from Kahn´s associates which have been annotated by Kahn
- drawings (or prints) from Kahn´s associates
These drawings may be further grouped into those which are signed or unsigned, dated or undated.

Authorship of the Drawings

While most of Kahn´s sketches bear his unmistakable signature[9], the authorship of the individual associates´ drawings - for the most part unsigned - has been more difficult to establish. This may occasionally be accomplished by comparing names and dates on the existing office payroll cards with the dates of the drawings. In certain cases the individual „handwriting" of the draftsman shines through several drawings, giving hints of the probable author. (Almost forgotten in the age of computer assisted drawing is an office culture of drafting in pencil in which each architect cultivated - within the norms of the office - an individual style of delinia-

ting plans.)

In dealing with drawings, the focus of most architectural historians´ interest tends to concentrate on those sketches and drawings which may be directly attributed to the architect concerned and less on those created by his assistants and draftsmen: we read „the Drawings of Frank Lloyd Wright", etc., knowing that in an architect´s studio drawing is a means of dialog and that in almost all cases the work in question is the work of many hands. In the case of the drawings for the Dominican Motherhouse, there exists ample evidence of that dialog and it has been one goal of this study rather than to neglect it, to - where possible - highlight and explore its consequences for the development of ideas. Of course there are a myriad of inventions and descisions involved in the making of the project and not every one can be traced back to its source. Where the authorship of a drawing or idea has been established, it has been noted in the text. More important for this study, though, than attribution (the „who" of the decision) has been method (the „how" of the discourse). Both the quality of Kahn´s work and the continuity of his explorations are grounded in his ability to find the delicate balance between leading and leaving space for his associates and helpers. A balancing act suggested in my conversations with two of Kahn´s former associates: David Polk and Duncan Buell. Said Polk: *„...you never had the feeling that if had been thinking about something that it wouldn´t get absolute full consideration...You really felt that you were working on those buildings with him and not just a tool.„* [10] And Buell: *„It was understood that we were never allowed to get too far ahead of Lou."* [11]

Chronology of the Drawings

Perhaps more critical to the accuracy of this study than the question of authorship has been that of chronology. In order to accurately and comprehensively trace the development of the design, it was necessary to establish a verifiable order in which the decisions and drawings were made. Fortunately, this was to a great degree possible using the available evidence in the Kahn Collection. Each of Kahn´s own drawings in the Dominican Motherhouse file - for the most part freehand sketches - has been roughly chronologically ordered in two portfolios and cataloged under the guidance of the first project architect David Polk: a process which was initiated shortly after Kahn´s death in 1974[12]. A small number of these 85 drawings had been dated by Kahn, staking certain milestones in the development of the design. The drawings and plans of the associates are filed seperately in 12 portfolios and have until now have only been roughly ordered according to their media, with the result that the various schemes are spread out over several portfolios. The first task, then, was to view the several hundred loosely ordered drawings and to attempt to establish a chronology: a task which is as exhausting as it is fascinating. Simply to achieve a first overview of all the drawings requires several days. After viewing the drawings, a chronological ordering was then accomplished by digitally photographing, labeling and then sorting the individual drawings. All the major plan schemes have been dated by their authors and the order of the majority of the undated drawings may be derived for the most part from the context of the dated plans. Among the myriad of drawings are a great deal of annotated prints, overlays, copies, variations and developments of themes which might indicate how intensively a particular scheme was persued. After sorting the majority of the drawings and sketches, a smaller group remained (consisting of dead ends, discarded ideas, sideward leaps, etc. - most of these drawn by the associates) which were difficult to order among any particular scheme, but which may for the most part at least be be ordered in one of the general phases of the project´s development. The few points of the project where uncertainty as to chronology arises have been noted in the text.

Drawing Media

The great majority of these sketches and drafted plans - both those of Kahn and those of his assistants - are drawn on Kahn´s favorite medium of lightweight yellow tracing paper. Kahn´s sketches - cloudy, multi-layered palimpsests in vine charcoal - may seem to only tenatively adhere to the paper´s surface (see quote at the beginning of Chapter 3: Marshall Meyers: „Louis Kahn and the Act of Drawing: Some Recollections") while his associates´ drafted variations and details - constructed primarily in hard, sharp pencil - are often incised into the tissue-like yellow background in thin silvery graphite grooves. (Conventional American office practice at the time was pencil on robust white vellum). Those who have had the good fortune to handle or view either Kahn´s sketches or his associates drawings will attest to their exqisite delicacy and undeniable presence: qualites which have proved extremely difficult to

reproduce in print media. In fact, the difficulty of attaining even satisfactory reproductions from many of these low-contrast drawings may have been one reason why many key drawings for the project have until now never been published.

CAD Drawings

As a means to better compare the various schemes and to better visualize the final scheme as it was intended, a portfolio of CAD plans and diagrams has been prepared, using as reference photos and photocopies of original scaled and dimensioned office drawings, or, when no dimensioned plans were available, by measuring the respective drawings. (See portfolio for descriptions of the original drawings.) An effort has been made to remain true to the drawings as found, including their ommissions, errors and contradictions: nothing has been „repaired" or „completed" by the author. Thus the unresolved portions of the various project variations have been left „as is" and indicated as such.

Project Files

The project files, contained in two boxes consisting of correspondence, contracts, meeting minutes, calculations, photos and notes were indispensable in reconstructing the development of the project: helping not only to reaffirm the drawings´ chronological order, but to gain insight into the context in which they were created. Even 40 years after the fact, the extensive meeting minutes and correspondence combine to give a surprisingly precise and colorful picture of a lively client - architect relationship and of the personalities involved: containing suggestions, remarks, quotations, reactions to designs, points of agreement and disagreement, etc... in several cases allowing us to understand the reasons for decisions made and for the directions taken by the drawings. Instructive as well are those parts of the files which indicate what information may have remained withheld from the project partner: cost estimates, internal minutes and notes, etc..

Additional Drawings and Files

In addition to those drawings and files related directly to the Dominican Motherhouse and Saint Andrew´s Priory, were other sources within the Kahn Collection which helped to shed light on or to better situate the project: office payroll cards helped to establish exactly who was involved in the project and for how long, letters from Kahn´s general correspondence gave insight into the long term development of certain themes in his thought, while drawings and sketches from other project files helped to better situate the Motherhouse project in terms of its development, etc..[13]

Interviews

Of greatest informational and personal value were the numerous formal interviews and informal discussions held as part of the research for this project. The first catagory consists of interviews with those persons directly involved in the development of the Dominican Motherhouse - project architects David Polk and Anant Raje, as well as Sister Irene Lolli and Sister Eilleen Patricia, both members of the convent´s building commission. (Sister Eilleen being the convent´s current archivist.) A second category is formed by interviews with those persons who had been intimately involved with Kahn´s work and were willing to discuss various aspects of it with me: the landscape architect Harriet Pattison, as well as Kahn´s associates Duncan Buell and Henry Wilcots. In a third catagory were former students in Kahn´s Master´s Studio at Penn who helped me to better understand the relationship between his studio teaching his office work: Professors David DeLong and Jim Kise. Finally, were the numerous discussions and interviews with those persons - architects and scholars - who, through their own studies of or connection with Kahn, were able to provide me with valuable insights into the themes developed here, among them: Professors David B. Brownlee, Michael J. Lewis, David van Zanten, Tom Leslie and Peter McCleary, as well as Julia Moore Converse, Director of the University of Pennsylvania´s Architectural Archives and William Whitaker, the archive´s collections manager. Fr. Luke Dysinger OSB of Saint Andrew´s Abbey was able to provide me with information on that project.

Literature

A thematically ordered bibliography lists the reference literature for this study.

Chapter 2: Footnotes

1. Susan Sonntag, Against Interpretation and other Essays
Farrar, Strauss & Giroux, New York, 1961 p.13-23

2. While projection and spectulation are of course necessary in any truely humanistic dis-
course, at least for the present moment, an apparently „limited" and in-depth attempt at the
clarification of certain metier-immanent fundamentals or the demonstration of an analytic
method seems to paradoxically carry the most potential for positive change. Although
increasingly rare, there exist a number of fine examples of the catagory of descriptive and
formal analysis within the literature of architectural theory and criticism which have served to
inspire and set a standard for the following study, among them: Colin Rowe´s „phenomenol-
gical" essay, „La Tourette"; Christian Deviller´s essay/formal-spatial analysis of Kahn´s Indian
Institute of Management; Christian Sumi´s monograph on Le Corbusier´s Maison Clarte;
the descriptive analysis in Michael Benedikt´s erudite and provocative „Deconstructing the
Kimbell" or - to a certain degree - Peter Eisenman´s descriptive formal method in his 1963
dissertation, „The Formal Basis of Modern Architecture". (See Bibliography for full references.)

3. By the mid-1960s Kahn´s assistants were accutely aware that „the things coming out of
the office would be wonderful things." (David Polk in interview with author, October 2004.)
With posterity so near at hand, even the most casual of sketches tended to land in the plan
drawer rather than in the wastebasket: a boon for studies such as this one.

4. I refer here particularly to Christopher Alexander´s Notes on the Synthesis of Form
(1964), as well as various programming and „problem-solving" methods such as Geoffery
Broadbent´s Design Methods in Architecture (1969), William Pena´s Problem Seeking: An
Architectural Programming Primer, or such „systematic" planning methods as Johnathan
Habraken and the University of Eindhoven´s SAR-method from the 1970s.

5. Professor Walter Nageli, unpublished lecture, „Entscheidungsketten", 2000, Universität
Karlsruhe.

6. Among the complex „juxtapositional" works of the 1960s we might classify: the Meeting
Place for the Salk Institute (1959-65), the Levy Memorial Playground (1961-66), the Fort Way-
ne Fine Arts Center (1961-73), the President´s Estate at Islamabad (1963-65), the National
Assembly at Dhaka (1962-84), the Philadelphia College of Art (1964-66), the Dominican Mo-
therhouse (1965-69), Saint Andrew´s Priory (1966-69).

7. Vittorio Gregotti in, „Louis Kahn: Modern Connection" Rassegna 21, 1985, p.4

8. Julia Moore Converse, In: David Brownlee and David DeLong, Louis I. Kahn: In the Realm
of Architecture, Rizzoli, New York, 1991, p. 420.

9. An uncertainty concerning the chronology and attribution of the sketches does appear
between the third and fourth schemes: see Chapter 5.

10. Interview, author with David Polk, 20 October 2004

11. Interview, author with Duncan Buell, 15 April 2006

12. See: Julia Moore Converse, op. cit., Confirmed in interview, author with David Polk, 20
October 2004

13. Among the portfolios and files in the Kahn Collection studied in connection with this work
were those for: the Dominican Motherhouse, Saint Andrew´s Priory, the Korman House, the
Morris House, the Adler House, the Esherick House, the Tribune Review Building, the Salk
Institute, the Exeter Library, the First Unitarian Church, the President´s Estate at Islamabad.

Chapter 3. The Drawing Mind, the Thinking Hand:
Louis I. Kahn and the Intertwined Practices of Drawing and Architecture

„I felt, from a very young age, the reward of being able to draw."
Louis I. Kahn, Interview in documentary „Signature Against the Sky", WCAU-TV, 1967

„He worked at night. The office was quiet and most everyone had gone. The phone stopped ringing and there would be no more interruptions.... Sitting by his side a draftsman, or perhaps the man in charge of the job would wait patiently for a word or question to break the silence. „...What if we did it this way?" and he would lightly touch the tip of the charcoal to paper, beginning a tenative sketch.
He rarely worked alone. He needed this dialogue, this testing of ideas: the question and the reaction. The question might be general or specific, but always it signaled the never ending search: „this or that" or „what if" or „is this too big?" And his chosen drawing materials responded. The marks of the vine charcoal barely adhered to the smooth paper, sitting on the hard surface as black dust ready to be brushed away by his hand the moment a better thought arrived. He had invented this method for himself: vine charcoal on smooth yellow paper. Drawing and erasing became immediate and rapid as his thoughts. He would smudge away one idea and follow it with another, leaving only a faint trace of the original sketch. The layers of charcoal left a translucent, animated image of the new ideas superimposed on the ghosts of the old.
No reason to save the initial thoughts. No reason to overlay tracing paper on top of paper to record them all: too slow, too wasteful. Then, once he was satisfied and the search was done for the moment, a spray of fixative would seal up the final image with all the thoughts, ghosts and smudges preserved."
Marshall D. Meyers: „Louis I. Kahn and the Act of Drawing: Some Recollections"

„Drawings and tracings are like the hands of the blind touching surfaces of the face in order to understand the sense of volume, depth and penetration."
John Hejduk, „Thoughts of an Architect", in: Victims, London, Architectural Association, 1986

On the Advantages of Incompleteness

Drawings as Open Works

Before embarking on an extended study of a work which exists „only" as drawings, it would be advantageous to at least briefly sketch out a framework for the narrative to be told by those drawings. For, although it is not the text´s main line of inquiry, in many respects the following study may be seen as being as much about drawing and its uncertain connections to architecture as it is about „architecture" itself.

Although the world of architecture is poorer for the fact that the Dominican Motherhouse was never built, we may regard this loss in one respect as a gain. In presenting us with the rare opportunity to study a complete and extensive set of „master drawings" - one which stops precisely on the threshold of a mature project´s final detailing and realization - the existing material allows us to focus our attention on those generally less-studied parts of a design´s existence which remain here „untainted" by the later realities of building, inhabitation and reception. On the one hand, the well-advanced state of the design - thought through to the scale of its individual masonry courses and window details - supplies us with precise information as to the building´s intended reality. On the other hand, through these drawings, by their very nature incomplete, we can - indeed must - make this building „our own" by filling in that which is represented by them with our own images. This is one fascination of good architectural drawings: that they, through a combination of precision and incompleteness, make us collaborators in the process of making. As Martin Steinmann has observed, *„A building and a drawing of that building are different expressions, or more correctly, different existence-forms of the same thing. One difference is in they way in which we perceive them. With a building, the form stands before us at the beginning: from it we reach, through the means of abstraction, that which Adolf Loos called the „Basis of the Form" („Grund der Form"). On the other hand, with the drawing our perception begins at this Basis. We must construct the resultant form in our head, according to the instructions which the drawing gives us.... While reading these drawings we can´t conjure up just any picture, though. When „Fir" is notated, we can´t imagine anything else. Only, how does „Fir" look? How does this wood look when it is new? How does it age, and how does it look then? In order to read these drawings, which are so exact, we must create a world of things in our head on the basis of our experience: boards, planed, wire, rods, galvanzied, shingles.... This seeing, which*

leads from things to images, describes, then, exactly the opposite way than that which the designer goes: the one which leads from images to things."[1]

Tangible Evidence of Thought

In this particular case, of perhaps even greater interest than our „collaboration" in the perception of the final design, is our „participation" in the process leading to that design. To follow the still-tangible thoughts and speculations of Kahn and his associates over the three-year course of the project´s gestation is to reenact an engrossing journey, one complete with false starts, contradictions, slow accumulations, hard-won insights, etc.. The plot thickens as the sheets are successively, carefully taken from the portfolios: Why was one configuration found better than another? Why was an entire scheme redrawn in order to change a few lines? Why was an original detail abandoned in favor of what seems to be a far less compelling one? From sheet to sheet the forms move, shift, evolve into ever new states. Knowing the final outcome in advance does nothing to reduce the fascination of the story, for while leafing through the schemes it becomes apparent just how precarious the existence of that well-known final design actually was; how near it often was to failure and how ready to embark on alternative paths.

Those who have had the opportunity to see Kahn´s charcoal-on-yellow-tracing-paper worksheets will attest to their concrete beauty as **drawings**: their schimmering layers, dark recesses, balanced fields, gestures both hesitant and impatient make many of these delicate sheets worlds unto themselves, for reasons completely independent of their architectural content. **(Figs. 3.1 - 3.3)** And, as David van Zanten has pointed out, when viewed as compositional drawings they are perhaps unique in twentieth century architecture.[2] As partners in a drawn dialogue, the drafted schemes of his associates - in which Kahn´s shadows become concrete - are scarcely less compelling. If the following pages can relate at least some of the deep intellectual and sensual pleasure which the journeys through those drawings have provided the author, then they will have achieved at least a portion of their task.

At the same time, as fascinating as **this** particular story may be, there remains the pressing question if there is something beyond the merely engrossing within the study of these drawings; something which transcends the recording of a singular architectural event and which may be learned and generally applied to the making of architecture?

Questions of Means

Reflective Cultures of Designing

The interconnections between the twin practices of drawing and architecture have, in various cultures of designing, alternately been taken for granted or been the subject of extensive speculation and thought.[3] In those reflective cultures of designing, the architect has been challenged to „think through" his or her means of drawing and notation, not to dismiss or ignore them. As in other reflective creative disciplines, the various means of working and conceptualizing architecture are acknowledged to possess their own **generative** potentials: orthographic projection (which may or may not generate flat or „graphic" buildings), diagrams (which may purposefully or unwittingly „become" architecture), layered tracing paper (which may or may not lead to layered space), axonometric projections, perspective drawings, three-dimensional computer modelling, etc, etc.: all shape thought and thus the resulting work. The question, „Is architecture made in the head or on paper?" is, in a reflective design culture, reformulated: for it is understood from the outset that thought and physical means of representation enjoy a reciprocal relationship. The hand thinks and the mind draws: the question is not one of „if" there is a connection between the two, but of „in what way and to what effect?" No matter that certain architects such as Le Corbusier and Wright - filing on their reputations as geniuses - would have sometimes have us think otherwise: „*Architecture is in space, in extent, in depth, in height: it is volumes and circulation. Architecture is made inside one´s head. The sheet of paper is useful only to fix the design, to transmit it to one´s client and one´s contractor.*"[4] One promise of a study such as this one is that by neither mystifying, overly rationalizing nor ignoring the relationship between thinking and drawing, we are presented with an opportunity to reflect on the potential characters of their reciprocity.

The connection between drawing and architecture was anything but casual with Kahn. Throughout his life he maintained a passion for drawing: a passion which formed an integral part of both his seeing the world and of his seeing himself within that world. In his later years, many of his anecdotes regarding his childhood and youth were centered around the act of drawing: the childhood burning of sticks in the back yard to make charcoal (pencils being too expensive), the first prizes in school drawing competitions, the drawing classes at Philadelphia´s Graphic Sketch Club and at the Pennsylvania Academy of Fine Arts, the epiphany of first drawing architecture in the high school course of William F. Gray (and the forgery of drawing assignments for his less talented classmates), his science teacher´s later allowing him to „draw physics", etc.. Kahn treasured his ability to draw and came to architecture with a predisposition for visual thinking, one which his graphically oriented Beaux-Arts training at the University of Pennsylvania under Paul Philippe Cret would further hone and which he would continue to cultivate over the course of his career.

Not incidentally, Kahn´s first published essay, „The Value and Aim of Sketching", written in 1931, not long after his return from an extended Grand Tour of Europe as a young man, was a reflection on the relationship between drawing, seeing and architecture: „Drawing is a mode of representation. It makes no difference whether a watercolor is tight, loose or flabby; for if it discloses a purpose, it is of value, and the more we understand the purpose the more valuable the watercolor will become... we must learn to see things for ourselves in order to develop a language of self-expression. The capacity to see comes from persistently analyzing our reactions to what we look at and their significance as far as we are concerned. The more one looks the more one wil come to see."[5] In later texts he continued to thematize the drawing-architecture connection: urging colleagues to „let their pencils linger at connections", etc.[6]

Kahn´s search for an own means of architectural expression was accompanied by a search for an appropriate means of drawing: in both office (see Meyer´s quote above) and afield. As he grew as an architect, Kahn´s referential drawings became increasingly less illusionist and more probing and analytical. In contrast to the painterly drawings from his earlier European trip in the 1920s, his famous travel sketches of the 1950s are as much programmatic as they are descriptive. The powerful drawings of Italian Squares, Greek and Egyptian temples, the Pyramids at Giza are as much his own projections or abstract explorations into the basic architectural phenomena of figure and ground, mass and void, light and shade, landscape and built form as they are depictions of any particular building or ruin. As such, they offer us glimpses of Kahn´s own architectural proccupations at this critical stage of his career. (Figs. 3.4, 3.5) Inversely, some of his sketches for his own projects might easily be taken for sketches of historical buildings or ruins. (Figs. 3.6, 3.7) By the time of his late maturity Kahn had aquired an impressive repertoire of referential, exploratory and definitive drawing techniques: a culture of drawing which was further instilled in his office.[7] His own drawn involvment with his projects did not stop at the concept phase, but continued to the level of the smallest details: within the course of a project a drawn dialog between Kahn and his associates would develop by means of tracing paper overlays or late night annotated drawings which the project architect might find on his or her desk the next morning. (Figs. 3.8, 3.9)

Questions of the Drawings

The folllowing Section bears the title, „On the Gradual Formulation of Thoughts While Drawing" in reference to Heinrich von Kleist´s well-known text, „On the Gradual Formulation of Thoughts While Speaking" („Über die allmählige Verfassung der Gedanken beim Reden", 1805/06[8]) In that text - a letter to a good friend - von Kleist mused over a method in which clear thought might be teased out of darkness into light, not through meditation or brooding, but through unforced and rumative speaking. He proposed to his friend uncensored, successive thinking aloud - any listener will do - as a kind of self-generated act of Socratic thought-midwifery. In a parody of the French „l´appétit vient en mangant," he suggested „l´idée vien en parlant." The sifting, evolutionary, self-feedback nature of designing on paper may be considered largely analogous to the method described by von Kleist, with drawings, rather than words, being the means of inquiry which take on a life of their own as they are allowed to unfold. In this light, Marshall Meyer´s brief description of Kahn´s rumative drawn-verbal

method at the beginning of this chapter could almost be a paraphrase of von Kleist: „l´idée vien en parlant et dessinant".

The goal of this brief chapter is neither to attempt a description of Kahn´s drawing-thinking method nor to formulate a general hypothesis on the relationship between drawing and building. Rather, the intent is to form a point of departure from which the reader might better „think through" the drawings in the following chapters. In interest of this thinking through, I would like to raise the following questions and remarks as a way of introducing the drawings and the accomanying text..

Orthographic
Projection and Space

A first question regards means and ends. Kahn´s buildings - and the Dominican Motherhouse is exemplary in this respect - were to a great degree „thought through" and generated with the architect´s traditional two-dimensional tools of orthographic projection: conventional plans (especially plans!), sections and elevations; with perspectives and models used only sparingly in the process, and when, apparently more often for presentation than conceptualization. This is a method which is largely a heritage of his neo-Beaux-Arts training. And yet, in spite of this „graphic" method, Kahn is generally considered to have created some of the twentieth century´s most sublime and subtle architectural **spaces**. This fact would seem to run counter to the currently widespread assumption that three-dimensional modelling - whether in the form of scale models, perspective drawings or computer-generated images - is necessary for accurately visualizing complex architectural space, or that it at least substantially enhances our capacity to do so. Is Kahn an anomaly then? Or is there instead a specific **generative** relationship between his two-dimensional drawing method and his complex three dimensional spaces which deserves more attention? This question will be taken up again in Section III. Until then, it remains close at hand with the drawings presented in Section II.

Uses of Drawing

A second question regards the various **uses** of the drawings. Without developing a rigid system of catagorization, it would be instructive for the reader to question the drawings as to just **when** and to **what degree** they are purposefully ambiguous and gestural, when they are more probing and analytic, and when they become precise and concrete. (And - perhaps most interesting of all - when they combine two or more of these properties.) The drawings, at first glance „merely" technical drawings or two dimensional sketches, upon further study demonstrate an impressive range of what these basic tools are capable of acheiving. Of special interest is how drawings may be used to fix intent while leaving certain particulars open in order to move forward: in other words, how fragmentary drawing is used to find out „what the things want to be" (Kahn). This finding out may be additionally manifest in the way that „exploratory" drawings are used to examine specific themes (for example mass-void, interior exterior) while leaving other themes (use, circulation...) completely unaddressed. Related to both of these uses is how drawings are used as a form of dialog between Kahn and his associates: the associates´ precise and finely drafted translations of Kahn´s rough freehand sketches, his rough revisions of their fine plans, etc.: a back-and-forth between ambivalence and concreteness, opening and closing which both drives and brakes forward movement.

Old and New
Methods of Designing

A final question, one corollary to both above - for these drawings are separated from us by the widening gap of now 40 years - is to what degree Kahn´s „old" method of drawing and working is relevant to architects involved in contemporary practice, where the locus of designing has been largely transfered from paper to the computer screen? Even if enticed by the aura of these hand drawings, the user of contemporary digital technology may likely find much anachronistic in the method behind them: the redrawing of entire plans in order to change a few details, the tedious and inexact transfer of information between different scales or between master sketch and associate plan, the time-intensive generation of multiple variations which seems predestined to be replaced by the instant copy-and-paste capabilities of the computer.... And yet, through the narrative emerges a glimpse of a reflexive culture of drawing-thinking which poses critical questions to our own contemporary working culture. Many of these questions have have been discussed elsewhere: some authors have lamented in the loss of hand-drawing the loss of a method which represents a continous chain of events between the original body-generated gesture and the finished work (implying a

transfer of the body´s own sense of itself, of its senses for proportion and of scale over the length of the process[9]) while others have seen the potential of linking digital designing and production tools, with the promise of rejoining thought and craft. Some have pointed out that computers have considerably expanded the buildable form-repertoire of architects, while others have pointed out that the computer still cannot match the fluidity and serendipity of the pencil-at-play as a means of conceptualizing. Some have pointed out the enormous gain in precision, complexity and speed associated with the computer, while others have pointed out that that tool leads architects to unwittingly make certain value judgements which they might otherwise avoid, etc..[10]

This is not the place to discuss to pros and cons of analog and digital design cultures. Yet within the context of current design culture - in comparison to Kahn´s, strongly image-based and with a for him unimaginable productive capacity - one aspect does emerge as a critical question. Kahn´s was a practice which not only allowed for slowness, but seemed to actually **invite** it. (Kahn was a slow producer, even within the context of an „analog" culture.) Might not this apparently purposeful slowness of method - with its muliple transfers, tracings, repetitions, spaces left for inaccuracy and ambivalence - have been a way of bringing deliberation (which in spite of the tools at its disposal has always had the same tempo) and means of production in sync? If complexity and depth in architecture are matters of accumulation, and if drawing is also a drawing of connections between different scales and different areas of reality, then might we not see Kahn´s cultivated friction and idling as a method for avoiding a rush to premature closure; a way of holding the door open for the serendipitous, the accidental, the slow-ripening? Thus Kahn, *„While drawing I´m always waiting for something to happen: I don´t want it to happen too quickly, though..."*[11]

If the final richness and depth of architecture - and Kahn´s is undeniably rich and deep - is tied to its means of being thought, then such drawings must inevitably pose questions. The answers to these are complex and cannot be generalized here, as they are caught up in an ever shifting context from which new cultures of designing may emerge. I leave the reader, then, alone with these questions and the following narrative to begin to „draw" his or her own conclusions.

Footnotes: Chapter 3

1. Martin Steinmann, „Techne: zur Arbeit von Peter Zumthor", in: Partituren und Bilder, Architekturgalerie Luzern, 1989, pp. 6-8. (My translation.)

2. David van Zanten, „Kahn and Architectural Composition", Lecture: Yale University Architectural School, Dec. 2003, unpublished manuscript.

3. Among more recent thoughtful and thought-provoking reflections on this connection belong Robin Evans´ essay, „Translations from Drawings to Buildings" (1986), in: Translations from Drawings to Buildings and Other Essays, AA Documents, London, 1997, pp. 153-194, and book ‚The Projective Cast, MIT Press, Cambridge MA, London, 1995 are to mentioned, as well as Edward Robbins´ Why Architects Draw, MIT Press, Cambridge, MA., London, 1994. See the Bibliography for further references on this theme.

4. Le Corbusier, Précisions,1930. Wright also fostered the „made in the head" version with his well-known description of Fallingwater´s paper-free conception, certainly a better way of demonstrating one´s own genius than messy route of drawing. (Of course, on various other occasions, Le Corbusier and Wright, both accomplished and passionate draftsmen, waxed poetically over drawing and its connections to their architectures.)

5. Louis I. Kahn, „The Value and Aim of Sketching", T-Square Club Journal, Philadelphia, May 1931, in: Alessandra Latour, Louis I. Kahn: Writings, Lectures, Interviews, Rizzoli, New York, 1991, pp. 10-13.

6. Louis I. Kahn, Monumentality, in New Architecture and City Planning: a Symposium, 1944, in: Alessandra Latour, Louis I. Kahn: Writings, Lectures, Interviews, Rizzoli, New York, 1991, pp. 18-27.

7. For more comprehensive overviews of Kahn as an artist and draftsman, see: Marshall D. Meyers, „Kahn and the Act of Drawing", in: Sketches for the Kimbell Art Museum, Kimbell Art Foundation, Fort Worth,1975; Jan Hochstim, The Paintings and Sketches of Louis I. Kahn, Rizzoli, New York, 1991; Eugene J. Johnson and Michael J. Lewis, Drawn from the Source: the Travel Sketches of Louis I. Kahn, MIT Press, Cambridge MA, London, 1996; and William J. R. Curtis, „Modern Architecture, Mythical Landscapes & Ancient Ruins", Annual Soane Lecture, Sir John Soane´s Museum, London, 1997.

8. Heinrich von Kleist, „Über die allmälige Verfassung der Gedanken beim Reden", published as a pamphlet from the Kleist-Museum, Frankfurt (Oder), 1996, pp. 23-34. (My translation.)

9. As to how the hand itself „thinks", or plays an integral role in thinking, ruminated Martin Heidegger: *„Perhaps thnking, too, is like building a cabinet. At any rate, it is a „handicraft", and therefore has a special relationship to the hand. In the common sense, the hand is part of our bodily organism. But the hand´s essence can never be determined, or explained, by its begin as an organ which can grasp. (...) The hand is infinitely different from the other organs of grasping... different by an abyss of essence (...) But the craft of the hand is richer than we commonly imagine. (...) The hand reaches and extends, receives and welcomes - and not just things: the hand extends itself, and receives its own welcome in the hands of others. (...) but the hand´s gestures run everywhere through language, in their most perfect purity precisely when man speaks by being silent. (...) Every motion of the hand in every one of its works carries itself through the element of thinking, every bearing of the hand bears itself in that element. All the work of the hand is rooted in Thinking."* Martin Heidegger „What Calls for Thinking?"

10. The pros, cons, promises and pitfalls associated with the transfer from analog to digital design methods have been eloquently discussed by Michael Benedikt: „Less for Less Yet", in: Harvard Hesign Magazine and „God, Creativity, and Evolution: The Argument from Designers", in: Center 15, 2006, pp. 1-45; also Peter Lynch, unpulished lecture Cranbrook Academy,

2004; and Horst Bredekamp, „Frank Gehry and the Art of Drawing", in: Gehry Draws, MIT Press, Cambridge MA and London, 2004, pp. 11-38.

11. Louis I. Kahn, Interview in documentary film „Signature Against the Sky", WCAU-TV, 1967, in Kahn Collection.

Section II

On the Gradual Formulation of Thoughts While Drawing:
Designing the Dominican Motherhouse of St. Catherine de Ricci
Media, Pennsylvania, 1965-69

Chapter 4. Prelude: The Congregation, the Program, the Architect

„...Constantly the question, **What is a Monastery? What inspired the first Monastery?** *You needn´t know the truth of the circumstantial fact because that is not a guide at all. Anything in history which happens circumstantially is of little worth. What in history is a sign of the inevitable is of tremendous worth."*
Louis I.Kahn, The Instutions of Man, lecture, Princeton University, 13 March 1968

„A building is a world within a word."
Louis I. Kahn, Talks with Students at Rice University, 1969

„Painting has nothing to do with thinking, because in painting thinking is painting. Thinking is language - record keeping - and has to take place before and after. Einstein did not think when he was calculating: he calculated - producing the next equation in reaction to the one that went before - just as in painting one form is a response to another, and so on."
Gerhard Richter, Notes, 1962

„In fact, we cannot observe the creative phenomenon independently of the form in which it is made manifest. Every formal process procedes from a principle, and the study of this principle requires precisely what we call dogma. In other words, the need that we feel to bring order out of chaos, to extricate the straight line of our operation from the tangle of possibilities and the indecision of vague thoughts, presupposes the necessity of some sort of dogmatism. I use the words dogma and dogmatic, then, only insofar as they designate an element essential to safeguarding the integrity of art and mind, and maintain that in this context they do not usurp their function."
Igor Stravinsky, Poetics of Music in the Form of Six Lessons, Cambridge, 1952

The Congregation   The work which is to unfold at length in the following sections may be found in Kahn´s archive under the somewhat imposing project title of **„The Mary, Queen of All Saints Motherhouse, Domincan Congregation of Saint Catherine de Ricci."**[1] The commissioning congregation holds a special place among America´s religious insitutions: founded in 1880 near Albany, New York by Lucy Eaton Smith **(Fig. 4.1)** it introduced the work of offering spiritual retreats for women in the United States. Inspired by the fifteenth century Florentine mystic, St. Catherine de Ricci, Smith´s goal had been to establish a place for women in what she had come to know as the male-dominated religious and political culture of late ninteenth century America. The need which she had felt was indeed as a real one, for under the guidance of Lucy Smith and her younger sister Lilly **(Fig. 4.2)**, the congregation would bloom during the first decades of its existence, with Lilly establishing further foundations in Philadelphia and Cuba by 1900.[2]

In 1964, after over 80 years of residence in upstate New York, the Albany congregation was forced to vacate its original home after the local fire commission had deemed the old woodframe building unsuitable for institutional use. Rather than looking for another site in New York, the decision was made to follow the second foundation to Pennsylvania. In the1930s the sisters there had been able to purchase the opulent but depression-deserted William L. Elkins estate, „Elstowe", in the Northern Philadephia suburb of Elkins Park, in which they soon installed a large womens´ retreat house.[3] By the late 1950s and early 60s, against the backdrop of America´s burgeoning post-war affluence and materialism, a renewed interest in spirtual life had begun to blossom: the retreat house at Elkins Park - at times bustling with over 300 short-term guests - was unable to provide the sisters from New York with the breathing space which they had envisioned for their own permanent home. Some fifty miles to the South, though, in Delaware County near Media, Pennsylvania, a smaller country estate with the name of „Windy Hill", was for sale by auction. **(Fig. 4.3)** Acting quickly, the sisters aquired and then moved to the property. It was thought that by establishing their Motherhouse near Media they could benefit from both the relative proximity to Philadelphia and Elkins Park as well as from the seclusion which the distance provided. Shortly after having settled in their new home, though, the extent of the ongoing spiritual groundswell was to be felt by the sisters there as well: within a few years they were in need of larger accommodations due to the steadily increasing number of new postulants.[4]

After having made the decision to build a new, larger Motherhouse on their property - which they had determined was to include dormitories for approximately 120 sisters, a chapel, a refectory, a library, educational and recreational facilities - the congregation, under leadership of its Prioress General, Mother Mary Emmanuel, began its search for an appropriate architect. Their way to Kahn was a short one, thanks to Mother Emmanuel´s friend, the Reverend Thomas Phelan, chaplain at the Rensselar Polytechnic Institute in Troy, New York. Father Phelan, a specialist on litugical art and consultant for new church architecture in the Albany diocese, was familiar with Kahn´s work and recommended his recently completed First Unitarian Church in Rochester, New York (1958-63) to Mother Emmanuel as a fine example of what modern religious architecture might be.[5]

That Father Phelan would recommend and the sisters would choose a Jewish architect for their Dominican convent is not as unlikely as it might at first seem. Kahn´s transcendentally freewheeling, strongly personal sense of religiousness was not to be confined within the conventions of a particular orthodoxy. „I can´t speak about religious sects. I just know about the Catholics, the Jews, and the Moslems - I have a vague idea of the various sects. But I don´t have a vague idea about religion itself. I feel conversed with religion as a very sacred part of the intimate. But as far as people practicing their philosophies of religion, I can frankly say I don´t know anything about them. None of them seem to be of the quality of religion itself."[6] In addition to his design for the First Unitarian Church, Kahn had served as a member of the Art and Architecture panel of the Catholic Liturgical Conference in Philadelphia in 1963 and had lectured at the Twentieth Liturgical Conference in Chicago in 1965.[7] By the end of his career he would have accomplished the rare feat of having planned and built religious sanctuaries and meeting places for the Jewish, Christian and Islamic faiths.

First Contact

At the end of March,1965 Kahn´s office received an inquiry in the form of a letter from Mother Emmanuel.[8] Kahn was away in Pakistan at the time, involved in the planning of the twin capitals at Dhaka and Islamabad, but David Wisdom, his associate since his 1940s partnership with Oscar Stonorov and closest to what would normally be called „office manager", took the opportunity to respond promptly in a letter dated April 2,1965.[9] Affirming Kahn´s interest in the assignment, listing several completed buildings which might be of interest to the congregation and mentioning the fact that the office was currently involved in the programming stages for another monastery, the Saint Andrew´s Priory in Valyermo, California, Wisdom invited Mother Emmanuel to visit the office in order to view works in progress. After this quick exchange of letters, it would take a full year, though, before the first meeting between Kahn and the sisters was to take place: this was to be by no means a small undertaking for the congregation, and before embarking on a project with such long-term consequences for their way of life, the sisters needed time to reassess their needs and to plan their project´s funding. After long deliberation, they reaffirmed their original program and calculated $1,500,000 to be their maximum budget for the new building before again taking up contact with Kahn.[10]

On April 26, 1966 Kahn and his assistant Galen Schlosser finally met with Mother Emmanuel and the congregation´s building committee in Media.[11] In this and the following project meetings Kahn would be accompanied by an assistant, who would take notes while Kahn led the discussion with the sisters´ committee. The first meetings between the architects and the sisters were spent becoming aquainted with each other, with Kahn questioning on the traditions and rules of the order while both parties defined the components and relationships of the program.[12] This would be the beginning of a process of self-education through questioning in which Kahn would throughout the length of the project continually modify and refine his (more than mildly romantic) understanding of monastic life in general and the sisters´ needs in particular. (Figs. 4.4 - 4.6)

David Polk,
Project Architect

By the second meeting Kahn´s assistant, David Polk, had been given the position of project architect. Polk, a young architect and graduate of the University of Pennsylvania, had now been a part of Kahn´s office for about four years - spaced around a hiatus for army service - and had collaborated on such projects as The Tribune Review Building (1958-61), The First Unitarian Church (1958-63) and Erdman Hall at Bryn Mawr College (1960-64). A talented

designer and draftsman in his own right, Polk belonged to those in the office who were equal to the considerable challenge of holding up their own side of a dialog with Kahn during the conceptual phase of a project. Accordingly, Kahn would often employ him in the position of „initiator" for new projects.[13] In nothing less than a fantastic coincidence of timing, a new project for another monastery, the Benedictine St. Andrew´s Priory, had now been on Polk´s drawing board for less than a month. In trusting him with the Dominican Motherhouse as well, Kahn had the unique opportunity to develop the twin monastery projects in dialog with a single project partner. That Polk had previously worked on the First Unitarian Church and had just finished working on another programatically related project - the scheme for a women´s dormitory at Bryn Mawr College - must have been an additional argument for Kahn´s choice. Polk would help bring the shorter-lived St. Andrew´s project to completion and accompany the Dominican Motherhouse through the greater part of its development until leaving the office in 1968, at which time Anant Raje, a young Indian architect who had met Kahn in Ahmedabad in 1962 and had joined the office two years later, would assume the role of project architect for the final phase of its development.[14] **(Figs. 4.7 - 4.9)**

The Site

Although the mendicant Dominican priors - the **fratres praedictons** - were originally an urban order, seeking direct contact with the populations of the towns and cities in which they built their houses, taught and preached, the female branch of that order traditionally followed more contemplative goals and were thus less bound to the city. In this respect, the congregation could scarcely have wished for a more appropriate site for a new monastery than this semi-rural location. The property which the sisters had been able to aquire consisted of some 55 acres (22 hectares) of land with a large, handsome manor house and outbuildings in a forested section of Upper Providence Township near the small town of Media, Pennsylvania: a landscape of gently rolling and wooded hills approximately 30 miles south of downtown Philadelphia. **(Figs. 4.10 - 4.13)** Located at the highest point in Delaware County, the site was skirted by the historic „Providence Great Road", the first route to be cleared into Pennsylvania´s backcountry by early settlers beginning in 1683.[15]

Kahn and the sisters agreed that the structure and size of the existing house made it difficult to integrate in a larger project, thus it was to be reserved as a separate retreat for guests and older sisters, maintained at a distance and out of sight of the new building. Such an arrangement additionally allowed for the sale of the old house should the need arise. Given the topography, which ranged from a relatively gentle slope on the North side of the property to a steep Ravine in the South, and considering the extent of the forest, the logical site for the new monastery presented itself almost immediately: a hillock on the edge of a meadow clearing which sloped gently but constantly away in all directions. Located in a secluded position deep within the irregulary-shaped property and surrounded by old-growth deciduous forest on the South, East and West sides, the site could be accessed either from the Northeast over North Providence Road by driving past the manor house or from the Northwest over Bishop Hollow Drive. The natural clearing - dubbed „daffodil hill" by the sisters for the lush blanket of flowers which covered it each Spring - had the advantages of good drainage, solar exposure and of being able to be built upon without sacrificing a large number of trees. The forest edge, the meadow and the slightly sloping terrain created together an idyllic and mallable setting for a monastery, offering the simultaneous qualities of openess and closure, the twin promises of prospect and refuge.

The Sisters and Their Program

The leaders of the congregation were women of considerable intellect, culture and experience. Bringing with them individual histories in foreign missionary activities, scholasticism, education and administration; their mutifaceted interests were anything but purely „monastic". Although not profoundly steeped in the culture of modern architecture, in seeking out Kahn the sisters were consciously seeking an appropriately modern interpretation of their program, much in accord with the contemporary Catholic Church´s progressive stance toward art and architecture as well as with the then-nascent reforms of the Second Vatican

Council.[16] Of course tradition substantially dictated the major elements of the program: the separate ranks of the sisters, the convent´s function as a seminary - as a place of education and retreat for sisters and lay persons from outside of the congregation - were fundamental to the Dominican order. Yet there still remained a certain freedom in defining the program´s components - and perhaps more importantly in this case, in defining how they were to relate to each other. Apparently burdened by few stiylistic preconceptions and working from a list of their own wants and needs, the sisters had received no professional aid in developing the program. (As the plan developed Father Phelan would become involved as an advisor for the designing of the chapel and a special consultant for the planning of institutional kitchens would additionally be engaged by the sisters.) The program which Kahn and the sisters had worked out together in their first meetings was more qualitative than precisely quantitative in nature: while types of use and approximate numbers of users were specified, exact room sizes, adjacencies and detailed functional requirements were left open for the architects to develop in dialog the sisters by means of their designs.[17]

From Programming to „Reprogramming"

This approach to programming as an open-ended dialog between client and architect was ideally suited to Kahn´s holistic ideal of conceiving a design, in contrast to conventional prescriptive practice in which the architect is presented with a more or less complete brief from the client at the beginning of a project. For Kahn, architecture could never result from the direct translation of predefined „functions" into spatial diagrams and further into buildings. The role of the architect in programming was to be an active rather than a passive one: ideally, as a result of his education and experience it was most likely he, rather than the client, who was best equipped to discover the deeper societal and cultural nature of the institiuton at hand; the insight necessary to move - according to Kahn - from circumstantial „needs" to the more deeply seated „desires" from which all human institutions spring. *„There are few clients who can understand philosophically the institution they are creating... Few clients have it or even sense the lack of it. Usually a written program is handed to you and you must assume the role of the philosopher for the client."*[18] Given a program consisting of functionally defined areas and their relationships, it was the architect´s duty to „reprogram": to reshape that program in light of an unchanging, transcendent image of man, directing it away from the paths described by functionalism, modern social science or formalism. *„Our profession is shabby only because we do not change the programming. If you change that programming, you release wonderful forces because the individual then never makes the mistake of making something which just pleases himself. You please society in your programming, not in the way you do your lousy building. The architect trains himself in expression which is true."*[19]

In his emphasis on the architect´s intution, memory and sense of appropriateness in arriving at this „expression of what is true", Kahn stood radically apart from so many of his colleagues, who in the 1950s and 60s, had attempted to systematize architectural programming by, on the one hand, making it a judgement-free, quasi-scientific branch of problem-solving, or on the other hand, a democratic participatory act.[20] Kahn´s insights into the relationship between program (or „function") and form - modernism´s most oft-repeated and perhaps least understood pair of terms - belong to his most profound: deserving of much more elaboration than may be given at this point of the narrative. For that reason, we will return to this theme at various points over the course of this section and in the analyses in Section III.

From Areas to Spaces: the Threshold

Already during the first meeting Kahn proposed an additional element to the program which had not been considered by the sisters: a gatehouse, tower, or ceremonial place of arrival which would mark - symbolically and spatially - the threshold between the monastery and the outer world. Situated in this threshold building would be the rooms which functionally straddled the border between the secular exterior to the sanctified inner world: an entry hall, the administrative offices and the guest rooms. Kahn suggested that the entry hall be decorated with the symbols of all the major world religions: assembled there, they were to be reminders of the universality of belief. The fact, though, that they were to be positioned at the building´s threshold, and not inside the monastery, was intended to intimate the beginning of a realm which was explicitly set aside for the Dominicans´ own particular form of worship and life. *„The monastery which I am doing has an entrance place which happens to be a gate. It´s decorated in the invitation of all religions, something which is now being*

started. But they are given a place only at the gate, because the sanctity of the monastery must be kept."[21] The sisters were immediately enthusiastic about these suggestions. As he later elaborated: *„I have a gateway building. This gateway is the transition between the inside and the outside - I mean - is the center of the Ecumenical Council. It is not in the program. It comes from the spirit and nature of the problem. This is why I think it is so important that the architect does not follow the program but simply uses it as a point of departure of quantity and not of quality."*.. *„The program that you get and the translation you make architecturally must come from the spirit of man, not the program. The program is not architecture - it is merely instruction, it is like a prescription by a druggist. Because in the program there is a lobby which the architect must turn into a place of entrance. Corridors must be changed into galleries. Budgets must be changed to economy and areas must be changed to spaces."*[22]

That Kahn would have great sympathy for the potentials within a monastery´s program and for its inherent dichotomies and intricacies is not difficult to imagine. The ideals of secluded contemplation, learning and ritual community, the interaction between the closed world of the sisters and that of the vistors from the outside, the internal hierarchies of the sisters: all these were the stuff of a finely grained society based on transcendental values which could have only deeply inspired the idealistic Kahn.

The Double Life of the Sisters, Internal Hierarchies	The schematic program, assembled and installed as a point of departure by Kahn and the sisters, divided itself according to the „double life" of Dominican tradition into two distinct major areas: the contemplative private living quarters for the nuns and the active communal and public rooms. Within the order the sisters were grouped according to a four-tiered hierarchy, beginning with newly arrived postulants, followed by the novices who had taken their first vows, the younger professed sisters who had already entered the order and finally, the older professed sisters.[23] Concerning their living quarters, it was felt appropriate that each of the different ranks of sisters be housed separately, each group with its own living room. The cells of the professed sisters would be larger and contain private bathrooms; should the need arise, those of the older sisters could serve as infirmary rooms. The cells of the postulants and novices would be smaller and have access to shared bathing and toilet rooms. The communal rooms were to be divided into those for worship (the chapel) those for education and discourse (classrooms, a library and an auditorium), those for greeting and assembly (the tower, the refectory) as well as the necessary ancillary spaces such as kitchen, housekeeping, storage and administration. Gardens might be layed out a places of contempletive work and some form of recreational facilities were to be considered. Concerning the materials of construction, Kahn spontaneously suggested stone in response to the existing buildings on the site.[24]

With budget, site and schematic program defined, Kahn and his assistants were now ready to begin to bring their first tenative thoughts to paper.

Chapter 4: Footnotes

1. Unless otherwise noted, the source of all original Drawings of the Dominican Mother-house pictured in this text has been the Louis I. Kahn Collection, Kroiz Gallery, University of Pennsylvania (hereafter referred to as „Kahn Collection"): Project File 700, Folders LIK 030.I.C.700.001 - 030.I.C.700.012, as well as correspondence and project files in Box LIK 10. (See Appendix for plan list.) The only exception is Figure 5.49 which may be found in the permanent archive of the Dominican Motherhouse in Elkin´s Park, PA. Additional drawings and file material from the Kahn Collection are noted in the footnotes, as are internal correspondence and meeting notes from the Dominican Motherhouse´s archive.

2. Source: brochure, website of the Dominican Motherhouse of Saint Catherine de Ricci (http//www.elkinsparkop.org); interview, author with Sister Irene Lolli and Sister Eilleen Patricia, Dominican Motherhouse, Elkins Park, PA., April 15, 2006; correspondence, author with Sister Irene Lolli, October, 2007.

3. The Estate „Elstowe" was built in 1898 by the prominent Philadelphia architect Horace Trumbauer, best known for the Philadelphia Museum of Art and numerous villas for the turn-of-the-century East Coast high society. Source: http//www.philadelphiabuildings.com.

4 Interview, author with Sister Irene Lolli and Sister Eilleen Patricia, Dominican Motherhouse, Elkins Park, PA., April 15, 2006. Property sales information filed in the Archive of the Dominican Motherhouse, Elkins Park, PA.

5. Letter, Mother Mary Emmanuel to Kahn, 26 March 1965, Box LIK 10, Kahn Collection.

6. Louis I. Kahn, in conversation with Richard Saul Wurman, October 1973, in: Wurman: What Has Been Will Always Be, Rizzoli, New York,1986, p. 231.

7. Interview notes, Michael J. Lewis with Sister Irene Lolli, 1 May 1990. Lewis´ essay in David Brownlee and David DeLong, Louis I. Kahn: In the Realm of Architecture, Rizzoli, New York, 1991, p. 383-89.

8. Letter, Mother Mary Emmanuel to Kahn, 26 March 1965, Box LIK 10, Kahn Collection.

9. Letter, David Wisdom to Mother Emmanuel, 2 April 2 1965, Box LIK 10, Kahn Collection.

10. The budget of 1,500,000 dollars appears several times in the correspondence for the Dominican Motherhouse. See: Box LIK 10, Kahn Collection.

11. Meeting Minutes, Galen Schlosser, Louis I. Kahn, 26 April 1966. Box LIK 10, Kahn Collection.

12. Interview, Author and David Polk, 20 October 2004. Confirmed in interview, Author with Sister Irene Lolli and Sister Eilleen Patricia, 15 April 2006.

13. Interview, author with David Polk, Polk Residence, Chestnut Hill, PA, 20 October, 2004. Regarding Polk´s ability as a designer, the noted Philadelphia architect Jim Kise referred to Polk´s „famous" student projects and thesis at Penn. (Interview, author - Jim Kise, 19 April 2006.)

14. Interviews, author with David Polk, author with Anant Raje. Raje, who had joined the office as a „technical assistant", later went on to collaborate - together with Baldkrishna Doshi - with Kahn on the Indian Institute of Management in Ahmedabad and to establish a prominent independent practice in Ahmedabad (Among his celebrated works were the Institute of Forest Management at Bophal and the Center for Statistics in New Delhi.) He has additionally held teaching positions and professorships at various Universities.

15. Property sales information in Archive of the Dominican Motherhouse, Elkins Park, PA. Information to Providence Road: Historical Landmark, Media Borough Council, 1977.

16. Interview, Author with Sister Irene Lolli and Sister Eilleen Patricia, Dominican Motherhouse, Elkins Park, PA., April 15, 2006. For texts on Vatican II (1962-65), see the Vatican Archive, Documents of the II Vatican Council: http//www.vatican.va/archive.

17. Meeting Minutes, Galen Schlosser, Louis I. Kahn, 26 April 1966. Box LIK 10, Kahn Collection. Interview, author with David Polk, Polk Residence, Chestnut Hill, PA, 20 October, 2004.

18. Louis I. Kahn, in Wurman: op. cit., p. 120.

19. Louis I. Kahn, Talk with students at Rice University, Spring 1968 in: Louis I. Kahn, Conversations with Students, (2. ed.), Rice/Princeton Architectural Press, Houston, 1998, p. 54.

20. For influential literature on the programming/problem-solving approach to design in the 1960s and 70s see, for example: Christopher Alexander: **Notes on the Synthesis of Form** (Cambridge, Mass., 1964), or Geoffery Broadbent: **Design Methods in Architecture** (London,1969), or William Pena: **Problem Seeking: An Architectural Programming Primer** (Boston, 1977). The other side of the „programming argument" tended to shun a tight fit between form and function and to advocate flexibility and the accomodation of mass production to individual use. See, for example, the „mat" buildings of Candelis, Shadrach and Woods or Johnathan Habraken and Univerity of Eindhoven´s **SAR** - planning method. The participatory model was strongly advocated in the 1960s and 70s by architects such as Lucian Kroll.

21. Louis I. Kahn, in H. Ronner and S. Jhavari: Louis I. Kahn Complete Works, (2. ed.), Birkhäuser, Basel and Boston, 1987, p. 301.

22. Louis I. Kahn, in H. Ronner and S. Jhavari: op. cit. p.303.

23. First typed program (Undated); meeting minutes, Galen Schlosser, Louis I. Kahn, 26 April 1966. Both in: Box LIK 10, Kahn Collection.

24. Meeting minutes, Galen Schlosser, Louis I. Kahn, 26 April 1966. Box LIK 10, Kahn Collection.

Chapter 5. „Architecturing": The Designs, April 1966 - December 1968

„Drawings are, designs are expressions of - and in all instances expressions of - one´s striving to reach the spirit of architecture."
Louis I. Kahn, lecture, Drexel Architectural Society, Nov. 5, 1968

„A building is a struggle, not a miracle"
Louis I. Kahn, (SOURCE)

„...I will no longer talk of the things that are in the house, but of the way in which these things are put together, in fact, the way they are ARCHITECTURED...."
Le Corbusier, „Dèfense de l´Architecture", 1929

First Steps, a First Scheme: April - June, 1966

Grasping Quantities

Kahn´s first elementary sketches remind us that there are no shortcuts to architecture: even for a 64-year-old architect with over 40 years of experience. He is still subject to the same rules as any student: the need to sum up and grasp the quantitive requirements of a program before he can begin to manipulate its raw square feet in order to transform them into what would eventually become a „realm of spaces". **(Fig. 5.1)** Kahn begins with the sisters´ cells - for him the **raison d´etre** of the program - drawing them freehand and to scale according to their number and hierarchy: 30 newly-arrived postulants, 45 novices, 30 junior professed sisters who have already taken their vows and entered the order and 30 older professed sisters. The cells have been tenatively dimensioned: smaller (10 ft. x15 ft. / 3m x 4.5m) cells for the younger sisters, larger (10 ft. x 20 ft. / 3m x 6m) for the elder sisters. In the first mee-ting with the congregation, Kahn had already proposed that the square proportions of the younger sisters´ cells would - in some unspecified way - serve to „measure the(ir) servitude".

Beneath this, on the same sheet, the chapel has been schematically dimensioned on a square-feet-per-person basis and roughly blocked out in a conventional rectangular plan. Further below, moving ahead toward a tentative disposition of the main spaces, Kahn appears to have demonstrated to himself that by arranging the four groups of sisters´ cells as two-story bars around an ambulatory and the chapel, this portion of the program could take on a centralized ring configuration similar to that of his First Unitarian Church. Still further below and to the left, now thinking in terms of the whole program, he has drawn a tiny linear scheme with the various elements of the program strung together along a shifting street-like central axis.

The Cross Schemes

This linear scheme is extrapolated in second and third, larger scale sketches. **(Figs. 5.2, 5.3)** In the second sketch a series of ambulatories describe the thick outer edge of a cross´ nave, embracing the chapel, the directly adjacent refectory and a large central court or **claustrum** which defines the center of the plan. The minor axes of the cross contain the cells and their respective sub-courts, which in turn open toward the main court. This simple scheme resembles an eastern orthodox cross or a rather rudimentary Ecole des Beaux-Arts plan: symmetrical, processional and tightly ordered within its tartan grid; the secondary bays dedicated - in school-book Beaux-Arts manner - to connecting galleries and minor spaces. In the third sketch an additional minor axis has been added: again, the individual areas are gathered around the main space as if around a central arcaded street. In spite of its spare hieroglyphics, we can glean much information from this little drawing. All the typical ele-ments of a traditional western monastic type have been considered: ambulatories, inner and outer cloisters, etc.: assembled, though, to a typology which has no obvious antecedent. The highly directional plan progressively unfolds its layers of sanctity: opening near the more public studio and school, passing the novices and then the sisters´ cells to the chapel and terminating in the refectory at the apex of the cross. Although it´s still not exactly clear how this scheme was intended to relate to the site, fragments of forest seem to indicate that the major axis was to run in an East-West direction, which would correspond to the liturgically-correct orientation for the chapel. The main entry is indicated with an arrow on the Western end of this axis opposite the chapel and a second arrow points in the direction of what must be North Providence Road (the „R" in plan). A crescent shape (a pond, transplanted from the design for the National Assembly in Dhaka?) forms a threshold in this direction.

The Chapel	If for Kahn the monastery finds its beginning in the individual seclusion of the cells, then it must reach its blossoming in the communal worship for which the chapel makes place. In a separate early sketch **(Fig. 5.4)**, Kahn begins to explore the nature of that chapel. In a long rectangle a traditional monastic church has been schematically yet conscientiously layed out, with a central altar and rood screen separating the professed sisters´ choir from that of the younger sisters and the lay. Of equal interest to the sketch are Kahn´s cryptic notes: for he has indicated that in contrast to the „traditional relationship" which he has layed out, some kind of „new relationship" was to be sought. This new relationship is apparently dependent upon the definition of just which area „belongs to the convent" and which „belongs to the lay". Some kind of superposition of inner convent life and the outer world of the lay seems to be the crux of his questioning here, although the final means of that superpostion are impossible to determine from the sketch. Although it´s uncertain if this particular scheme was ever shown to the sisters for discussion, we do know that it was not pursued in further design variations, being quickly abandoned for square and centralized plans. (Father Phelen, who was apparently receptive to liberal interpetations of the traditional litugical layout would later serve as an advisor to Kahn and the sisters regarding the design of the chapel). What makes the sketch of interest here is this superposition of inner and outer worlds: a theme which will resurface in the later schemes: occuring there not only within the bounds of the chapel but on the scale of the entire monastery, as we will observe.
Superposition of Inner and Outer Worlds	

It´s difficult to judge if for Kahn these first drawings were serious attempts at designing a building for this particular site or if they were simply a first means of engaging hand, paper and program. More architectural stick figures than true designs, Kahn´s only surviving sketches from the earliest phase of the project deal exclusively with ordering the internal world of the program: shifting its building blocks against each other in search of a resolved configuration while leaving the specifics of place and context - at least for the moment - unaddressed. But this was not at all atypical for Kahn´s initial approach to a design problem. On the contrary: by this time in his career he had come to see the act of building as being firstly and foremostly a social act; *„an offering to an institution of man."* When confronted with a design problem, the search for the configuration of individual parts which spoke most profoundly of „institution" had become his first priority: transcending the contingencies of material, construction or site. As he had claimed earlier at the 1959 CIAM conference in Otterlo, *„The realization of what is an auditorium is absolutely beyond whether it is in the Sudan, or in Rio de Janero..."*[1]

„Form and Design"	Although often dismissed as too idiosyncratic, too unsystematic to qualify as „theory", Kahn´s verbal **oeuvre** - documented in the form of brief essays, transcribed lectures and interviews - is essential to the understanding of his work. For it is not at all incidental that the late maturation of his built work coincided with his hard-won capacity to structure the **Denkraum** - or conceptual space - within which that work might arise. With Kahn, the verbal self-challenge almost always preceding the built answer.[2] After several probing attempts in the 1950s, his first mature description of how architectural artefacts come into being was laid out in 1960 in what he identified to be a process of „Form and Design". Oft quoted, but worth repeating in the context of this narrative, is the description of what he found to be the twofold nature and internal hierarchy of the creative act: *„...Form encompasses a harmony of systems, a sense of Order and that which characterizes one existence from another. Form has no shape or dimension. For example, in the differentiation of a spoon from Spoon, Spoon characterizes a form having two inseperable parts, the handle and the bowl. A spoon implies a specific design made of silver or wood, big or little, shallow or deep. Form is „what", Design is „how". Form is impersonal. Design belongs to the designer. Design is a circumstantial act, how much money there is available, the site, the client, the extent of knowledge. Form has nothing to do with circumstantial conditions. In architecture, it characterizes a harmony of spaces good for a certain activity of man.*

Reflect then on what characterizes House, a house and home. House is the abstract characteristic of spaces good to live in. House is the Form, in the mind of wonder it should be there without shape or dimension. A house is a conditional interpretation of these spaces. This is Design. In my opinion the greatness of an architect depends on his powers of rea-

lization of that which is House, rather than the design of a house, which is a circumstantial act...."[3]

For Kahn, our institutions - of home, learning, government, etc. - were all „on trial", their original meanings clouded by layers of cultural detritus and circumstance: *„When we think of the simple beginnings which inspired our present institutions, it is evident that some drastic changes must be made which will inspire the re-creation of (their) meaning."*[4] The search for „Form" is the open-ended search for an approximation of this „simple beginning". Here lies the true purpose of architecture: not in the expression of program or of conditions of circumstance, but of the cumulative human experience behind program, beyond circumstance. According to Kahn, the grasp of Form, grounded in man´s „sense of appropriateness" or „sense of commonality", belongs to his intuition and accumulated cultural knowledge; Design, through its questioning of Order, belongs to his ratio. Said Kahn of his own Beaux-Arts training: *„The design begins with the sketch (which) depended on our intuitive powers. But the intuitive power is probably our most accurate sense. The sketch depended on our sense of appropriateness. I teach appropriateness. I don´t teach anything else."*[5]

Kahn´s Form-Design hierarchy thus structures the work of the architect. In practice, the process of designing will tend to proceed roughly as follows: presented with an architectural program the architect - with the aid of both his (cultural) memory and his sense of appropriateness - first searches the mind for the most suitable among the archetypical forms which it has previously stored away: this becomes the hypothetical „Form" of the instituion at hand, be it „House", „School", „Library", etc.. These archetypes are not forms which exist in some distant realm as an ideal **Ding an sich**, rather they represent basic modes of being-in-the-world or, one might say, „existential, or social structures". The „Form" being an (unmeasurable) point of departure, rather than a (measurable) model. For Kahn the ideal „Form" of a project defined the hierarchical and reciprocal relationships between its internal activities and was thus the architect´s insight into the unchanging essence of the human institution. This spatial order, whether expressed verbally or layed out in a „Form" diagram becomes, then, an intuion of a deeper reality, to which all further decisions must be referred. (Kahn´s now-famous description of his „Form Diagram" accounting for the genesis of the First Unitarian Church gives insight into this priority of decisions.[6]) Thus, before the plan - of a school, a house, a library, a monastery - is anything else, it is a „socio-spatial diagram". Like Karl Popper´s description of conjecture and refutation in a scientific experiment[7], once installed, the educated guess of the „Form" is to be proved or refuted by bombarding it with the many contingencies of reality during the„Design" phase: budget, site, materials, building codes, etc.. If the „Form", however deformed by „Design" holds true against these tests, it is the „true" Form, if not, a new „Form" diagram must be conceived and the process begins anew.

Kahn´s insight into the creative architectural process as one uniting intuition and ratio, Platonic Idealism and Realism, cultural memory and empiricisim, conjecture and refutation - especially provocative against the background of modernism´s empiricist **tabula rasa** methodology - remains today one of his most wide-reaching and perhaps least thoroughly understood thoughts. Bearing this in mind in order to continue with the narrative, we will return to further explore the consequences of this statement in Chapter 8.

The First Scheme and its Variations: June 22, 1966 - July, 1966

Between Site and Program

After this inital probing Kahn gave David Polk his tenative sketches along with the responsibility for developing them into a first, scaled schematic study. Polk, having had more opportunity than Kahn to investigate the site in person, suggested to him the spatial potential inherent in the forest: that the existing trees could form a natural edge against which the diverse elements of the program might be arranged. The sisters´ cells could engage in an intimate relationship with the forest while clearing a space for the communal rooms.[8] To Polk´s great satisfaction, Kahn approved of his suggestion for further development during his upcoming absence from the office and continued to consider the potential of the idea himself while he was away. It´s tempting to think that a series of tiny sketches on the back of a letter inviting him to lecture in Stockholm on April 2,1966 may have been drawn while **en route** to

that very appointment. **(Figs. 5.5, 5.6)** They show four variations in which the basic elements of the program - the four bars of cells (one for each group of sisters) and a more or less solid triangular block formed by the common spaces - are juxtaposed across a large interior court or garden. Regardless of where Kahn sketched these diagrams, Polk´s insight in regard to the site seems to have helped him to focus his thoughts on the program: for in contrast to his earliest sketches, the spatial intention of this simple two part **parti** - which holds monastic seclusion in equipose with group worship and communal life - is now abundantly clear.

If the resulting diagram corresponds almost exactly with the fundamental monastic typology of the medieval Cartheusian charterhouse as made manifest at Clermont and Galluzzo, **(Figs. 5.7, 5.8)** this is neither a case of historicist nor academic quotations (to which Kahn was loathe), rather a result of his essentialist method. Expressed in Kahnian terms, both the Cartheusians and Kahn, working independently and some 700 years apart, had sought and found an appropriate „Form" - or type - for the institution of monastery. A „Form" - which according to Kahn - does not belong to anyone, any more than *„the waltz belongs to any musician or oxygen to the discoverer of that element", it is simply that „one finds a certain nature, and as a professional we must find that certain nature."*[9]

Frictions + Reciprocities = „Form"

Fitting the sketches to the site, we can see that the cells have been arranged in an arc which corresponds roughly to the natural topography and to the course of the sun, leaving the crest of the hill untouched for a cloistered garden or open space. The communal rooms are as of yet portrayed as an undifferentiated triangular block. Rudimentary as they may be, already layed out in these simple diagrams are the inherent dichotomies of the problem: on one hand, the private world of the sisters, on the other, the communal areas and the interface with the public world; on the one hand, the wish for a comprehensive form, on the other hand, the wish to articulate the program´s constituent parts; on the one hand, the particulars of topography and site, on the other, the will of geometry to assert itself.... The sum of these frictions and reciprocities would equal Kahn´s first serious intuition of this monastery´s „Form".

Working over the next weeks Polk completed the first scheme in further discourse with Kahn. Like Kahn, Polk´s first step consisted of drawing the elements of the program as scaled building blocks. **(Figs. 5.9 - 5.11)** An attempt to grow Kahn´s „Form" using some kind of meaningful serialism generated by the cells and the interlocking classrooms was quickly abandoned and a large, comprehensive plan in scale 1´´ = 50´- 0´´ **(Figs. 5.12, 5.13)**, showing the new monastery in relationship to the topography, forest and existing buildings, was submitted to the sisters along with a description from David Wisdom on June 22,1966 while Kahn was once again away in Asia.[10] The entry drive to the monastery was to begin on North Providence Road, skirting past the exisiting manor house and approaching obliquely through a newly planted orchard, which seems to simultaniously serve as a filter or threshhold and as a dislodged and domesticated piece of forest.[11] A secondary drive leads discretely from Bishop Hollow Road through the trees to a convenient service court adjacent to the kitchen. Wisdom´s letter - its tone and phrasing reflecting the influence of his long association with Kahn - succinctly walks the sisters through the plan:

My Dear Reverend Mother:

We repectfully submit for consideration the Site Development Plan showing new proposed buildings and surroundings for the Motherhouse, and the general character of the buildings.
The approach is obliquely through an orchard replanted where the old orchard grew, arriving at a paved entrance platform, the Gateway and Administration Building lying ahead, and the Chapel, Refectory, School and related courts stretching away to the right.
The individual cells are organized in an arc facing South along the brow of the hill in the woods beyond the main platform. They are placed so that each room has its own private relationship with the woods - the serenity of the woods being felt to be in harmony with the nature of the cell.
The rooms are arranged in three tiers with access being from the middle level which is also the main ground level of all buildings. Thus one descends one flight of stairs to the first level and ascends one

flight to the third level. All the rooms are connected by an interior gallery and open cloister which looks across one of the four sunken gardens to that portion of the woods encircled by the arc of rooms. The sunken gardens are at the first level giving light and outlook to the galleries and cloisters at that level. The Chapel, Refectory and School are organized linearly along the main platform forming, with their courts, a community of buildings, each being accessible from the principle gallery which widens to form a generous hall at the entrances to the major spaces. These buildings begin to become a realm of spaces appropriate to their purpose.

As shown the number of cells is 105 (sic: 135) consisting of:

    45 novices
    30 postulants
    30 younger professed sisters
    30 older professed sisters

The cells for the novices, postulants and younger sisters are 9 feet 4 inches wide and 12 feet long. Those of the older professed sisters are 11 feet 4 inches wide and 15 feet long.

The Chapel will accommodate 164 persons with the possibility of expansion to 200 for special occasions.

The Refectory will accommodate 160 persons at the four long tables indicated on the plan.

The Auditorium will accommmodate 160-200 persons.

Please let us know when another meeting may be held to discuss further development of your program.

Very truly yours,
David Wisdom

„Form" and Landscape, Typos and Topos

Immediately apparent is to what great degree the **parti** of the presented scheme has remained true to the miniature „Form" diagrams on the back of Kahn´s letter.[12] But the developed plan reveals more than just a direct translation of a typological solution: further study reveals that - in contrast to Kahn´s first attempts with the cross scheme - program and site are now beginning to engage in a relationship which is based on something more than simple mutual negation. In the new scheme the „double life" of the congregation becomes spatially manifest in the way in which the private and public halves of the program are divided along the edge between forest and meadow. To the North of this edge, the communal buildings, to the South, the private world of the sisters´ cells submerging almost completely into the forest like a chain of so many private **hermitages**, each seeking seclusion from the outside world. The operation of fitting the four cell tracts precisely to the topography, in concert with the counter-arcs of retaining walls and sunken gardens/cloisters, strengthens the centrifugal movement of the plan and serves to fortify the gesture of the cells gravitating outward from the meadow and into the forest. **(Fig. 5.14)**

It´s not only that the features of the site have now been engaged in order to strengthen and clarify the program´s latent meaning by spatially underscoring it and anchoring it in a concrete situation: the effect of the institution on the site has been reciprocal. What had previously been a relatively insigneficant event in the landscape - a single hillock among many in a rolling topography - has now been occupied by that program and spatially „amplified" by the setting of the monastery´s ring: transforming it into a unique and focused place in its context: a „Hill among hills". Would it be presumptuous to see in this gesture the beginning of place-making in the sense of Heidegger´s famous „revealing and gathering" bridge, through which *„the banks emerge as banks only as the bridge crosses the stream"*? [13]

While this may be the case, further consideration of the site plan reveals that things are somewhat more complex than suggested at first glance. For in the previously illustrated chapterhouses - as in most traditional western monasteries - the voided courtyard formed by the cloisters is a strong figure which serves to center and anchor the rooms gathered around it. But here, the figure inscribed within the the arc of the four cell tracts is overgrown with the forest´s trees, challenging the clear figural quality which would have made it the unmistakable spatial focus of the complex. What in the first reading of the plan provides a strong „figure", has in a second become a part of the „ground" of the forest itself. Our reading of the plan flickers: it is as if a traditional cloister typology has been simultaneously implied by

the plan´s geometry and „crossed out" by the growth of the forest across that plan.[14] (Fig. 5.15)

Communal Spaces

On the North side of the complex and in the clearing, the communal and public spaces - tower, chapel, refectorium, auditorium, library and school - have been arranged in a deep linear block against the edge of the forest. If the sisters´ cells appear to disappear into the forest, the elevation sketches show that the communal buildings are intended to join in a strong figure against the backdrop of the trees. (Figs. 5.16 - 5.18) Free from the formal conventions of Kahn´s rejected neo-Beaux-Arts cross composition and not subject to the same topographical and natural lighting parameters which had determined the positioning of the cells, each of the components in the public sphere is now theoretically free to take on any shape and to find its most favorable disposition in respect to the other volumes. In spite of this freedom, common to all of the major spaces is the use of the eroded square as a basis in plan. (Kahn: „I use the square to begin my solutions because the square is a non-choice, really. In the course of development, I search for forces that would disprove the square."[15]) The chapel´s base square has been overlayed with circles at each of its corners, while a second, rotated square forms the innermost layer around the central altar. A circulation cross is superimposed across the whole, linking the various layers to their adjacent spaces. In the refectorium a similar circulation cross has been rotated 45 degrees, opening the square at each of its corners and dividing the plan into niches for the four great dining tables. Tower and library are again variations on the layered square, as is the clustered group of classrooms, which describes a 45 degree triangle, or half of a square. The conch-shaped auditorium is the single exception to this excercise in theme-and-variations.

„An Architecture of Connection"

Kahn and Polk have devised a complex and generous „architecture of connection": a series of galleries, courts and subcourts which serve to separate, present and link the individual elements of the program. Judging from the generousity of these spaces - they account for almost one half (!) of the scheme´s total built area - it´s easy to believe that the cloisters and ambulatories of a traditional monastery have grown from their ancillary roles to become the main reason of the institution. In these unprogrammed and open-ended spaces, we might imagine how Kahn must have imagined the sisters: silently walking the galleries, lost in meditation or perhaps spontaneously engaged in philosophical discourse.... It is an elaborate architecture of that which has no instrumental function, of contemplation and chance encounter.

Arrival, movement, encounter: for Kahn, all actions deserving of an own architecture, a more-or-less discrete space within which to unfold. Indeed: these spaces - in themselves and as „spacings" between distinct uses - were for Kahn one of the primary means of interpreting the institution at hand. Tellingly, it is these spaces which most often fail to be described in the client´s written program. For Kahn, „The architecture of connection is that which the architect has to offer the client... The architecture of connection, that which connects the usable space: this is the measure of the architect... The organization of the connecting spaces is that which gives the man walking through the building a feeling for the entire sense of the institution."[17] Or again, later: „The places of entrance, the galleries that radiate from them, the intimate entrances spaces of the institution form an independent architecture of connection. This architecture is of equal importance to the major spaces, though these spaces are designed only for movement and must before be bathed in natural light. This architecture of connection cannot appear in the program of areas, it is that which the architect offers the client in his search for architectural balance and direction."[18] The development of this theme - inseperably intertwined with Kahn´s thoughts on „Form" and with his increasingly complex understanding of a „relational" architectural space, and thus so central to understanding his mature work - will be taken up again at greater length in Chapter 9.

The same fragile quality of connection between private and public realms which was indicated in the original „Form" diagrams has been translated into the current plan. At the respective ends of the axis formed by the principle gallery are the gatehouse and the library, each serving as „hinges" which tenatively connect both halves of the program. Of special interest is the Janus-faced gatehouse/tower. Here, collapsed into a single small volume is a simulta-

41

neous interface between interior and exterior, private and communal, forest and clearing. As described above, Kahn had already in the first meeting with the sisters in February introduced the idea of a tower or gatehouse as a special place of entry and arrival: it will remain a key component of the composition for the duration of the project.

Blurring Figure and Ground	The principle gallery forms a wide path directly alongside the forest´s edge, an element serving to both bind and distance both halves of the program. The plan of the communal spaces reads like grouped snowflakes or mandalas: that which forms figure and that which forms ground becomes in several places difficult to discern. (Fig. 5.19) Superimposed and punched into the main public spaces and the circulation galleries is the series of circular and semicircular courts and „water gardens", which, now legible as positive volumes, now as negative voids, further serves to blur that which is inside and that which is outside. The cylindrical „hollow columns" of the Mikveh Synagogue project (1961-72) or of the Mosque of the National Assembly at Dhaka (1962-82) come immediately to mind.
Theme and Variations	A series of plan variations worked out during the weeks before the first submission explore the relationships between the communal spaces. (Figs. 5.20 - 5.23) Considering for now the solution of the general two-part **parti** or „Form" as given, the configuration of the cells and the position of the „hinge"/ gatehouse remain constant in all of the variations as well. What is at issue here are the typological variations of the individual spaces (the strict adherence to the square loosening, some sort of centralized chapel form remaining a constant), their relationships to each other and their degree of autonomy or submission to a larger whole. While the relationship of the **claustrum maius** - the great cloister - to the cells remains unchanged, the role of the **claustrum minus** - the smaller cloister - for the communal spaces is varied. Additionally, in figures 5.22 and 5.23, the architects test the consequences of rotating the communal spaces eastward in order to establish a frontal, rather than oblique, relationship to the access road.
Direct vs. Remote Association	Having read in the meeting minutes that only the first of these variations (Fig. 5.12, 5.13) was presented to the sisters, we may ask ourselves why this solution was deemed by the architects to be better than the others. (A question which we may often repeat before all of the drawings have be viewed.) In this case, one criterium for choosing this particular form of assemblage over the others may be best illustrated by Kahn himself in a discussion with students of architecture at Rice University: *„Suppose you had a great kind of alley, or gallery, and walked through this gallery, and connected to this gallery are the schools which are associated in the fine arts, be it history, sculpture, architecture, or painting, and you saw people at work, in all these classes. It was designed so that you always felt that you were walking through a place where people were at work.* *Then I present another way of looking at it, say as a court, and you enter this court. You see buildings in this court, and one is designated as painting, one as sculpture, another as architecture, as history. In one, you rub against the presence of the classes. In the other, you can choose to go in if you want to. Now, without asking you which is better, which is a very unfair question, let me tell you what I think is better. I think the latter is greater by far. In the halls that you go through, you will absorb by some osmosis... you will see things. If you can choose to go in there, even if you never do, you can get more out of that arrangement than you can of the other. There is something which has to do with the feeling of association which is remote, rather than direct, and more remote association has a longer life and love."*[19]
Free Choice / Remote Contact	This preference for a combination of free choice and „remote" contact with that which Kahn called „the Availabilities" provides us with a primary means for deciphering virtually all of his mature plans, „be they at the scale of a house, an institutional building, or an entire city".[20] Accordingly, all of the design variations for the monastery´s communal rooms share the organisational device of the courtyard (or courtyards) in combination with the galleries, increasing both the number of and means for possible relationships between spaces. If the version chosen for presentation to the sisters was judged to be superior to the others, then we can only speculate that this was due to the way that the ordering of the individual parts best met the „Kahnian imperative" of choice, of remote rather than direct association. In the presented version, for example, the school rooms huddle together as if involved in an internal

dialog, forming their own sub-court which in turn gives on to a larger court; a situation more „open" and richer in possiblities of association than the linear disposition of those spaces as shown in figures 5.21 and 5.22. Indeed, in the preferred version, the dependence on conventional single-loaded galleries has been held to a minimum. The position of the library in plan seems the most appropriate of the suggested solutions, mediating best between the space of the school and the rest of the convent. In addition to providing the richest interfaces between uses, this compact version seems to find the best balance between the solitary realm of the cells for retreat and contemplation and the „choreography of free choice" in the communal forum: as in the original „Form" drawings, each half of the program is given equal weight in the plan.

Elevations:
A „Brick Order"

Three alternate elevation studies were prepared for the first scheme: a sketch by Kahn followed by two drafted versions from Polk. (Figs. 5.16 - 5.18) Showing the North facade only, these studies reveal how the complex of the communal buildings was to emerge as a highly expressive wall of individual figures from the dense backdrop of the forest; each scaled to announce its presence from a distance. If in the first discussions between Kahn and the sisters, some kind of stone construction was to be considered, these buildings were now conceived of as brick.[21] Apparently of a similar „brick order" to that which Kahn had been simultaneously developing for the Indian Institute of Management in Ahmedabad and the hostels of the Capital at Dhaka (Figs. 5.24, 5.25): their giant flat arches and gaping circular voids dominate the view from the approach to the monastery.

Kahn´s rediscovery of brick - that most „unmodern" of materials - had not by chance accompanied his late blossoming as an architect: well serving his desire for **gravitas** and resistance, for discrete and directly constructed spaces, for grainy, light-reflecting opacity. More so than an enclosure of concrete or steel, a handcrafted masonry wall seems to have evoked in him that fundamental sense of human dwelling for which he strove. In search of that quality, from the Yale University Art Gallery over the First Unitarian Church to the works in India and the Exeter Library, he gradually developed something approaching a backwards-moving morphological series: beginning with the nearly weightless „Renaissance" veneers at Yale and the Richards Medical Laboratories moving over the folded „Gothic" shells at Rochester to the archaic bearing-wall tectonics of the Exeter Library and of the Indian works.

Aside from his long-term preoccupation with the material, Kahn´s decision to use brick is an understandable response to this particular assignment: it being one of the most prevalent of indigenous building materials: one which is able to expressively accomodate both the required small and large scale spaces of the program within its natural constructive „order". (Kahn, on the similar problem of the Indian Institute of Managent: *„You notice I made all these buildings answerable to each other, even though the scale of the house and the dormitory and the school is so different. The material of brick bearing walls and piers with concrete floors is retained throughout, the larger spans giving rise to arches and buttresses, the more modest spaces simple slabs on walls."*[22]) This said, the resulting elevations do for the moment raise some difficult questions. Can Kahn´s monumentally-scaled Indian architecture - developed, among other things, in response to the extreme sun, heat and scale of the Indian subcontinent - be directly transplanted to the mild climate, to the gentle scale of the wooded Pennsylvanian landscape? As with the first attempts with the floor plan: it´s difficult to ascertain to what degree Kahn is truely serious, to what degree he is merely dipping into repertoire or purging himself of something. Accusations of self-endulgence or formalism would be - at least for the moment - difficult to deny: the brick may indeed, according to Kahn, *„want to be an arch"*, but the resulting elevations, with their huge multiple openings and their shadowy depths, seem to express more for expression´s sake rather than in a truly comprehensible response to the particulars of context, climate or program.

July 22, 1966:
The Presentation of
the First Scheme

On July 22,1966 Kahn and Polk met in Media with the congregation´s building committee which was headed by Mother Mary Emmanuel, Sister Monte and Sister James to discuss the first scheme. Reading between the lines of Polk´s extensive meeting notes, one can sense an atmosphere of friendly affirmation mixed with a subtle undercurrent of strong wills on either side of the table: the sisters would prove to be agreeable, yet by no means mall-

able partners for Kahn in the following months of discourse.[23]

The sisters were generally appreciative regarding Kahn´s interpretation of the program and of the presented solution: approving of the disposition of the building on the site and of the individual elements to each other. They responded enthusiastically to the architects´ suggestions regarding the relationship of the cells to the forest (Kahn: *„the cell should express the dignity of the individual"*), the strong connection between chapel and refectory and the idea of the tower as a threshold and „special place" of entry. Kahn was off to a good start.

They were less enthusiastic, though, about the distance of the school to the cells, feeling that each rank of sisters should have a private schooling area as a part of their living quarters, thus more strongly segregating the groups and making the woods a more active part of the convent. Although he immediately made a suggestion as to how the school rooms might be integrated into the cloisters of the cell wings, Kahn would fail follow up in the next schemes, most certainly as this would oppose his bi-polar „Form" idea, which held the quiet private and active communal areas in equipose.

Balconies or window seats for the cells were rejected by the sisters as being either too expensive or unnecessary. Brick was acceptable as a building material, but Polk noted that the sisters „hated" efflourescence. Regarding the refectory, the sisters maintained that *„meals were now a social as well as a religious experience"* and that therefore many small tables would be more appropriate than the four great planks which had been indicated in the plan. (Each with a length of approximately 18 ft. (6m).) Kahn protested, saying that the smaller tables would *„...make the place feel like a restaurant rather than a dining hall."* Sensing, perhaps, that the sisters´ sense of ritual might not live up to his own idealized images of convent life (there had already been requests for recreational facilities with swimming, badminton, basketball and tennis: these would soon be followed by wishes for further „worldy" comforts such as air conditioning and intercoms), Kahn ruminated poetically on *„... the presence of the Chapel - the sense of ritual, not convenience, a feeling of exhaultation...."* Kahn could only have had the greatest of expectations for a congregation of Dominican nuns: who, if not they, would be willing to excercise the personal asceticism necessary to dwell in what he had envisioned to be an architecture of silence and transcendence? In the coming months the sisters would not always live up to his own idealized „Trappist visions" and the conflict between his ideals of monastic asceticism and theirs of an active modern religious life would regularly provide grounds for discussion. On the particular subject of the refectory tables, Kahn stood his ground: designing over the following months an entire spectrum of fixed tables and seating arrangements: T-formed, semi-circular, cloverleafed... seemingly anything but the despised „cafeteria style"...

Agreeing upon a follow-up meeting at the end of August, the architects left the sisters with a copy of the standard A.I.A. contract and a fee schedule. Kahn hedged, though, when asked by the sisters about the costs of his plan, stating that it would be more profitable to discuss the costs after they had *„brought the project closer to a true expression of their needs."* Polk concluded his notes with the laconic comment, *„The sisters do not seem overawed by the size of the project."* A rather unusual note on which to end the minutes of a meeting. Perhaps he was thinking what the sisters should have been: that a bit of awe would have been particularly appropriate in their case, considering their $1,500,000 budget: for the project on the table measured a proud 160,660 square feet (14,456 m²), excluding basement.[24]

The Second Scheme: August - September, 1966
While the first project meeting was both mutually affirmative and generally constructive, it did not take long, however, for the first signs of difficulty to cloud the otherwise positive mood of the beginning. In September, Mother Emmanuel, most likely beginning to develop a sense for the project´s true dimensions, wrote Kahn to express her worries and to remind him of of the congregation´s limited budget. High interest rates and inflation had added considerably to the burden of financing such a large project during the mid-1960´s and without a concrete cost estimate, she was uncertain of how to go forward.[25]

Compacting the Plan	After receiving Mother Mary Emmanuel´s letter, Kahn and Polk began immediately to reconsider their design. Attempting to save the first plan´s **parti** while searching for means to a more compact whole, a second scheme was developed over September. **(Figs. 5.26, 5.27)** The monastery´s position and orientation on the site remain the same as before, while responding to the sisters´ suggestion that the combined main and service entrance drive now lead in from Bishop Hollow Road. This lessens perhaps the poetic sense of procession when compared with the earlier approach through the orchard; gone as well is the elegant separation of visitor and service access. On the other hand, the new monastery now has its own address, no longer accessed by driving past the manor house. On this point Kahn and the sisters were in agreement: the new route of approach would remain for the duration of the design.

In response to the new approach, the entry tower - now octagonal in plan - has been shifted from the West side of the complex to the East. In an attempt to tighten up the plan, a narrower main gallery skewers through the tower, collecting the main communal spaces along its side and terminating in both the school and the living quarters. While still offering separate courts for school and service areas, the first version´s generous system of **claustra** has been compacted by pressing the building blocks tightly against each other. Gone, too, are the figure-ground obscuring „hollow columns" and „water gardens" of the earlier scheme. The direct relationship between Chapel and Refectory - preferred by both architect and the sisters - remains in this version, as it will in all following versions. An intriguing moment in the plan is provided by the Chapel, in which a square rotated within a square creates both **poché** for ancillary spaces such as the confessionals and sacristy as well as forming thresholds to neighboring rooms. Whereas in the previous version, the project´s governing geometry may be derived from both its program and its relationship to the topography, here a new „irrational" geometry begins to take over in which both internal **parti** and external relationship to the slope of the ground and edge of forest are considerably less lucid than before.

Order and Inconsistancy	While the measures to trim the project have succeeded in subtracting almost 35,000 square feet (3,252 m^2) from the total floor area (the project now measures in at 131,600 square feet (12,226 m^2) and was estimated by the architects to cost approximately $3,999,000 [26]), it´s difficult not to sense more probing than progress in this new version. Concerning „Form": the clarity of the original bipolar **parti** has been compromised without gaining any functional advantages in return. Further reading the plan according to Kahn´s own criterium as a „Forum of Availabilities" we can see that in contrast to the previous scheme, the associations now tend to be „direct rather than remote", unfolding along a mostly linear circulation system. **(Fig. 5.28)** This circulation has additionally gained a number of smaller sub-branches which seem to have arisen more out of trying to get around in the sprawling plan than as parts of an organic concept. Formally troubling, too, is the way in which the original „ring" of the cells has been extended to include a guest wing, the schooling rooms, a kitchen and secondary rooms. It´s not only that the resulting figure is more than a little ambivalent - both in its response to the context and for the spaces created inside - but that the formal syntax of extension is of itself questionable. Whereas in the first scheme and its variations clarity and tension were created by juxtaposing the small-scaled spatial order of the cells with that of the larger-scale common spaces, both clarity and tension are now compromised by bringing together the different room types within the single figure of the ring. If we compare this scheme with related plans such as those for the Indian Institue of Management, the Fort Wayne Fine Arts Center or the Philadephia Institute of the Arts - each of which finds its own means for defining and articulating its different spatial scales - we can see that this is in clear violation of Kahn´s sensitivity for „order". Accordingly, the architects seem to be especially at a loss when it comes to integrating the school into the ring, finally leaving it unfinished in plan.

The Third Scheme: October - December, 1966

The Corner as Connector	Not yet content with their efforts, and moving quickly forward from the second scheme (which would be left in a state considerably less finished than the first scheme and would

apparently not be presented to the congregation), Kahn and Polk continued to develop their plan. **(Figs. 5.29 - 5.31)** The new, third scheme is the first which begins to renounce the order-giving element of a main circulation gallery. Instead of being able to reach the individual volumes of the communal spaces by moving along along a connecting spine as one had previously, the buildings themselves now begin to **become** that spine. (Although the plan is still not entirely free of corridors.) This „collision" of bodies, the corners of which give way to create circulation within the plan, had been „discovered" previously by Kahn in Erdman Hall at Bryn Mawr College (1959-64) and the Fisher House (1961-67). **(Figs. 5.32, 5.33)** Now, though, the collisions are handled with an easy casualness unknown in Kahn´s larger projects.[27] A collaged plan, dated October 9,1966 gives insight into the working technique which may have encouraged this freedom. **(Fig. 5.30)** The preestablished dimensions and typologies of the various spaces have - for the time being - not been called into question, rather the connections between them and how they are to be grouped. By cutting out the readymade figures of the rooms from a blueprint and repositioning them on paper, Kahn was able to shift, butt and adjust the bodies in plan until - as if through the alternating pulls of attraction and repulsion - they had „found" their desired resting places, where they could finally be pasted in place. This freehand collage method - on the one hand a means to expedite the generation of variations (even quicker than Kahn´s favorite charcoal-on-yellow tracing paper), on the other hand encourages these groupings to occur at those odd angles which would not necessarily be generated if drawing freehand or working conventionally with T-square and triangle.

„Bricolage"

It´s difficult not to be drawn into speculation by Kahn´s compelling collage, the only drawing of this sort to be found in the Kahn Collection.[28] What, we may ask - beyond the quickness of its method - motivated him to this new technique? And what was behind the quirky and „irrational" geometry which had begun to take over the schemes? In search of possible influences it´s tempting to look at Kahn´s contemporaneous collaboration with the Sculptor Isamu Noguchi for the Levy Memorial Playground in New York (1961-66), in which Noguchi´s earthforms and sculptural objects combined with Kahn´s architectural fragments in a collaged landscape: a collaboration which according to the landscape architect Harriet Pattison may have encouraged a sense of free play in his own work.[29] **(Fig. 5.34)** Further, we might consider his deep and lasting fascination for that master **bricoleur** of the modern, Le Corbusier. Then there were the profession´s recent rediscoveries of certain historical models which lay heavily in the air: John Soane´s Bank of England, the spontaneous growth of ancient settlements, the meetings of accident and planning in such iconic places as Delphi, the Athenian Acropolis or the Villa Hadriana.[30] We know, too, from Vincent Scully that a copy of Piranesi´s etching of the Campus Martius in Rome, with it´s tumbled collage of monuments, hung at this time on the wall above Kahn´s desk in his Walnut Street office in Philadelphia.[31] **(Figs. 5.36 - 5.37)**

Certainly, all these - and a myriad of other - images were present in Kahn´s well-stocked visual treasury. Still, as we´ve already noted, there remains a sense that simple source hunting will not bring us very far with Kahn: the lessons of the past were something to be internalized, rather than to be mined as academic „quarries" for his work. Knowing this, it seems more fruitful to continue our questioning on a project-immanent, rather than presce-dent-based level.

Space as „Spacing"

An earlier quote may give additional insight into Kahn´s method of working here: speaking of the De Vore House (1954), he wrote, *„In searching for the nature of the spaces of a house, might they not be separated by a distance from each other theoretically before they are brought together? A predetermined total form might inhibit what the spaces want to be."*[32] In this method there can be no preconceived, comprehensive form, as the planning consists of first establishing the individual spaces suited for each part of the institution: the rooms are then assembled so as to make apparent the nature and strength of their relationships. By establishing their relative powers of attraction or repulsion, they make visible their roles in the institution, and thus show what the institution really „is". [33] Or, to listen to Kahn again (1972): *„The rooms talk with each other and they make up their minds where their positions are. And they must aspire, each room, to be as all-comprising as all-rapport, with its nature. If*

you name a room before it becomes a room it dies; because it becomes just another item."[34]

Irregular Geometries

While these quotes may begin to explain Kahn´s conception of a plan as a series of discrete rooms and their respective „spacings", they still do nothing to explain this particular plan´s irregular geometries. Leaving historical or contemporary influence aside, we may continue to ask if there is a project-immanent logic which would cause this plan to jump the „geometric imperative" of his previous projects. After all: until now all his projects of a similar size had obeyed the rule of regular and quite rigorous Euclidian order. One attempt at an explanation: Kahn had discovered with Erdman Hall that the square´s corner - and thus a new sort of diagonal planning - was the key to „letting the rooms find their own connections". [35] One impetus for the irregular, as opposed to regular, diagonal collisions in the new monastery plan may lie in the program´s varied „grain" or in the sizes of its individual rooms - from small to large (with the exception of the cells) with little repetition. In contrast to, for example, Erdman Hall or the Indian Institute of Management, the program for the Dominican Motherhouse does not allow for a „meaningful" serialism generated by repeatable, regularly-sized elements. As we have seen, Polk seems to have already established this fact in his early exploratory sketches. **(See Figs. 5.9 - 5. 11)** An irregular geometry was one way of dealing with this fact; for allowing multiple collisions to occur between the different pieces without being forced into the formalism of an ill-fitting geometrical corset which was the Achilles´ heel of many of Kahn´s still-ripening mid-1950s and early 1960s plans.

Independence and Inflection

The irregular geometry additionally underscores the **independence** of each fragment: moving away from serialism toward the individual character of parts. If until now Kahn had employed such ordering devices as regular composition, serialism or organic growth metaphors to unify the different elements of his plans, he consistantly employs here for the first time what Robert Venturi had called in his contemporaneous **Complexity and Contradiction in Architecture** the principle of „independence and inflection", in which the discrete individual parts of a composition gesture beyond themselves towards a „difficult" whole: „...*Gestalt psychology also shows that the nature of the parts, as well as their number and position, influences a perceptual whole and it has also made a further distinction: the degree of wholeness can vary. Parts can be more or less whole in themselves, or to put it in another way, in a greater or lesser degree they can be fragments of a greater whole. Properties of the part can be more or less articulated; properties of the whole can be more or less accented. In the complex compositions, a special obligation toward the whole encourages the fragmentary part, or as Trystan Edwards calls it, the term, „inflection".*
Inflection in architecture is the way in which the whole is implied by exploiting the nature of the individual parts, rather than their position or number. By inflecting toward something outside of themselves, the parts contain their own linkage, inflected parts are more integral with the whole than uninflected parts. Inflection is a means of distinguishing diverse parts while implying continuity. It envolves the art of the fragment. The valid fragment is economical because it implies richness and meaning beyond itself. Inflection can also be used to achieve suspense, an element possible in large sequential complexes. The inflected element can be called a partial-functioning element in contrast to the double-functioning element. In terms of perception it is dependent on something outside of itself, and in whose direction it inflects. It is a directional form corresponding to a directional space."[36] The concept of inflection is applicable not only at the formal level, but may be regarded as programatically inherent in Kahn´s ideal that in a „society of rooms", „*the rooms relate to each other to strengthen their own unique nature*"[37] Paradox in this plan is how the various squares - by their nature static and „closed" geometrical forms - have been engaged as open, „partial-functioning" elements. Chapters 9 and 10 will examine more closely this tension between the partial and the whole in Kahn´s late work.

Kahn´s original bipolar „Form"- though somewhat weakened when compared to the first scheme - still holds: the equipoise between the introverted realm of the sisters´ living quarters and that of the public and communal rooms remaining intact. The number of elements in the composition remain likewise largely the same. The four bars of cells still dig into the mild slope of the hill, bound together by a new version of the cloisters and sunken courts: now the circulation has been doubled, with generous (and costly) arched arcades providing the

main circulation and increasing the privacy of the cells. In addition a fifth bar of guest cells has been added to the East, closing a small guest court together with the Refectorium and service rooms. A small guest dining room which had been requested by the sisters has also been added to the program. The compact grouping of communal spaces presses upward into the cloister, seeming to pry the wings of the arc apart in an effort to simultaneously densify the plan while maintaining the desired distance between the convent´s two realms. This third variation shares the same inconsistancies of its predecessor in the way that the school rooms, kitchen and service rooms become parts of the outer ring. As in the previous scheme, the school rooms and auditorium seem to be the most uncertain and non-committal moments in the drawings.

The Elevations

Parallel to this, Kahn blocked out variations of the elevations and massing of the individual volumes in iconic, almost child-like drawings. (Figs. 5.38 - 5.42) Comparing the presented elevations, sections (both in Kahn´s hand) and model with the rough sketches from the first version, we can see that Kahn has - at least for now - moved away from the cubic, Ahmedabad-inspired forms of his previous attempt to hint at a more figurative language. The new treatment of the roofs - thin folded plates in the form of multiple gables - while „abstract" - seems to repeat „house" over and over again, or to evoke images of some kind of elementary gothic architecture. Large, circular arches still perforate the walls, but in their new context, invite us to see in them colossal rose windows. As the volumes strive toward individuality in plan, so too in three dimensions: with each element formally related to, yet distinctly unique from its neighbors. The entry tower is undoubtably the most striking of these figures: tapering as it rises from its broad base to reach the same height as the Chapel, it is at once squat and vertical, a most „doric" tower if anything: reminding us that Kahn pre-ferred „Paestum to the Parthenon", the primitive expression of an element´s „beginning" to its more elegant, developed forms. In a visual pun, the outline of the tower becomes a gigan-tic echo of one of the bells which have been drawn in its belfry. This emphatically willful - even whimsical - form leaves no doubt as to where the entry to the complex lies. The section through the monastery (Fig. 5.44, see also Figs. 5.46, 5.47) - an exceptionally atmospheric drawing - intimates how the thin doubled walls, folded and perforated to the point of fragility, make a light-and-shadow-box of the chapel and how the body of the chapel and the wings of the cells gently embrace the top of the hillock. A comparison with Kahn´s sectional sketch of the National Assembly at Dhaka from two years earlier shows his preoccupation with this fundamental earth-sky typology of gathering space: in both cases the ground has been modelled into an earthen plinth from which the volumes rise skywards. (Fig. 5.45)

The Presentation of the Third Scheme

On October 10, 1966 - six months after beginning the project - Kahn and Polk were able to present the plans of the third version along with a plasticine and cardboard site model to the sisters´ building commission in Media.[38] (Fig. 5.48) As part of their presentation, they included a site plan of the first scheme overlayed with a paper cut-out of the current scheme in order to demonstrate the considerable reduction in area which had been achieved.[39] (Fig. 5.49) From Polk´s meeting notes we can read that the sisters approved of the architects´ means of achieving this reduction, including the elimination of the generous main gallery: „... The Sisters liked the easy but strong relationship between the major elements themselves and between those elements and the cells...." Additionally, Kahn was now able to convince the commission that it was best to keep the classrooms separated from the cells, thus pre-serving his original two part **parti**. While the architects apparently had little difficulty gaining approval for their specific design decisions, the sisters again aired their concern over the possible cost of the whole project. (Astonishingly, the architects had still not voiced them-selves on this ticklish theme....) Even without an accurate architects´ estimate, by now it was clear to the sisters that the project on the table was most certainly beyond their means. Apparently prepared beforehand and now taking matters into their own hands, they sugge-sted that the monastery might be realized in stages. A first stage of building might include: cells for a total of 74 postulants and novices, visiting parlors, common rooms, a kitchen and the refectory. Kahn, obviously not keen at the prospect of having to realize the project piecemeal, but certainly aware of the discrepancy between the size of his design and that of the congregation´s budget, „...spoke of the need for that which is built to invite construction of the whole. The beauty of the whole must be in the part. Thus the inclusion of the tower

and possibly the auditorium, which might also be used temporarily as the Chapel, in the first stage of development should be considered." In what amounts to his first recorded admission that his design was not immediately buildable for the sisters´ budget, Kahn also suggested the possibility of indicating future construction in the form of gardens: a sort of topiary plan which could be filled in with the real buildings as the necessary funds became available.

Inseperable Parts

But - the crutch of a topiary plan aside - just how **does** one design an artifact so that the „the beauty of the (unfinished) whole be in the part"? At this point we - and Kahn - are faced with a fundamental question of method. If architectural design is manifestly a „top-down" operation of conceiving of „wholes" then to what degree can this wholeness be acheived through the apparently „bottom-up" procedure of accumulating parts? In spite of his many statements which might lead us to think otherwise - such as earlier statements about „growing" a plan - the evidence of his **oeuvre** shows that in the end Kahn never surrendered his allegiance to the whole.[40] And, in the case of the Motherhouse his reservations were not only of a formal order: for him the institution envisioned gained its full meaning only with the presence and interplay of all its constituent parts. He obviously feared that, like the only partially-realized designs for the Salk Institute or the Fort Wayne Fine Arts Center, an unfinished monastery would remain forever a fragment of the intended social vision. *„Form is that which deals with inseperable parts. If you take one thing away, you can´t have the whole thing. Nothing is ever fully answerable to that which man wants to accept as a part of his way of life unless all its parts are together."*[41] Perhaps in an effort to convince the sisters of this necessity, (perhaps, in a worst-case scenario, to at least end up with an attractive presentation for future publication) Kahn requested that the sisters invest in a „fine wood model" of the complete scheme.

This tension between „top-down" and „bottom-up" methods of design - manifest throughout the modern as the tension between „rationalist" and „functonalist" morphologies and explicitly installed as the twin poles of the creative act by Kahn in his „Form-design" dichotomy - is neither a question of budget, nor is it peculiar to the Dominican Motherhouse project, rather, as we will discuss at greater length in Chapter 8, it is one of the principle sources of the characteristic charge in all of Kahn´s mature work.[42]
At this uncomfortable impasse the meeting ended, with the next meeting scheduled for October 25th. In addition to clarifying the the question of the project´s costs, it was agreed that by then Kahn and Polk would prepare studies of the individual cells at a larger scale.

Money Trouble

Within a few weeks of the presentation of the third scheme, in a letter dated November 18, 1966, the sisters finally received the long-awaited cost estimate for the project together with a detailed description and fee proposal from Kahn.[43] The third scheme, now measuring 147,061 square feet (13,662 m^2), was estimated - using a differentiated price-per-square-foot basis - to cost approximately $3,500,000. Kahn now tellingly spoke of the whole no longer as a „building" but as a „Master Plan", indicating the possibility (which for the sisters would have been a necessity) of realizing the monastery in stages. Whether in parts or as a whole the estimated costs were worlds away from the $1,500,000 the congregation had imagined they would spend for their new home. Mother Emmanuel answered Kahn with a letter dated December 16, letting him know in friendly, but no uncertain terms that the design was both in terms of its means and its cost far beyond the pale.[44] In an effort to guarantee that her architect stay within the bounds of their modest means, she followed up her letter on December 21,1966 with a typed, reduced program and now named a budget (written in boldface across the top of the first sheet) of $1,000,000.[45]

My dear Mr. Kahn,

Since our last meeting in Media our little group has discussed frequently our building program and the suggestions that you have made. Much as we admire the plan we are agreed that it is not practical for several reasons.
1.) Our funds are limited (though our desires are not) and we do not have the money that the series of buildings would require. Perhaps we asked for more than we could afford or may need in the immediate

future. At any rate we do not wish to be involved in such an extended program.

2.) Even if the necessary money were available, we would hesitate long before commiting ourselves to spend so much in wide, exterior covered, cloister walks with high brick walls and numerous arches. This seems utterly inconsistant with a life dedicated to voluntary poverty.

3.) What made us actually reconsider the plan was the realization that the cost of the refectory alone would be in the neighborhood of $270,000.

4.) The Dominican Order is an apostolic order. Its spirit is one of action flowing from contemplation. The plan as you have developed it is geared more to a Trappist or Carmelite spirituality, where contemplation and solitude are their own end.

Could a single building be planned that would include all our basic necessities that would cost in the neighborhood of one million dollars? We need housing for about 50 Sisters now. Can we provide for them and permit future expansion to remain possible?

We deeply appreciate all the time and ability you have given to our problem, Mr. Kahn. If we have permitted ourselves to be carried away by your plans it is because they appeal to us very much. But be sure now that such expensive building does not suit our needs nor our funds.

I realize that my message must be a disappointment to you as it is to me. However, I would appreciate hearing from you about further possibilities.

Respectfully yours,
Mother Mary Emmanuel OP

A Bubble Bursts

If Kahn had led the sisters into following his „Trappist dream" during the previous months, planning an ideal monastery within a financial vacuum, this extended dreaming would now suffer a cold awakening with Mother Emmanuel´s letter. In retrospect, conventional critique might seriously question Kahn´s wisdom (and professionalism) in dealing with his clients: he knew months earlier of the project´s costs, yet the existing evidence indicates that had failed to completely reveal them to the sisters, in spite of their regular queries. Was he confident that that the sisters would manage to secure more funds for their project after having seen what was possible? (This had, for example, been the case with the Richards Medical Laboratories, and after all: the congregation did own considerable equity in the form of that opulent piece of real estate in Elkins Park....) Was he as yet incapable or unwilling to let the modest budget steer his thoughts on „Monastery"? Did he feel the need to develop an ideal version of his „Form" diagram before distilling it into its more affordable essence? Just how much bluffing, how much necessity and how much wishful thinking were at play here is impossible to ascertain from our distance. Kahn had often attempted to explain what he considered to be the difference between „economy" and „financing", and an excerpt from his address at the 1959 CIAM Congress in Otterlo might provide us with some insight into his thinking regarding budgets and institutions: „...A school or a specific design is what the institution expects of us. But School, the spirit school, the essence of the existence will, is what the architect should convey in his design. And I say he must, even if the design does not conform to the budget."[46] But this kind of idealism does have its limits for an architect passionate about building, and one thing must have by now been abundantly clear for Kahn: although the sisters had been the most patient of clients, there was now a real danger of either losing the project entirely or of only being able to build a fragment of the desired scheme if he was not able to soon bring costs within range of the their means. Mother Emmanuel, too, had by now realized the difficulty of designing so much monastery for so little money. In her revised program of 27 December she now sacrificed 45 cells - reducing the required total from 120 to 75 - in addition to making various other reductions in order to help reduce costs.[47]

Sketching Towards a New Form

Sketching: January - February, 1967

Mother Emmanuel´s critique of the third version, together with her formalized program and budget of 27 December, would now direct the project on to a new trajectory: leading it away from the path of previous attempts toward what would eventually become the final scheme. Acting directly on the communiques from December, Kahn and Polk would, by February 1967, dramatically distill and densify the project. A series of sketches from these weeks are compelling evidence of Kahn´s struggle to compact the plan. Although undated, it is possible

to assume an „operational" chronological order for the sketches based on the context of the design thusfar.[48]

In what we may assume to be the first of these sketches (Fig. 5.50) the third scheme has been simplified and reinterpreted as a regular pentagon, with two of its sides designated for the communal spaces and three for the cells. Kahn must have realized immediately, though, that the long periphery of the building would bring no significant savings in terms of area; in addition, the strongly linear and shallow circulation could have hardly appealed to him (see the discussion of „remote vs. direct association", Scheme 2). Elaborations of this scheme (by Polk?) (Figs. 5.51, 5.52) are no more convincing: the strong geometric figure anathema to both the particulars of topography and to the architects´ previous attempts at organizing an informal "society of rooms". In second and third variations (Figs. 5.53, 5.54), cells and communal spaces flatten to press up against each other on either side of a narrow crescent-shaped court in attempts to minimize the circulation space. While the individual elements remain largely the same as before, any sense of a well-balanced Gestalt is lost while the relationship between the topography and the plan becomes more uncertain than ever. It´s easy to read in the impatient charcoal strokes of these sketches Kahn´s discontent with his own efforts. Additionally, in his push towards compactness he seems to be indulging in some wishful thinking: it´s not really clear how expected to fit all of the required cells into these versions, even if they were to be a full three stories tall. (Fig. 5.54 has, for example, been noted with „60 cells on 3 levels.")

Drawings have a life of their own, and an observer may often find it difficult to judge if the pencil has been consciously lead or if it has done the leading itself. With the series of sketches at hand it´s easy to believe that we´ve reached such a passage: where the previously made marks quickly play back upon themselves to generate further and still further drawings. As an apparent result of this repetitive, ruminative shifting and probing, something new now falls into place. In this new variation (Fig. 5.55) the communal rooms are no longer juxtaposed to the cells but have been neatly assembled - like pralines in a box - within the rectangular space formed by the wall of those cells. The entry tower - until now a constant - has been abandoned in favor of an entry court. While the reward for this change of tack is a promising new take on a vexing problem, the diagram is still mute in regard to its (undrawn) context. Apparently sensing potential in this variation, Kahn now proceeds to adapt it to the specifics of the site in successive attempts. (Figs. 5.56 - 5.58) The figure is successively pressed tightly together, rotated 90 degrees counter-clockwise (the square plan of the chapel allowing for its rotation in any direction without compromising the liturgically-correct orientation) and fitted into a forest clearing across from some sort of place of arrival. Several tiny diagrams on these sheets show Kahn´s concern with fitting the plan both to the topography and to a space „excavated" from the forest´s vegetable mass. In further developments of this version, Kahn continues to explore the interaction between figure, site and program. (Figs. 5.59 - 5.60) Finally, the regularly-shaped pocket in the forest is now almost equally filled with the (positive) form of the monastery to the west and a (negative) clearing to the east. The threshold/tower has now returned to the composition, straddling the border between these two realms. (Fig. 5.61)

A New Scheme,
a New „Form"

The Fourth (Final) Scheme, First Version: the Plan of February 16,1967
The discoveries made with these sketches would form the basis of the next major step in Kahn´s structured search. The drawing dated February 16, 1967 shows the breakthrough to what would become the project´s final scheme. (Figs. 5.62, 5.63) The emphatically dualistic interpretation of the program, with its two seperate realms held in equipose by an open center - a constant of all previous schemes - had now been called into question after nine months of using it as a working hypothesis, or „Form". The cells, until now articulated according to the sisters´ four-tiered hierarchy, now form a three-sided, open rectangular frame which is staked out at its four corners by the sisters´ living rooms. Into the open arms of this regular frame the plan now implodes: the volumes of the communal spaces being drawn as if by force into what had previously been the open cloister. Remarkable is how the contrast between the system of regular Platonic figures and their seemingly spontaneous collisions

51

within the orthogonal frame gives the plan a hitherto unreached internal tension: as if the several buildings of the previous plans were striving - without quite succeeding - to become the „single building" which Mother Emmanuel had envisioned. The elaborate system of arcades and galleries which had been so unmistakably criticized in Mother Emmanuel´s letter has now all but disappeared: the building blocks seemingly straining, as Kahn would describe, „to find their own connections".

Inversions:
Form and Landscape,
Rotation and Closure

If schemes 1 - 3 represent a progressive series of design speculations based upon a group of unchallenged premises, the new scheme may in many respects be seen as a series of inversions of those original premises. Changed, for example, is the relationship of the plan´s figure to the forest and to the site´s topography. Whereas the earlier schemes had used the edge between woods and meadow as a line of demarcation between the monastery´s distinct private and communal realms, the new confiugation forms concentric rings moving out from the center of the clearing to the forest´s edge. The orientation of the grouping has changed as well: by rotating the whole 90 degrees counter-clockwise, one wing of cells now closes the figure to the North, strengthening the the impression of a man-made clearing in the forest. (The previously unchallenged parameter of direct sunlight for all cells being sacrificed in order to achieve this.) Instead of first experiencing the monastery in its frontality, one now approaches the tower obliquely, slipping in along the edge of the clearing in order to find oneself at its center.[49] The addition of a crescent-shaped pond, like a cupped hand on the North, serves to further close off the clearing from the outside world. Where the previous schemes had held the top of the hillock open, nestling the cells into the brow of the hill with a series of (expensive) retaining walls and sunken gardens, the new scheme exaggerates the existing topography: building up from ground level and placing the tallest buildings - the Tower and the Chapel - on the crest of the hill. Geometrically as well, we can read the new scheme as an inversion of the first scheme, in which the freely-positioned cells were juxtaposed to the orthogonally organized communal spaces: now it is the cells which form the orthogonal counterpart to the freely-positioned volumes of the communal spaces .

Shortly after the submittal of the new plan on March 2,1967 David Polk sent Mother Emmanuel a detailed breakdown of the areas based on the sisters´ written program from December 21,1966 as well as an estimate of the construction costs.[50] The total area of the complex had been dramatically reduced to 50,171 square feet (4,660 m^2), including basement and mechanical spaces, and was now estimated to cost $1,593,000, including exterior paving and landscaping. In his accompanying letter Polk voiced confidence that the project could eventually be built for the original budget of $1,500,000. The sisters seem to have been relieved that the architects had - with the aid of their revised program - been able to accomplish this radical reduction in terms of size and cost - cutting both by well over half - and agreed upon setting the budget at the original $1,500,000. The architects, at least, could exhale: the project could continue.[51]

A Modified „Form",
a New Equilibrium

This step to the fourth and final scheme was doubtless the most radical in the design process to date, modifying the very hypothesis of the original „Form" diagram. (The consequences of this to be discussed further in Chapter 8.) During the presentation of the scheme on February 16,1967 the sisters praised the architects´ ingenuity not only in meeting their budget, but tellingly, in finding a scheme which was a more appropriate spatial interpretation of their institution.[52] By superimposing the previously segregated public and private realms and moreover, by eliminating the halls and galleries and allowing the various spaces to meet in a radically unmediated fashion, the new plan suggests a substantially different environment than those envisioned in the previous schemes: one in which all of the monastery´s activities - contemplation, worship, learning, assembly, even cooking - were given virtually equal significance and bound together in a vision of of community in which the previously strongly held distinction between private and public lives has begun to erode. In reading the minutes of the meeting, it´s surprising to sense the apparent speed and confidence with which the sisters accepted this unorthodox plan. Was their trust in Kahn that great? Were the simply relieved that the plan could be so dramatically reduced in size? There is another interpretation: perhaps this directness seemed much more in the spirit of the Dominican Rule of voluntary poverty and in harmony with the sisters´ vision of community which was,

in spite of its internal hierarchies, fundamentally egalitarian. Whatever the case: they must be credited for their insight and courage in approving such an unconventional - and as of yet schematic and unresolved - plan.

In retrospect, the sisters may have sensed in the still-germinating plan an attempt at a spatial solution to the great challenge of equilibrium posed by their Order´s ideal of spiritual life: *„That which characterizes (the Dominican Brother / Dominican Sister) is the concord, the harmonious synthesis, of virtues, apparently the most contrary: gentleness with energy, love of study with love of action, genius for contemplation with the spirit of organization.... The Order's spirituality is complex and made up of many elements, but they are unified in a single goal that is sublime. All its constituents lead to a contemplation which seeks to fructify in the apostolate...The spiritual life of the (Friars / Sisters) is delicately balanced and, for those who are less than saints, hard to live. If thrown off center its constituents destroy themselves -- the sacerdotal (priestly) element becomes „parochial", mired in local interests; the monastic element becomes „monkish", considering the apostolate a distraction; the doctrinal element becomes „bookish", having little to do with the salvation of souls; the apostolic element becomes „activistic", spending itself in feverish activity... An apostolic message that has not been shaped in the sanctuary, the choir, and the cloister is never complete."*[53]

More than the previous versions, this new scheme - with its multiple juxtapositions and diminished hierarchies - might well be interpreted as an attempt to make spatially manifest the delicate balance and desired synergies between the individual constituents of Dominican life. As if to underscore this potential, at their meeting Kahn added to the sisters´ comments that the architects´ challenge in the further development of the plan lay in the working out of the individual spaces and their connections so that they were to become *„ truly equal in terms of their quality."*[54]

<table>
<tr><td>A Methodic Search, „Re-search"</td><td>That Kahn would spend several months working out the ramifications of his first „Form" diagram before modifying his stance may seem extreme - especially when compared to the tempo of conventional practice - yet is emblematic for his way of developing an idea. Seen within either the scale of his entire later career or that of a single project, Kahn´s way of moving forward tended to be a methodic and purposeful searching, a building upon that which came before, rather than the introduction of a plethora of new impulses or themes.[55] In this economy of ideas, a hypothesis or theme - once introduced - will most likely be explored in all of its consequences before it is to be abandoned or modified. What appears at first glance to the outsider as stubborness or a paucity of ideas may instead be seen as the hidden strength of the work: for it is precisely this quality of sustained attention to a limited number of themes, of holding an idea firmly while working upon it, which may lend the activity of designing a character approaching that of „re-search" in the original meaning of the word.</td></tr>
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While much theory and criticism tends to emphasize the volitional power of the architect and downplay the role of context: it is instructive to note at this point that this is not the only occasion that the contingency of budget had been a major force in moving Kahn to modify his original hypothesis or to distill a design into its more succinct essence. (In spite of what Kahn had to say about his disregard for budgets.) The Exeter Library, the Kimbell Art Museum, the Yale Center for British Art: these are all happy cases in which less (money) equals more (elegance of final concept). (Nor is Kahn alone here: virtually all of Le Corbusier´s Parisian villas are compacted, more elegant versions of earlier, more expensive designs[56], and Frank Lloyd Wright - no stranger to being brought down to earth by his clients - was to admit late in his career that *„The human race built most nobly when limitations were greatest and, therefore when most was required of the imagination to build at all. Limitations seem to have always been the best friends of architecture."*[57])

<table>
<tr><td>A Deeper Understanding</td><td>This said, Kahn had been involved in a dialog with the sisters for several months now: months which had served to modify his original „medieval" understanding of their order and of monastic life. We may be fairly safe in assuming that of at least equal importance to</td></tr>
</table>

53

budget considerations in the genesis of the new scheme was an evolving view of monastic life which was increasingly dynamic, moving away from a more stereotype or schematic understanding at the outset of the project.

The Further Development of the Final Scheme, February 1967 - December 1968

The Plan of February 16, 1967

Now, ten months after beginning to work on the project, Kahn and his associates had finally arrived at a scheme which was both in range of the sisters´ budget and seemingly true to Kahn´s own demands. If we can assume for now that a new **parti** (or „Form") is now in position as the working hypothesis, it is, according to Kahn, the task of „Design" to test this hypothesis against circumstantial demands, to develop and clarify the individual parts and their relationship to each other. As at the beginning of the process, the emphasis shifts once again from the „what" to the „how", from concept-finding to the architect´s daily handcraft of testing idea against reality.

A Difficult Proposition

The plan´s new hypothesis - that the needs of established monastic ritual and those of a modern informal religious life can both be done justice in a unified spatial gesture, in a single „big house", as it were - is a challenging one. The proposition of the unorthodox plan brings, coupled with its promise of becoming a „society" of equally significant spaces, its share of functional, spatial and formal difficulties. Kahn´s new proposal attempts to do without the whole repertoire of mediating architecture - corridors, galleries, halls, courts - which he knew and commanded so well from his Beaux-Arts influenced training and which he had instrumented and transformed in his own previous work, including the earlier schemes of this project. To attempt now to do almost entirely without this „architecture of connection" raises first of all functional questions. How, for example, does one move through the plan without disturbing the sanctity of the chapel, the concentration of the classrooms, a gathering in the auditorium? How to mediate between the spaces if not with corridors? If there is no longer a „back door" to the complex, how to separate access to the valorized public spaces and the profane service spaces? Furthermore, if - as we have heard Kahn declare - it is precisely this „architecture of connection" which *„gives the man walking through the building a feeling for the entire sense of the institution",* how to reach this sense of coherence, of legibility in the plan without it? Can the subtle hierachies inherent in the program be done justice to by a plan „without itinerary" and in which the distances have collapsed? And then, formally and spatially: to what degree are the individual parts autonomous, to what degree do they consolidate within a single whole? These questions are by no means trivial: they will occupy Kahn and his assistants for several months to come.

Suspending Judgment

Inherent in this method of functional **bricolage** is that each individual element may be developed independently as a separate spatial type. The potential being, in Kahnian terms, that the „existence will" of each space may develop freely, becoming what it „wants to be", uninhibited by a totalizing form or stuctural unit. Taken to its extreme, this method of „growing" and then assembling individual spaces might produce works which would transcend the architect´s previous preferences or prejudices. A suspension of judgment is required of the architect, who to a certain degree becomes a spectator of his own work: the potential reward being results which have the capacity to surprise their maker by transcending the existing limits of his will and imagination. The craftsman is never cleverer than his craft: or, according to Kahn; *„Order is not what you want it to be."*[58] Or again: *„From what the space wants to be the unfamiliar may be revealed to the architect. From order will derive creative force and power of self criticism to give force to this unfamiliar. Beauty will evolve."*[59] In this sense, the Motherhouse is perhaps the most literal and extreme illustration of Kahn´s setting out to find a house that is a „society" of quasi-independent rooms, each earnestly engaged in finding out *„what it wants to be"* while it at the same time *„talking together and making up their minds where their positions are."* If we were to judge the success of Kahn´s buildings by the degree to which they fulfill this criterium, we would find that earlier designs such as the Trenton Jewish Community Center - with its repetitive tartan grid - are still far

from this ideal. Even the masterpiece of the Kimbell Art Museum, in which the vaulted spatial unit - developed for the gallery spaces - is stretched against its „existence will" to house the auditorium, falls short here. An interesting practical corollary to this method - and with the sister´s modest budget no minor theme in this project - is that each element of the composition may grow or be reduced - according to the results of the latest cost estimate - without having to dramatically change the other elements within the scheme. (A procedure which was to be applied more than once in the course of the design. (See, for example, Fig. 5.104.))

Open Questions
Closer study of the rough plan of February 16, compelling as it may be when seen within the context of the project´s development, shows that it still offers us more speculation as to what it might become than convincing answers to how its self-imposed conflicts are to be resolved. The plan has been drawn in a manner which fixes intent while leaving many questions open: functionally, formally and spatially. In terms of function, the circulation and functional adjacencies are difficult to imagine in several instances: the axial connection between chapel and refectory directly behind the altar/sacristy seems to undermine any sense of ritual and sancitity in the holiest of holies; the connection to the cells via the auditorium involves a compromise in both the use of that space and in the accessibility of the cells; the use of an institutional kitchen as a circulation space between private and communal rooms would certainly stretch even the most liberal of clients´ sense of decorum; while the adjacency of the main entrance of the tower and the sevice court entrance - the crossing of garbage cans and visitors in plan - is a functional banality over which even an architect of Kahn´s caliber may from time to time stumble, etc.... For the time being, the question of vertical circulation has been left completely open: not a single stair has been drawn.

Formally, too, the architectural consequences of „letting the rooms find their own connections" are as yet uncertain: whereas certain rooms naturally „find their connections" through direct collision with their neighbors, others need to use „adaptors" in order to make those connections work: an additional, according to Kahn superfluous, architectural order is thus called into play. Spatially, the oblique entry approach toward the diagonally placed tower tends to direct movement either further along the facade toward the chapel, or to unintentionally deflect it toward the service court. A great deal of sketches exist from the design phase which begins here: testimony to the difficulty of the topological puzzle which Kahn had proposed for himself. **Figures 5.64 - 5.69** illustrate some of Kahn´s many attempts to organize and connect the core communal spaces during the following weeks: out of these attempts would begin to crystalize the plan variations which are presented below.

The Plan of May, 1967
The entrance to the tower has now been displaced 90 degrees, now facing the arriving visitors in a gesture of greeting. (Fig. 5.70) Not only more satisfactory in terms of offering a clear entry situation, this move has the added advantage of allowing the service entrance to be pushed back into a secondary position, out of sight and traffic flow of the main entrance. Unfortuately, though, this gain is achieved at the cost of transforming the central court - in the last version a small **hortus conclusus** - into the service court. An architect with Kahn´s sensitivity must have been immediately uneasy with this: even in a „non-hierarchical" plan, the idea of a service court occupying the geometric center - and sharing a wall with the chapel at that - could not have rested well with him. In addition, the school rooms, auditorium and North wing of cells are now cut off from direct access from the entry tower, resulting in either „open air" or extremely long routes through the building.

The octagonal shape of the refectorium - a recurring motif in classicist and Beaux-Arts plans - is a device which allows this space to elegantly „turn the corner" in plan. The school rooms have now consolidated to form a hammerhead block at the head of the northern wing. As with the intermediate schemes 2 and 3, a question of „order" or syntax is thus raised: a larger, communal room-type being added again to the periphery formed by the smaller cells. Again - as if Kahn were aware of this contradiction and unwilling to commit to it - the individual school rooms are left unfinished in plan.

Subtle Geometries	A subtle, yet important change has taken place in the geometric order of the plan: whereas in the version from February the volumes of the communal spaces „float" within the frame of the cells and relate freely to each other, unbound by any apparent geometrical logic, they now have all - with the exception of the tower, which is tilted aproximately 30 degrees away - locked into the same parallel grid. It is instructive to note that, if anything, this move to simplify the geometry has at the same time served to increase the tension in the plan: the volumes of the communal spaces rotating now in unison to „pull" against the orthogonal frame which contains them. Kahn, the musician, knew: meaningful dissonance can exist only in the context of order. **(Fig. 5.71)** As if aided by the simplified geometry, the spaces no longer need the aid of the „adaptors" to find their connections. Although still functionally unresolved, formally, at least, the plan has taken an important step toward a possible resolution.

The Plans of June 28 and August 7, 1967

A drawing from June 28, 1967 **(Fig. 5.73)** - the first larger-scale (1/16"= 1´- 0", circa 1:200) drafted floor plan of the final scheme - apparently based on a sketch from Kahn **(Fig. 5.72)** was further elaborated in a large, 1/16´´= 1´- 0´´ site plan and elevations for a presentation to the sisters and Father Phelen in Media on August 7. **(Fig. 5.74)** The tightly drawn, pencil-on-vellum plans begin to indicate, for the first time, a commitment to investigate an individual scheme in greater detail. The particulars of construction, the architectural consequences of the collisions and the intricacies of the smaller scales within the whole have all been examined to a greater degree than in the previous sketches and smaller-scale drawings. Already in June the tower had been completely layed out in plan and section. **(Figs. 5.75, 5.76)** The disposition of the parts has remained largely the same since May, with a few small, but decisive, changes. The auditorium has drifted over to meet the tower, making space for a small, conveniently tucked away sevice court and its entry. Freed of its service function, the central court can now breathe again as a small garden around which the plan can unfold.

Internal Network of Paths	More importantly: the new relationship of the communal volumes - for the first time linked together to form a „continuous collision" - allows for the desired uninterrupted and unhierarchic network of paths through the house. **(Fig. 5.77)** The most sensitive of these volumes - the chapel and the refectory - are shown as double-layered spaces: each containing its own ambulatory which is simultaneously part of the room and its hallway. The tower has now snapped parallel to the frame of the cells. In doing so, a reference frame is staked out within which the rotating core elements are now „held". As with the previous variation, the plan seems to paradoxically gain in tension in relationship to its increasing geometric order.

Restraint vs. Expression	With Kahn´s large (1/8"=1´- 0") and evocative charcoal sketches **(Figs. 5.78, 5.79)** showing the way, for the first time the floor plans of a scheme are accompanied by elevations from all directions. **(Figs. 5.80 - 5.83)** While the „ziggurat" entry tower from the earlier versions has remained, other elements have become more restrained. Gone are the multiple gables and circular arches, replaced by a more reticent and tectonically precise „brick order" of flat-roofed volumes with tapered pilasters and flat jack arches. The contemporaneous Phillips Exeter Library and Dining Hall (1967-72) come immediately to mind. Although these changes may have originated in the architects´ search for economy, it´s not difficult to see in the restrained prisms a response to the Dominicans´ vow of voluntary poverty, to the delicate scale of the landscape and to the complex floor plan, which generates considerable visual movement without the aid of highly articulated vertical volumes: to see, in short, a search for appropriateness.

Presentation of the Plan	According to the meeting minutes from August 7, 1967, the sisters once again accepted the general premises of the plan and, together with the architects, agreed upon a number of refinements which would form the basis of the next stages of the design. The school was to be combined with the auditorium by placing the auditorium on the upper floor; the library - until now, either a discrete element or included in the school or auditorium building - was to be moved to the second floor of the tower. Additional sitting rooms - now totalling four - were to added to the west end of the cells.[60] Together with Father Phelan the particulars of the liturgy and the furnishing of the chapel were dicussed: for more intimate worship a

56

small chapel (Kahn: *"a religious place in the religious place"*) for thirty persons was to be added to the east of the sacristy, so that the sacristy would be accessible to both large and small chapels; a confessional room, *"an agreeable room for two people to converse,"* should replace the conventional confessional booths. A private room for the priest was to be located above the sacristy. In accordance with the sisters´ ideal of an „action religion", Father Phelan suggested that separate chairs would be more appropriate than the previously drawn pews: this would allow alternate seating arrangements and even other non-liturtgical uses for the chapel. Inspired by Shaker meeting houses, Kahn suggested that the walls be fitted out with pegs on which the chairs could be hung. This would not be the only time that Kahn and his clients would conceive of a central sacred space as being able to serve secular functions: a church was primarily a „big house", and as such, subject to Kahn´s adage, *"Spaces should be conceived of for uses not yet defined."*[61] The central spaces of the First Unitarian Church (1959-63) and the Temple Beth-El Synagogue (1966-72) both expressly encourage this kind of sacred/secular double use. *"The space induces the project. If you have a space, something happens, the program then starts. It doesn´t start before you make the space."*[62]

Commitment
 The project records from these weeks provide evidence of the sisters´ commitment to the realization of the design. At the meeting of August 7, 1967, almost one and a half years after the first meeting, Kahn and Mother Emmanuel signed an A.I.A. contract for architectural services.[63] (That Kahn would work on a project for so long without being formally engaged was not that unusual: Erdman Hall at Bryn Mawr College had even been designed, planned and built without the signing an architect´s contract![64]) On August 24, 1967 Kahn wrote to Mother Mary Emmanuel, recommending four general contractors who might be invited to bid on the project: Joseph Farrell, Inc., builder of the Richards Medical Reseach Building; Mason & Cullen, Inc., builders of Erdman Hall; Unkefer Brothers, who had made extensive additions to an office building as planned by Kahn; as well as the reputable firm of McCullough-Howard. In November, the office of Vinokur-Pace, a frequent consultant to Kahn, was officially contracted for structural and mechanical engineering.[65]

Fall and Winter 1967-68: Densifying the Plan, Developing the Parts
In the following months, working with the premises agreed upon on August 7, Kahn and his associates began to explore the individual spaces of the plan in terms of their construction, their spatial qualities and their precise interrelationships. Although Kahn had already begun to think roughly in terms of construction early in the design process (see Chapter 6: „Cells"), the accepted scheme, the signed contract and the addition of Vinokur-Pace to the team seem to have given the impetus necessary to step up the planning tempo and to increase the depth of detail.

The result of allowing each space in the monastery to develop into what it „wants to be" is a project which resembles as much that for several buildings as one for a single building. By mid-October, Kahn and his associates had studied each of the core spaces in plan at a larger 1/8"=1´-0"scale. (**Figs. 5.84 - 5.93**) The walls of the core spaces - until now drawn as simple planes - have now „grown" a tectonic framework of pilasters, columns and beams more appropriate to the larger volumes and greater loads in play. The columns and frame are used in turn to articulate use-space: defining galleries or rooms-in-rooms, establishing concave or convex thresholds at the collisions of the volumes. (A comparision with the unmediated transitions in the earlier plans shows that this is a significant enrichment.) Kahn´s sketches for the chapel center the space with Exeter-Library-like diagonal roof beams while disrupting its symmetry with appendages for confessionals and chapel. (**Figs. 5.84 - 5.86**) Chapel, Tower and Refectory all profit from this tectonic fleshing-out, with such spatial highlights as the tower´s third floor room-fugue or the refectory´s superposition with the kitchen. Only the school/auditorium lags behind: the attempt to combine the two uses not yet successful (the circulation leading through a classroom!) and the construction still comparatively schematic. (These individual elements will be studied in greater depth in Chapter 6.)

On Drawings:
the Plan as Generator

It´s instructive to note that there are no sections or volumetric drawings to accompany these detailed studies. By this phase of the project at the latest, it has become abundantly clear that the architects´ use of orthographic **plan** drawings has been their primary means for developing the schemes, with both sections and elevations used sparingly and only secondarily in the process, perspectives and models even more sparingly. (This is true not only of this project, but, with the notable exception of the section-driven Kimbell Art Museum, of virtually all of Kahn´s works.) If it´s true that Kahn´s first priority lies in the establishment and development of an institution´s „Form", then it follows that the plan will become the generator of the scheme, defining the **parti** in terms of relationships and spacings respective to the way that humans are most likely to move and relate to each other: on the horizontal plane. But beyond its use as a functional or socio-spatial diagram lie other, autonomous dimensions of the plan drawing: in addition to its use as an agent for defining mass and void (Kahn: „*the rhythm of light - no light - light, light...*") plan notation - not unlike musical notation - possesses its own potential to both express **and generate** dynamic qualities such as tension or repose, to describe phases of movement, pause and rest.... Alan Colquhoun has described, in his essay „The Beaux-Arts Plan", an experience of the plan-as-partita which seems to well approximate our reading of certain of Kahn´s mature plans, that of the Dominican Motherhouse included: „*When we „read" a Beaux-Arts plan, we seem to be carrying out three operations at the same time, or at any rate in quick succession. First, we interpret the marks on the page as a Gestalt pattern. Second, we translate this into an imagined two-dimensional space which we experience sequentially - following the direction of narrow, bounded spaces, halting at square spaces, interpreting rhythmically arranged points as transparent boundries, and so on. Finally, we translate this into three-dimensional volumes. From these interpretive steps we arrive at a coherent organization which does not gain its meaning from any but the most generalized functional attributions. It is in this generalized „program" that one of the most striking analogies between the Beaux-Arts plan and the symphony lies.*"[66]

From Plan to Volume

Colqhoun´s passage is compelling for several reasons: two of these wil be discussed at length later in the text: the „generalized" or „loose fit" between form and function in Chapter 9, and the **„Gestalt"** or „overall" qualities of plan notation in Chapter 10. In his description, Colquhoun has touched on another intriguing aspect in many of Kahn´s mature plans which is of interest to us at this stage of the narrative: the potential of the various horizontal dimensions to unfold into three-dimensional volumes. From the Rennaissance to the Ecole des Beaux-Arts, there was a wide consensus that a well-conceived plan bears the seed of of its vertical dimensions in section and elevation: „*Every three-dimensional form is born from its plan as a tree is born from its roots.*"[67] (Daniele Barbaro, La Practica della Perspettia, 1569) With the advent of slab-and-frame construction and with the resulting emphasis on the horizontal plane, modern architecture no longer upheld such a necessary correspondence between horizontal and vertical dimensions: on the contrary, such a correlation would have tended to upset the flowing, non-hierarchical horizontal space which was so programmatic for the moderns. Regarding this horizontal-vertical correspondence Michael Graves, in his essay, „The Necessity for Drawing", (with its implicit critique of modernism), points out that „*..not all drawings take advantage of this capacity. Compare, for example, the plan of a building such as the Villa Madema and Mies´ project for a brick villa. The understanding that the plan notation presumes volumetric control seems to be extant in the former, while missing from the latter. Though some would have difficulty with the assumption of the plan as the primary organizational device, and would choose an alternate point of departure, such as the section, there is still the potential to express the essence of volume in the two-dimensional drawing. The issue is that the drawing that depicts only two dimensions is capable of expressing the essence of volume and surface - indeed, the aesthetic intent.*"[68]

While the consequences of Kahn´s reestablishment of the vertical dimension in architecture will be discussed further in Chapters 9 and 10, a nagging question at this point is - for Kahn´s plans do not simply „extrude" into three dimensions - just how and to what degree **are** their volumes „inherent" in their plans and how do Kahn and his associates go about „growing" those volumes/spaces? The variations of the tower, the chapel and the refectorium begin to shed light on the architects´ attempts to develop spaces - which have until now been seemingly „held back" - from their plans. **(Fig 5.84 - 5.93)** It is important to note that

especially in this type of „labyrintine" plan, the vertical dimension overtakes a major role in establishing hierarchy, orientation, modulation as one moves through the spaces. (A quality virtually missing, for example, in the later labyrinthine plans of Le Corbusier, in most of the structuralist and „mat" buildings of the mid-1960s, in which „everywhere is a piece of the same".) Along with the positions and „spacings" which the individual spaces have „found" in plan, it is precisely this articulation of their vertical dimensions which helps establish their relative significance within the whole. Kahn hinted at this fact when he postulated, *„Civiliza- tion is measured by the shape of your ceiling."*[69] Or, more concretely, *„...my design at Dhaka is inspired, actually, by the Baths of Caracalla, but much extended. If you look at the Baths of Caracalla we know that we can bathe just as well under an 8-foot ceiling as we can under a 150-foot ceiling, but I believe there´s something about a 150-foot ceiling that makes man a different kind of man."*[70]

Having breached the question of plan-section corrospondence, we must admit that the drawings which we have seen to this point do not yet provide a fully satisfactory answer. We may bear this in mind as we continue with the narrative.

Intermezzo: Sketch of March 7, 1968

The development of a design is not a linear process. (Indeed, Kahn extremely disliked the word „process" in connection with architecture, having declared more than once that, *„Making architecture is not „a process", making beer is a process".*[71]) Although from our privledged distance the potential of the current scheme may seem clear enough, with the energies of all parties apparently dedicated to its realization, a small sketch in Kahn´s hand, dated 7 March 1968 seems to express second thoughts about that design. **(Fig. 5.94)** Once again, a „Form" diagram shows, as in the earliest schemes, the clear articulation and sepe- ration of the two realms. In contrast to the current loose conglomeration of discrete spaces, Kahn proposes here a dense symmetrical composition with a cloistered grove at its center: again, an interpretation of a traditional Cartheusian charterhouse typology. It is as if Kahn were taking a step backwards to hold review: is the unconventional hypothesis of the current scheme just too difficult to work out in plan? Is he still uncertain about rightness of the new „Form"? Does he have doubts about being able to realize the design within the budget and is now exploring a still compacter scheme? All this remains speculation, for he will inevitably stay with the final scheme. Still, the existence of such sketches are evidence of the doubt and uncertainty which are a part of designing, of the architect holding his breath before com- mitting himself completely, even this late in the development of an idea.

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The Published Scheme

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Sketch of February, 1968 / Plan of April 22, 1968

The Winter´s detailed studies of the core elements first coalesce into a comprehensive plan with Kahn´s wiry and articulate 1/16" = 1´- 0" drawing from February/March,1968. **(Fig. 5.95)** With a number of minor adjustments and simplifications, this sketch would soon crystallize in the associates´ plan of April 22, 1968. **(Fig. 5.96 - 5.100)** Although that plan still belongs to the intermediate studies, it is by far the most frequently published of all the Motherhouse variations and is often presented as the „final design". (See, for example, Giugiola, Norberg- Schultz, Gast, McCarter.[72]) This is most likely due to the simple fact that of all the variations of the final scheme, this is the one with the most complete and readily reproducible set of plans and elevations: compactly drawn with relatively high contrast at a scale of 1/16" = 1´- 0" (ca. 1:200). As we will see, for this project Kahn´s assistants drew even large scale 1/8´´= 1´- 0´´ (ca. 1:100) plans in low contrast, difficult-to-reproduce graphite pencil on yellow tracing paper, with the final variations of the Motherhouse being spread out in their individual parts over several sheets. The fact that the office never had the opportunity to assemble and redraw the most developed variation of the final scheme in a comprehensive and publishable form has left us until now with this intermediate version to stand in for the project´s „final state".

A Clear Spatial Order: Architecture as Configuration	The changes to program and disposition agreed upon in the last meeting would plane the way toward the plan´s final state. A closer look at Kahn´s sketch and at the plan from April 22,1968 validates the sisters´ suggestion that the auditorium could be stacked above the school: the vertical adjacency simply makes functional sense, with the oft-frequented classrooms at ground level, the less intensively used auditorium upstairs. More generally, what becomes apparent through this move is how, in a configurative art such as architecture, the modification of a single element may significantly effect the whole.[73] (And the Dominican Motherhouse - which derives its „meaning" to a great degree solely through its acts of con-figuration - seems predestined to illustrate this fact.) Specifically: the resulting subtraction of one compositional element from the plan´s equation automatically relaxes the whole, ridding it of its most formally and functionally uncomfortable moments (the unresolved school, the kinks in the circulation, etc.). All of the larger-scale communal spaces can now find their place in the core, resulting - for the first time since the very first scheme of June 1966 - in a clear hierarchy of spatial orders. Convincing in the new configuration is the ease with which the core volumes now „circumstantially" find their connections. The circulation ring or „inner cloister" formed by linking the volumes around the central court occurs much more naturally than in previous versions: this echos the larger ring of the cells and their galleries and increases the possibilites for traversing the plan. (Fig. 5.101) The tower now hosts three stairs: the central stair leading directly to the library in the second and third floors, the two additional stairs, to the completely planned offices and guest rooms above. The requested private chapel now forms an apselike appendage to the main chapel. The solution for the desired confessional room - present in Kahn´s sketch - has been abandoned in the plan from April.

The frame of cells has now been fitted out with living rooms at each of its corners. There, four great vertical chimneys emphatically fix the horizontal elements, effectively staking out the limits of the building within the clearing. For Kahn the fireplace was a powerful symbol of dwelling, of *„the presence of man in the building"*: and as such, a strongly articulated ele-ment in virtually all of his houses and a moment of domesticity in his institutional buildings such as Erdman Hall and the Exeter Library. (The desired degree of domesticity of the mona-stery may be interpreted from the fact that it now boasts no less than seven fireplaces.) Although indicated in Kahn´s February sketch, taken back for reconsideration in April´s plan is the vertical circulation for the cells: this time only a single stair has been indicated in one corner of the North wing. In addition, the windows of the cloister gallery have been filled in, leaving a completely unbroken wall to the courtyard. Ironically, these last two „shorthand" solutions - certainly never intended as being final - have through their repeated publication become two of the plan´s „permanent" and more enigmatic features. Or are we to imagine that - regulations of the building code aside - Kahn would have seriously suggested connec-ting the upper floor cells with a single stair, would have suggested long galleries without natural light?[74] The same Kahn who had claimed, *„The lightless corridor, never a room, aspires to the hall overlooking the garden."*?[75]

Elevations and Sections	The elevations from this version show the continued tension between expression and reti-cence; the pull of the appropriate which we have seen developing in the previous variations. (Fig. 5.97, 5.98) The bell-shaped tower has now been transformed into a carved cubic block, appendaged with what seems to be an outrigger belfry. (A Kahnian wink at Le Corbusier´s La Tourette?) Continuing to develop the „house" theme, chapel, school and refectory are all topped by giant hipped roofs, albeit in strongly abstracted forms: the school´s roof being chopped off dramatically on the courtyard sides, the chapel´s roof clamped between giant hollow corner lanterns, which bring light rebounding into its interior. (In form, the lanterns are similar to the articulated corners of the Exeter Academy´s Dining Hall, in effect they seem closely related to the skylight monitors of the First Unitarian Church or the corner towers (or „hollow columns") of the mosque at Dhaka.) The facades of the outer wings have become more plastic and austere. The West entry facade greets the vistor with the rather sober blankness of its brick prisms which are all but closed and scaleless on their lower levels. Turning the corner toward the forest, the building transforms itself from a closed bearing wall structure on the public entrance side to an open masonry frame between the cells and the woods. Accompanying the elevations, two sections through the monastery - astonishingly,

the first to be drawn since the third scheme, and the very first to be drafted of **any** scheme - begin to intimate the fall of natural light and the vertical modulation of space as one moves through the plan. **(Figs. 5.99, 5.100)**

The Plans of late April - June, 1968

The Gestalt Character of the Plan

By late Spring 1968 the disposition of the major elements was apparently no longer in question. Now the architects´ attentions would turn to the refinement of the individual parts as well as to the question of the plan´s context. There exist a large number of plans and prints from these weeks: rather than working out the minor variations with a series of tracing paper overlays (which would have been the most economical method), often entire plans have been redrawn in order to change a few small details. Comparing the different variations - which are at first difficult to order in an exact chonology - we might imagine that the reason for this considerable extra work lies in the architects´ regard for the entire plan as an organic structure or **Gestalt** pattern: that changes in one part of the field call for counter-changes elsewhere in order to maintain a sense of equilibrium or common syntax within the whole.

In what is most likely the first plan after April 22 (the stairs and windows are still missing) **(Fig. 5.102)** two of the living rooms have been removed; the small chapel has become triangular in shape and the pool has returned, accompanied by a garden wall which appears to have as its main function the further intertwining of the building and its surroundings. With a second plan **(Fig. 5.103)** the corner stairs have returned to the cell tracts; the small chapel is now a more usable diamond-shape; the pool has again disappeared. The Plan dated May 20,1968, while continuing to refine the decisions of the previous steps, is interesting evidence of the architects´ constant battle with the budget. **(Fig. 5.104)** Accompanying almost every scheme is a calculation of its area. Here, the consequeces of shrinking the communal rooms by approximately 5 -10% are tested by simply making a reduced copy of those areas and pasting them onto an existing plan. The minimized basement space - certainly less than ideal from an architectural standpoint - is further evidence of the struggle with the tight budget. **(Fig. 5.105)**

Finally:
A Comprehensive
Plan

The basis of May 20´s overlay is a fully-developed set of floor plans in which virtually all questions of form and use have been answered. **(Figs. 5.106 - 5.111)** To be able to see - for the very first time in the process - all parts and levels of the monastery developed and drafted is to begin to comprehend the subtle complexity which has been so slowly and rigorously generated by the repeated addition and articulation of the elementary plan shapes. With both main and upper floors complete, it´s now possible to better understand the roles which the library and the auditorium are to play in this "society of rooms": their presences on the second level, their „spacings" to the lower level. For the first time, the multiple possibilities for traversing the plan become fully apparent: with 12 separate stairs exponentially deepening its labyrinthine character. We might imagine a sister, setting out from her second floor cell to the chapel, to be equally likely to choose a route over the library, the school, or the kitchen.... In terms of captured space and light, the family of layered plans now begin to reveal their true characters as they vertically unfold: the tower´s ground-floor office spaces becoming on the next floors the library´s double-height top-lit book niches and further upward the loggias of the guest rooms; the wall-folding superpositions of cross and square in chapel and refectorium first become apparent in the upper floor plans (the chapel admitting light over its corners, the refectorium over the center of its gables, the thin, light-reflecting folded planes etc.). The spatial richness which has only been hinted at in the published plan of April 22 - perhaps conceived, but never shown - now becomes undeniably manifest in these four plans. In answer to our question of a few pages back: we may indeed begin to understand how Kahn used two dimensional plan drawings to „think" his extraordinarily three dimensional spaces.

The Composition
in its Context

Not only had the internal spaces of the monastery been resolved: during these weeks, for the first time in several months, the floor plan has been drawn as part of a comprehensive site plan, showing forest, topography and approach.**(Fig. 5.112)** If, in following the difficult struggle of getting the plan to work on the inside, we´ve in the meantime lost sight of its

context, this new drawing finally illuminates just how this plan was meant to find its place in the landscape. As at the scale of the building the volumes of the communal spaces seem to rotate within the frame of the cells, so rotates the entire monastery within the regular forest clearing. As if caught in the same centrifugal pull, forest and fragments of monastery have become separate parts of a single, turning movement. The space between the forest´s edge and the building´s volumes has become almost palpable through this act of rotation, with each irregular in-between charged by the movement. Forest and architecture have been engaged in a transactional dialog in which they simultaneously reinforce and contradict each other: describing at the same time the stasis of a forest clearing and some kind of move-ment away from that center. As if a result of that movement, the sister´s swimming area - until now located in the monastery´s clearing - has now been expelled to a separate clearing with a more appropriate spacing to the retreat.

If we imagine approaching the complex along the entry drive - which echos the angle of the chapel and school, geometrically anchoring the rotating composition in plan - it becomes apparent to what degree the monastery resists any attempt at experiencing it frontally. (The elevations which we´ve viewed until now tend to make us forget this fact.[76]) We slip into the forest clearing obliquely, being allowed only partial views of our goal: as if it were our own movement toward the building which had set the plan rotating away from us. Any symmetry which the plan might suggest seems to be relativized by its siting. Frontal views of individu-al volumes are accompanied by diagonal views of others: the unseen rest always receding against the edge of the forest. The prismatic effect which until now we´ve only observed from inside the floor plan applies to the experience of the whole in its setting. Thus forest and architecture seem cojoined : the whole experienced as if from the „inside" - even when outdoors. In this, the Dominican Motherhouse is a special case of a central theme in Kahn´s late work: that the explicitly „two" of interior and exterior is implicitly „one": a theme which will be taken up again at length in Chapter 10.

Plan of July 17, 1968
In spite of the radical reductions which had lead to the final scheme, the budget continued to hover like the the sword of Damocles over the fate of the project. As the prospect of realiza-tion drew nearer, cost estimates increased in frequency and detail. In July, the plan - its first and second levels have been drawn (Figs. 5.113, 5.114) - would again undergo a process of distillation in order to reduce its area: (See note: „reductions in area", blueprint of Fig. 5.113.) The frame of cells has now telescoped together at the central stair to reduce the circumfe-rence of the whole; the core volumes are reduced accordingly in order to fit in the smaller space formed by the cells. With these few adjustments, an additional 1,539 square feet (143 m^2) could be wrung out of the plan. While with this slight reduction in area comes an increased elegance of means (the elimination of one stair in the tower, the switch to straight-run stairs in the school tract) and balance (the decision to adequately teminate the North wing with a small office, the addition of a small intermediate space allowing for circulation without having to move directly through the kitchen), the reduction occurs not without the cost of a certain spatial richness. Especially the tower seems to suffer from the loss of its outer spatial layer when compared to the plan of May.

Plan of August 5, 1968: „Final" Version
Towards Construction Drawings
By August, the architects - Kahn had been working over the Summer increasingly with his associates Anant Raje and Frank Kawasaki as David Polk prepared to leave the office in order to teach and open an independent practice - were intent on completing the design and bringing the project into the construction drawing phase.[77] The new plans - the last to be drawn as an entire set (Fig. 5.115 - 5.120) - show changes relating to construction and detail. Most obvious in plan are the „hollow columns" which now, in addition to giving an adequate weight and structural depth to the chapel, tower and school, provide the necessary „servant spaces": ductwork for air conditioning and mechanical services. These at first glance minor elaborations are not only tectonic and functional, but lend the core volumes a considerably richer spatial effect as well. The outward-pointing corners of the chapel and refectorium are now supplemented by a re-entrant, inward-pointing movement. The corners thus turned back

upon themselves challenge the original stasis of the squares: the transitions between the spaces are considerably more complex than with a simple collision of squares: threshold-making, inwardly-outwardly inflecting, concave and convex.... An opportunity to further study these transitions will be given in the next chapter.

The Paradox of the „Free" Plan

The myriad of decisions, large and small, the many fine adjustments which we have been able to follow in the drawings leading up to this final version: all these are testimony to an apparent paradox in this new Kahnian „paradigm of order". That is: that the apparently „free" composition - if it is to indeed reach a level of internal coherence and elegance rising above that of a banal conglomeration of parts - requires greatest precision in planning, a precision which is at least equal to that required in the conception of his geometrically and structurally more obviously „disciplined" compositions. The months spent working on the plan are testimony to this fact. The elements of the plan, at first glance apparently thrown into place like so many dice, are now indeed precisely and subtly interrelated: in terms of geometry, masonry module, spatial sequences and function. At this stage of the planning, any attempt to move or even to slightly redimension an individual element would in fact set off a chain reaction throughout the whole, changing its formal structure and making its multiple internal dependencies visible. Paradoxically, the transitions, which have been so laboriously constructed to appear „accidental", would be disrupted by the slightest change.[78] To have captured the energy and tension of the first collage drawings in a formally resolved and completely functional plan is anything but trivial. Having reached this stage of development it would be worthwhile for the reader to linger in the spaces of the latest plan as well as to review the many steps taken, great and small, since the establishment of the final scheme in February, 1967 in order to to better appreciate the distance travelled.

August 1968 - March 1969: Final Development and Sudden End

The plan had now reached what we may call its final state: each of the individual building blocks would maintain its form and disposition for the duration of the project. The variation from August 5 would be drawn again on vellum in October, accompanied by an inconclusive study testing still simpler spatial means. **(Fig. 5.121)** In the following weeks and months, the particulars of construction were to be explored: always in regard to the sisters´ austere budget. Although concrete block had already been indicated as a building material in his early sketches of the cells (see Chapter 6), Kahn had apparently not given up hope of being able to use brick as the major material of construction. The preferred all-brick construction was drawn as a detail and estimated along with a more economical version using brick-sized concrete masonry piers and full-sized concrete block filling: a construction derived from that which Kahn´s office had developed some 8 years earlier for the Tribune Review Building. **(Figs. 5.122, 5.123)** The concrete block version proved to be by far the most financially feasable solution, resulting in an estimated savings of over 200,000 dollars when compared to the brick version, thus becoming the basis for the final plans.[79] Concrete floor slabs remained in the core buildings and corridors while being replaced in the cells by more economical, almost primitive, wooden plank-and-beam floors; slate shingle roofs were priced against less expensive lead-coated copper; windows and millwork were to be of white pine or - budget allowing - cypress.[80] The elevations and details from this final phase give a feeling for what had become the convent´s stark and reticent austerity: certainly a far cry from the exhuberent baroqueness of the earliest scheme! **(Figs. 5.124 - 5.135)** The details, though, intimate how these „Dominican poor" concrete block walls, which define all spaces interior and exterior, have become transformed by the architects´ thought into something approaching a „luxurious asceticism". **(Figs. 5.136, 5.137)** The play between small concrete brick pilasters and large block filling tells the story of the walls´ tectonics (Kahn: *„A beam needs a column, a column needs a beam. There is no such thing as a beam on a wall."*[81]) while drawing a subtle grey-in-grey rhythm across the facade. (Kahn, again: *„The joint is the beginning of ornament."*[82]) We may imagine how - by the introduction of craftsman´s jointing details and by the

Towards a Fine Austerity

juxtaposition of elements from a limited palette of natural materials - lead, slate, cypress or oak - the otherwise dull and grainy grey cinder blocks were to come alive in the natural light which they were shaped to filter and reflect.[83] This frugal meting out of more costly materials and techniques in order to ennoble a budget-bound whole had been an effective tactic at the

Tribune Review building and would become a major strategy for the National Assembly at Dhaka, where Kahn later described: „...The concrete is made like rotten stone. The marble inset mixes the fine with the rough and the fine takes over."[84]

A detailed cost estimate of the design from August 15, 1968 prepared by the oft-consulted Bill Gennetti and presented by Kahn to the sisters in November, arrived at a total construction price of $1,572,036 including landscaping, paving and mechanical services for a complex which now measured 52,902 square feet (4,915 m²).[85]

The project was now within reach of the sisters´ original budget and seemingly on course towards its realization. A call for interested construction firms to register for bidding had been placed in local building trade periodicals („Dodge Report", etc.) and Kahn´s office had already sent the drawings to selected building contractors for preliminary estimates.[86] In the meetings with the sisters over Fall and Winter, no major planning decisions were to be revised. Details of construction and use were discussed and refined: wood windows versus steel, kitchen equipment, seating arrangements in the chapel, the final dimensions of the classrooms, etc.. At a meeting in Media on November 13, 1968 Kahn promised to have completed all design development preliminaries by mid-December. With an additional six month head start for the working drawings and one and a half years for construction, the sisters could move into their new convent within two years![87]

Towards Realization

Here, on the threshold of realization, the sisters would hesitate. In spite of all sucessful measures to sink costs, money had continued to remain a major theme at their internal project meetings. The architects had squeezed and cut where they could and there were now virtually no reserves left should the inevitable happen and the costs begin to slowly inch up again. A more economical means of construction than the bare concrete block walls was hardly conceivable and the already-distilled plan could no longer be reduced without sacrificing its integrity or intended use. The sisters, reluctant to burden future generations of their congregation with debts, were accutely aware of this.[88]

A Great Disappointment

But budget problems, however real, were not the only, and perhaps not even the greatest threat to the project. Changes had been at work within the congregation and the society around it which would soon put an end to the work. On the one hand, the number of new postulants to the congregation had steadily dropped in the four years since beginning the project, calling the sisters´ original need for more space seriously into question. More important, though, were the Second Vatican Council´s proposed reforms to monastic life which had been established in 1965: the very year in which the sisters had initated their project.[89] Their discussion and eventual integration into the life of the congregation had been taking place parallel to the extended development of Kahn´s design, which had ironically served as a catalyst for the sisters´ ongoing and often heated debates on the virtues of the monastic life which they had until then known versus the promises of the Vatican´s proposed new opportunities for working increasingly in the world.[90] Eventually, the sisters began to see ever more of their seminary work and active religious life as taking place outside of their convent - at churches, schools, community centers, universities - undermining their original need for the proposed classrooms, the large chapel, and thus the refectory and extra bedrooms. The shared vision of monastic life which had first lead the sisters to seek out Kahn in 1965 had by 1969 slowly but surely lost its concensus within the congregation. On March 10, 1969 the congregation´s general councillors and building committee, faced with the decision of proceding with the building of the final scheme, voted unanimously to stop all work on the project, giving their main reasons as „...cost and the constant flux of our way of life at this particular time."[91] These were the late 1960´s, that volatile and expansive time in which, as Kahn himself had often repeated, „all of our institutions are on trial": this meant the institutions of religion as well. He could not have been anything other than extremely disappointed, though, when he received the following letter, dated March 18, 1969 from Mother Emmanuel´s successor as Prioress General, Mother Mary Bernadette:[92]

Dear Mr. Kahn,

It is my unpleasant duty to advise you that after much soul-searching and discussion we have decided to discontinue the plans for a new Motherhouse. The reasons are many and forceful. Aside from the money, which is, of course, a very real factor, we face at the moment constantly changing attitudes toward the manner and setting of religious life which opens up distinct forms this life is taking and will continue to take in the future.
In these days of re-evaluation, re-newal and re-study, we feel that the complex of buildings we originally envisioned would dictate decisions on our form of life rather than permit us to vary our life to fulfill our vocation amid the needs of today. We are in unanimous agreement that we cannot proceed with the original plans at this time.
For the present we have decided to provide for our aging Sisters at one of our other Convents. At Media we shall make some renovations to meet immediate needs.
I do not wish to imply that we are merely delaying our project for a year or two. For your sake as well as our own we feel it best to conclude our mutual agrement now. Will you please have sent to us a statement of fees we still owe? At the same time we would appreciate having whatever models or plans are available.
It has been an enriching experience and great pleasure to have been associated with you and your staff in this venture. We have all enjoyed and profited from it. Our sincere appreciation for your understanding, patience and wisdom.

Sincerely,
Mother Mary Bernadette, O.P.,
Prioress General

Sadly, this would be the last official communique regarding the project between the convent and Kahn. Sister Irene Lolli, secretary of the building committee and Sister Eilleen Patricia, member of the congregation´s general councillors, recalled years later how much the sisters regretted having to end their stimulating and friendly working relationship with Kahn and that in spite of this sudden end to the project, they and Kahn „parted as friends."[93]
Aside from a minor remodelling of the existing manor house and the addition of a small chapel in order to adapt it to their own use, the sisters would never build at Media and the hillock they called „daffodil hill" would remain for the next decades as it had always been. The older sisters moved shortly after the termination of the Motherhouse project to the newly remodelled Saint Catherine´s Hall, a vacant utility building at the Elkins Park retreat, to be followed by the rest of the congregation in 1989, at which time both the house and property at Media were sold for use as a private residence.[94] By the end of the 1990s both the hill and the rest of the property at Media had been sold again, this time to be subdivided and built up with high-end speculative houses, thus closing the door on a plan which had been the source of so many rich thoughts and hopes.

A Tenuous Resolution, Open Ends
„That which has not been built is not really lost. Once its value is established, its demand for presence is undeniable. It is merely waiting for the right circumstances."
Louis I. Kahn, quoted in John Lobell, Between Silence and Light, 1979

„For all its beauty, a tightly circumscribed word always means a shrinkage of meaning, a capping of loose ends. Where it is precisely those loose ends on which the phenomenal world most depends, in that they intertwine with each other."
Joseph Brodsky, Memories of St. Petersburg, 1993

If Kahn has lead us over the past months on the long way from gesture to plan, through dissonance to resolution, it is a tenuous resolution which he has found: spring-tight and seemingly waiting only to further unfold into its successive forms of expression. In spite of the „finshed" and detailed plans, we cannot say with certainty how the Dominican Mother-

house would have finally appeared and found its place in the lives of the sisters had it been built. Not everything had been decided; certainly there would have been late changes in the planning, there always were, sometimes decisive and indeed, often welcomed by Kahn: „*When you have all the answers to a building before you start building it, your answers are not true. The building gives you answers as it grows and becomes itself.*"[95] If the project remains to date one of Kahn´s most enigmatic and compelling „uncompleted things", it is not only for its exemplary illustration of principle, but due to its combination of precise intention and „loose ends" which have been left to intertwine in our imaginations with different layers of the phenomenal world. Regarding its precision: the following chapter and the newly-drawn portfolio of schemes will attempt to demonstrate at least some degree of this by illuminating the planning of its major elements in greater depth. Regarding its „loose ends": the chapters in Section II will attempt to engage some of these by situating the project in the context of Kahn´s long-term thoughts on architectural space.

Chapter 5: Footnotes

1. Louis I. Kahn: Talk at CIAM Congress, Otterlo, 1959, in: Twombly (ed.), Louis I. Kahn: Essential Texts, W.W. Norton, New York, 2003, p. 55.

2. See Peter Kohane, „Louis I. Kahn´s Search for Form„ in: Xavier Costa (Ed.): Kahn: Libraries/ Bibliotecas, Editorial Gustavo Gil, Barcelona, 1989, pp. 72-132 for one extended description of how Kahn´s verbal statements of intent tended to precede his ability to realize those intentions in his built work.

3. Louis I. Kahn: transcribed from a radio lecture for „Voice of America„, November 1960. Published first as „A Statement from Louis I. Kahn„ in Arts and Architecture, February 1961, and later as „Form and Design„ in Architectural Design, April 1961.

4. Louis I. Kahn: in William Jordy, „The Span of Kahn„, Architectural Review, June, 1974.

5. ibid. The influence of Kahn´s Beaux-Arts training on his mature concept of „Form and Design„ is evident in his later description of that training. In this interest, the more complete quotation from Jordy´s interview: *„First, the sketch or esquisse. For beginning design problems Beaux-Arts training typically presented the student with a written program without comment from the instructor. He would study the program, be given a few hours in a cubicle (en loge) during which he would make a quick sketch of his solution without consultation. This sketch was filed as the basis for the elaboration of the problem which followed. Final drawings could not violate the essence of the original esquisse. The sketch, or esquisse, was the beginning excercise issued by the central office, the Beaux-Arts Institute. This was registered as the first impression as to how the student saw the building. It was something that every student trained himself for. In order not to be at great variance with the nature of a library, or the nature of a legislative chamber, we looked up these places to see what they were in preparation for the esquisse. Once the sketch was made we had to adhere to it during the time of study. This particular aspect of Beaux-Arts training was probably the most controversial because there was no exchange between the advocates of the program and those who interpreted it, the architect. So the sketch depended on our intuitive powers. But intuitive power is probably our most accurate sense. The sketch depended on our intuitive sense of appropriateness. I teach appropriateness. I don´t teach anythng else. I don´t teach how I do things. I´m at my best when I don´t tell anything about how I do things. I´m at my best when I talk about the nature of things - the nature of a library. It´s not derived so much from knowledge because the examples are very ragged. It is derived because you revere the sense of the beginning.... I don´t think that appropriateness comes from examples of what has been done. They are a test of what is done, but not the beginning, the source. The esquisse gave us this sense of a source, because we knew little about how things were done. We couldn´t go to the books and really research the problem before the esquisse was made. So I think that the esquisse was valuable in giving a sense of what, out-of-the-blue, a library should be, as though we had never seen a library....„*

6. Kahn often related the genesis of his First Unitarian Church (1958-63) to illustrate the process of „Form and Design„ at work. Presented with the program, Kahn - so he told - quickly realized that the sanctuary („the center of questioning„) and the required classrooms („which raise the spirit of the question„) were in fact inseparable. Kahn represented this realization in in a „Form„ ideogram, with „questioning„ center, ambulatory and ancillary classroom spaces. The clients, though, had imagined a binuclear scheme, with sanctuary and school separated by a linking foyer. Kahn was then able to demonstrate to the congregation how the individual spaces of the school „wanted„ to take part in the presence of the sanctuary: piece by piece, the clients´ binuclear scheme morphed back into Kahn´s original diagram: the „Form„ was thus saved. The pithy final plan, in which the individual sizes of the rooms have been respected (the circumstances of „Design„), shows how the „Form„ was strong enough to hold through to realization. (See „A Discussion in Louis I. Kahn´s Office„ in: Perspecta 7: The Yale Architectural Journal, 1961, p. 9-18.) In contrast to Kahn´s description, which tends to suggest that the intuition´s way to the correct „Form„ is always a quick and

certain one, this was not at all the case with several of his projects, as we shall see in the following pages. We might also note at this point that not all programs move with the same vehemence toward „Form": whereas a church, an auditorium, a school tend to suggest a strong (that is socially charged) Form, a speculative office building, a materials testing laboratory or a fast-food restaurant do not.

7. See: Karl Popper: Conjectures and Refutations, Routlidge and Kegan Paul, London,1963.

8. Interview, author with David Polk, Polk Residence, Chestnut Hill, PA, 20 October 2004. See also: Interview, Polk - Kazumi Kawasaki in A+U, Extra Edition, November, 1983, p. 234: *„...He wasn´t too much aware of the site when working on the original schemes, and when I went to look at the site and I found the woods in relation to a clearing to be a certain way and proposed the idea of the cells sort of related to the woods in a kind of inter-edge to the woods and making a place within which the other things could sit...."*

9. Louis I.Kahn: in conversation at Rice University, Spring 1968, quoted in: Conversations with Students (2. Edition), Princeton Architectural Press/Rice University, Houston,1998, p. 54.

10. Letter, David Wisdom to Mother Mary Emanuel, 22 June 1966, Box LIK 10, Kahn Collection.

11. In his later projects, Kahn would often employ a grove, not only for its obvious natural beauty or symbolic meaning, but precisely for its spatial/architectural qualities. See, for example: the Kimbell Art Museum, the Graduate Theolgical Union Library, Salk Institute, St. Andrew´s Priory, the Franklin D. Roosevelt Memorial or the Bicentennial Exposition. Author in interview with Harriet Pattison, 21 October, 2004, Architectural Archives, University of Pennsylvania. For more on this theme, see also Chapter 10.

12. „Parti" being the term codified at the Ecole des Beaux-Arts to denote the general plan scheme, concept or disposition, (From „prende parti": to take a stance.) See: David Van Zanten , „Architectural Composition at the Ecole des Beaux-Arts" in: Arthur Drexler (ed.), The Architecture of the Ecole des Beaux-Arts, Secker & Warburg, London, 1977, pp.111-324.

13. *„Der Ort ist nicht schon vor der Brücke vorhanden. Zwar gibt es, bevor die Brücke steht, den Strom entlang viele Stellen, die durch etwas besetzt werden können. Eine unter ihnen ergibt sich als ein Ort, und zwar durch die Brücke...."* Martin Heidegger: Bauen, Wohnen, Denken; in: Darmstädter Gespräch 1951: Mensch und Raum, Darmstadt, 1952, p. 78. See also Chapter 11 on place, landscape and architecture.

14. *„I cross out the words so that people notice them. When something has been obscured, it makes you want to read it."* Jean-Michel Basquiat, in: Jean-Michel Basquiat, Whitney Museum/Abrams, New York, 1993, p.24.

15. Louis I. Kahn, in: Heinz Ronner and Sharad Jhavari, Louis I. Kahn Complete Works 1935-1974, Birkhäuser, Basel and Boston (2nd Ed.),1987, p. 209.

16. Hannah Arendt, The Human Condition, Chapter 5: „Action", University of Chicago Press, Chicago, 1958, pp.175-247.

17. Louis I. Kahn, „Order Is", in Alessandra Latour, op. cit., p. 58.

18. Louis I. Kahn, in: Wurman, op. cit., p. 257.

19. Louis I. Kahn, talk with students at Rice University, Spring 1968 in: Louis I. Kahn, Conversations with Students, op. cit., p. 57.

20. See: David B. Brownlee: „The Houses of the Inspirations", in: Brownlee and DeLong, op. cit., p. 110.

21. Meeting minutes, David Polk, 22 July 1966, Box LIK 10, Kahn Collection.

22. Louis I. Kahn: „Not For the Faint Hearted", first publihed in: AIA Journal, June 1971, in: Wurman, op. cit., p.124.

23. Meeting minutes, David Polk, 22 July 1966, Box LIK 10, Kahn Collection.

24. Area calculations by architects on office blueprint. (Folder 030.I.C.700.012) By dividing the sisters´ 1,500,000 dollar budget by Kahn´s 160,000 square feet, we are left with less than 9.50 dollars/square foot. Considering the fact that Kahn´s office would in the coming months use prices ranging from 25 dollars/square foot for the cells to 50 dollars/square foot for the chapel in their cost estimates, we can quickly see that the proposed scheme would have easily cost over three to four times the sisters budget! (Source of prices: DMH Project files, Box LIK 10, Kahn Collection).

25. Letter, Mother Mary Emanuel to Louis Kahn, 7 September 1966, Box LIK 10, Kahn Collection.

26. Office blueprint with area calculations and cost estimate based on differentiated price per square foot, Folder 030.I.C.700.007, Kahn Collection.

27. Kahn´s first use of „informal", non-orthogonal planning in a large-scale project seems to date from 1951 in an unrealized sketch plan for the Mill Creek Housing project in which standard low-cost housing blocks stand at various irregular angles to each other, producing oddly-shaped courts in a dramatic departure from his earlier orthogonal attempts with that project. (LIK Box 60, Kahn Collection) Eugene J. Johnson points out that this sketch was made by Kahn while at the American Academy in Rome directly upon return from a trip to Delphi, where he had experienced the non-orthogonal planning of the Greek sanctuary at first hand. (Michael J. Lewis and Eugene J. Johnson: Drawn From the Source: The Travel Sketches of Louis I. Kahn, MIT Press, Cambridge, MA., 1996, p. 88.) The Childrens´ Day Camp for the Trenton Jewish Community Center (1957) is Kahn´s first „informally" non-orthogonal built work. In this minimal structure we can already see a number of themes which will occupy Kahn at Media: such as individual parts inflecting to a greater whole, the definition of a tenemos in a clearing, etc..

28. While there are examples in which entire buildings have been cut out in order to compare sizes (Dominican Motherhouse, see Fig. 5.49) or to reposition within a site plan (Dhaka: see The Louis I. Kahn Archive: Personal Drawings, vol. 7, Garner Publishing, New York, 1987.), this seems to be the only example of the collage technique used to design a **single** building by shifting and spacing the cut-out shapes of the individual rooms.

29. Author in interview with Harriet Pattison, 21 October, 2004, Architectural Archives, University of Pennsylvania.

30. The extent of Kahn´s knowledge of Hadrian´s Villa and of its direct use as a model for his own work is open to some speculation. It´s difficult to imagine that he didn´t visit the Villa during his 1951 stay at the American Academy in Rome. According to his associate Thomas Vreeland, Kahn had often mused on the Villa as a „place of the immeasurable", and Vreeland had in 1960 actually directly traced a section of the Villa as a plan generator for the troublesome Salk Meeting House design, apparently receiving enthusiastic approval from Kahn, who did not immediately recognize the fragment. (See Brownlee and DeLong, op. cit., p. 335) In an interview with Vincent Scully, though, Kahn denied any direct historical quotations in his work:
„(Vincent Scully) had been criticized by another critic of architecture because he mentioned that Frank Lloyd Wright´s building in Florida was influenced by Hadrian´s Villa. He remarked to me that the building I did - I think it was the Salk Institute - was also influenced by Hadrian´s Villa.
Actually, somebody else in my office showed me a picture of Hadrian´s Villa, and I was im-

pressed with the ins and outs of these two buildings. He showed me how close it was to my own building, something I´d never seen before because I´m unhistorical by nature.
Scully, who is a historian, sensed the desire, saw these pictures and then put down things like that, but it´s completely the opposite.
Fitch, who is a good critic, said, „You may say something about Frank Lloyd Wright, and you can´t prove it. But Lou Kahn´s alive and kicking. Why don´t you ask him if he felt that way about Hadrian´s Villa?" So he called me up and he asked me and I said that I did not. I said, „If it´s been in the book all this time, why didn´t you correct it?" And he said, „What can I do to correct it? It´s printed." (in: Wurman, op. cit., p.117).
Whatever the extent of his knowledge, the Villa Hadriana and other historical models were certainly „in the air" around Kahn. Perhaps not incidentally, Charles Moore, Kahn´s teaching assistant for thesis projects at Princeton in the late 1950s, was one of the first among late 20th century American architects to reappraise Hadrian´s Villa in written form. See: Perspecta no. 6 (1960), p. 16-26.

31. Vincent Scully, Louis I. Kahn, George Braziller, New York, 1962, p. 37.

32. Louis I. Kahn, in: H. Ronner and S. Jhaveri, op. cit., p. 70.

33. See: Christian Devillers: The Indian Institute of Management, Casabella 54, September 1990, p.60.

34. Louis I. Kahn, in: Wurman, op. cit., p. 232.

35. Louis I. Kahn, in: Wurman, op. cit., p. 151.

36. Robert Venturi, Complexity and Contradiction in Architecture, MOMA, New York, p. 88-89. It´s instructive to note that while in his book Venturi demonstrates the principle of inflection with the **facade**, with Kahn that principle tends to be most active in **plan**. (*„The rooms talk with each other..."*)

37. Louis I. Kahn: „The Room, the Street and Human Agreement" (1971), in: Latour, Louis I. Kahn: Writings, Lectures, Interviews, Rizzoli, New York, 1991, p. 264.

38. Meeting notes, 10 October 1966, David Polk, Box LIK 10, Kahn Collection.

39. Collage Plan in archive of the Dominican Motherhouse, Elkins Park, PA.

40. In a letter to Louis Kahn after an office visit, the young Colin Rowe stated, „You deplored composition because it appeared to be no more than a manipulation of forms for the sake of effect. You wanted to grow a building." Rowe to Kahn, 7 February 1956 Box LIK 65, Kahn Collection.

41. Kahn at Yale University (undated) on the Fort Wayne Fine Arts Center in: Wurman, op. cit., p.13. Two (for Kahn unforeseeable) events have demonstrated „after the fact" the tension between the configuration as a „whole" and as a „conglomeration of parts" in Kahn´s work. The failed attempts to convincingly extend the Kimbell Art Museum (1986, Mitchell Giurgola, arch.), and the Salk Institute (Anshen and Allen, 1995), have convincingly demonstrated that the apparently „unfinished" or „open" orders of those buildings were, in fact, only apparently so.

42. Adolf Behne was the first to draw attention to this conceptual split in modern architecture. In his **Der moderne Zweckbau** of 1926, he coined the term „functionalist" to describe a unique, tailor-made architecture based on well-defined functions, while the term „rationalist" was used to refer to the development of repeatable, type-based solutions. Instructive is that Behne saw the rationalists as the greater servants to society, the functionalists as the greater individualists. For more on this tension within Kahn´s work, see Maria Bottero: „Organic and Rational Morphology in the Work of Louis Kahn", in: Zodiac 17, 1967, and Alan

Colquhoun, Modern Architecture, Oxford University Press, Oxford, 2002, p.169.

43. Letter with enclosed cost estimate, Kahn to Mother Mary Emmanuel, 18 November 1966, Box LIK 10, Kahn Collection.

44. Letter, Mother Mary Emanuel to Kahn, 16 December 1966, Box LIK 10, Kahn Collection.

45. Letter with program, Sister Mary Emanuel to Kahn, 27 December 1966, Box LIK 10, Kahn Collection.

46. Louis I. Kahn: Address at the 1959 CIAM Congress in Otterlo, in: Twombly: Louis I. Kahn: Essential Texts, W.W. Norton, New York, 2003, p. 42.

47. Typed modified program from DMH congregation, December, 1966, Box LIK 10, Kahn Collection.

48. It is precisely at this point of the narrative that the path becomes its most uncertain. Whereas virtually all other steps in the development of the design as described here may be chronologically verified either by dated plans, project files and/or from the context of other drawings, in terms of both attribution and chronology, these undated and unsigned sketches represent the most speculative passage in the reconstruction of the monastery´s design process. Concerning attribution: although none of these sketches have been filed among those 85 project drawings which have been „definitively" identified as Kahn´s, the „handwriting" of most of them does indeed seem to indicate that they belong to him. We have, then, either a case of Kahn´s drawings having been filed in the office drawing portfolios (which, in fact, has been verified in several other cases), or of Polk sketching with Kahnian means in a Kahnian manner. (With - nearly 40 years after the fact - David Polk no longer able to remember these particulars, the former possibility seems the most likely.) With final attribution uncertain at this point we must remain content with a picture of both Kahn and Polk pushing the project forward together. Concerning the drawings´ chronology: while in their „Complete Works" Ronner and Jhaveri have placed Figs. 5.50 and 5.54 as intermediate steps between what I have named schemes 1 and 2. I propose that at least three facts speak for the chronology presented here: firstly, the unity of handwriting and medium in all the sketches in question; secondly, the fact that the proposed chronology best matches the architects´ and sisters´ continuing goal of compacting the project (Figs. 5.50 and and 5.54 indicate considerably fewer cells (a maximum of 60: see Kahn´s note on 5.54, „60 cells on 3 floors.") than schemes 2 and 3, indicating that they were almost certainly drawn **after** Mother Emmanuel´s reduced program with 74 cells from 27 December 1967); and finally, the fact that the proposed chronology describes a plausible and comprehensible development within the scope of the project. (See also the proposed graphic chronology in Chapter 5.) Because the tendencies illustrated by the sketches are long-term within the project, I propose that the general argument presented here in form of the narrative remains feasible even with allowance for certain deviations from the presented chronology.

49. See also Chapter 9 for a discussion of movement and diagonal planning in Kahn´s work.

50. Letter with cost estimate, David Polk to Mother Mary Emmanuel, 2 March 1967, Box LIK 10, Kahn Collection.

51. Interview, author with David Polk, Polk Residence, Chestnut Hill, PA, 20 October, 2004.

52. Meeting minutes from 13 February 1967, Box LIK 10, Kahn Collection.

53. Hinnebusch O.P., Willaim A., „Dominican Spirtituality: Principles and Practice", Thomist Press, Washington, D.C., 1965, p.123.

54. Meeting minutes from 13 February 1967, Box LIK 10, Kahn Collection. In a remarkable parallel to Brother Hinnebusch´s text on Dominican life (and Kahn´s unfolding design) is dis-

cussion in Kahn´s Master´s Studio from 1961, in which the problem of a monastery had been assigned: (see also Appendix A.)

„An Indian woman gave the first remark of significance.
She said, „I believe that this place should be so that
everything stems from the cell.
From the cell would come the right for the chapel to exist.
From the cell would come the right for the retreat
and for the workshops to exist.“
Another Indian student
(their minds work in most transcendent ways)
said, „I very much agree,
but would like to add
that the refectory must be equal to the chapel,
and the chapel must be equal to the cell,
and the retreat must be equal to the refectory.
None is greater than the other.“

55. Interview, author with David Polk, Polk Residence, Chestnut Hill, PA, 20 October 2004.

56. Timothy Benton, Le Corbusiers Pariser Villen, Stuttgart, 1984.

57. Frank Lloyd Wright, The Future of Architecture, Horizon, New York, 1953, p.62.

58. Louis I. Kahn, in: Wurman, op. cit., p. 235.

59. Louis I. Kahn, „Order Is", in: Alessandra Latour, op. cit., p. 59. To which Gertrude Stein might have countered, „The inventor because he does not know what he is going to invent inevitably the thing he makes must have its ugliness." (On Picasso´s early cubist paintings.)

60. Meeting minutes from 7 August 1967, Box LIK 10, Kahn Collection.

61. Louis I. Kahn: in: Wurman, op. cit., p. 67.

62. Louis I. Kahn: on the Exeter Library, 1972, in: Wurman, op. cit., p. 178.

63. A.I.A. Contract between Louis I. Kahn and Dominican House of Retreats and Catholic Guild, 7 August 1967, Box LIK 10, Kahn Collection.

64. See: Michael J. Lewis, In: Brownlee and DeLong, op. cit. p. 357.

65. Letter, Kahn to Mother Mary Emmanuel, 24 August 1967, Box LIK 10, Kahn Collection.

66. Alan Colqhoun: „The Beaux-Arts Plan", in: Architectural Design Profiles 17, vol. 48, nos. 11-12, 1978, p. 50-65. In a manner related to Colquhoun´s, some seven years earlier Kahn spoke of the plan as a partita: *„...Open before us is the architect´s plan. Next to it is a sheet of music. The architect fleetingly reads his composition as a structure of elements and spaces in their light. The musician reads with the same overallness...."* Louis I. Kahn, „The Room, the Street and Human Agreement", AIA Gold Medal Acceptance Speech, 1971, Box LIK 52, Kahn Collection.

67. Daniele Barbaro: La Practica della Perpettia, 1569.

68. Michael Graves: The Necessity of Drawing: Tangible Speculation, in: Architectural Design, 1977.

69. Louis I. Kahn: transcribed note of a studio discussion, Penn, 5 Dec. 1960, in: Robert McCarter, Louis I. Kahn, Phaidon Press, London, 2005, footnotes.

70. Louis I. Kahn: source . Each discrete space is strenghened in its search for significance not only by finding the right place within the whole, but also by receiving its own **scale**. Kahns´s buildings often attempt to reconcile monumentality and human scale. See quote from Aldo van Eyck -„Rightsize" - at end of Chapter 10.

71. Louis I. Kahn, quoted by David Polk in interview with author, 20 October 2004.

72. An incomplete list of publications which have presented the plan of 22 April 1968 as the „final design" would include: Gast, Giurgola, McCarter, Saito, A&V special issue 2001.

73. A provocative and thorough analytic theory of architecture as a configurative art is worked out by Bill Hillier in his Space is the Machine, Cambridge University Press, Cambridge, GB, 1996.

74. Robert McCarter suggests that this was indeed the case and that the stairs were reinstated in the following version as a concession to the building code. See: McCarter, op. cit., p. 295.

75. Louis I. Kahn: „The Room, the Street and Human Agreement" (1971), in: Latour, Louis I. Kahn: Writings, Lectures, Interviews, p. 26.

76. An effect of the building in space similar to Kahn´s description of the perception of Erdman Hall at Bryn Mawr College: *„The effect of the building as one approaches... will be that of diagonal walls East and West. when the sun is rising, three walls will appear in light and three walls will be in shadow; and when the sun is setting, the walls previously in light will be in shadow."* In: Wurman, op. cit., p. 5.

77. Author in interviews with David Polk, Anant Raje. Verified by office time cards/payroll from 1968. (Boxes 71 (F2), 75 (F6), 77 (F8) Kahn Collection.)

78. Kahn´s wish for an apparently „informal" geometry did not set his unusually high demands for formal resolution out of order. A closer inspection of the plans reveals the formal resolution of the volumes´connections in all cases: there is absolutely nothing casual or sloppy about them. Any attempt to redraw the later schemes using the planning module of the concrete blocks and the width of the cells will make the multiple dependencies within the plan apparent. Indeed: in several cases Kahn´s associates were not beyond „stretching" the planning grid in order to formally resolve the connections. (See note in Chapter 5.)

79. Source: handwritten cost estimates with variations for materials and construction, dated: 16 May 1968, 4 June 1968, 13 August 1968; typed cost estimate (4 pages) 15 August 1968; meeting notes, 12 November 1968. LIK Box 10, Kahn Collection.

80. ibid.

81. Louis I. Kahn: Lecture „Silence and Light", ETH Zürich, 12 February 1969, in: H. Ronner and M. Jhaveri, op. cit., p. 9

82. Louis I. Kahn, „Foreword", in: Latour, op. cit. p. 332.

83. The Tribune Review Building, with its pilasters of brick-sized concrete blocks and filling of full-sized blocks, further employs a subtle combination of struck and pointed mortar joints, shadow joints and strategically placed string courses to articulate the story of its tectonics. The fine detailing, which encompasses the precast concrete roofs and beams, gives the building a striking dignity which belies the modest materials of its construction. As such it intimates to a certain degree what the materiality of the Domincan Motherhouse might have been. Robert McCarter is to be credited for dedicating 10 pages to this neglected and subtle masterpiece. McCarter, op. cit., p.139-149. (A predecessor was the DeVore House of 1954 in which a simlar construction had been indicated.)

84. Louis I. Kahn: in conversation with Richard Saul Wurman, October 1973, in: Wurman, op. cit., p. 232.

85. Cost estimate, Bill Genetti, dated: 13 August 1968, Box LIK 10, Kahn Collection.

86. Various offers for bid requests in Box LIK 10, Kahn Collection. For example: letter, Bornstein and Son Inc. (10 September 1968) and letter, C. Raymond Davis and Sons, Inc. (4 October 1968).

87. Meeting notes, 12 November 1968, Box LIK 10, Kahn Collection.

88. Minutes. meeting of the general councillors and building committee with Mother Mary Bernadette, 10 March 1969, Archive of the Dominican Motherhouse, Elkins Park, PA.

89. For texts on Vatican II (1962-65), see the Vatican Archive, Documents of the II Vatican Council: http//www.vatican.va/archive. (Accessed April 2005)

90. Interview, author with Sister Irene Lolli and Sister Eilleen Patricia, Dominican Motherhouse, Elkins Park, PA., 15 April 2006

91. Minutes. meeting of the general councillors and building committee with Mother Mary Bernadette, 10 March 1969, project folder, Archive of the Dominican Motherhouse.

92. Letter, Mother Mary Bernadette - Louis I. Kahn, 18 March 1969, Box LIK 10, Kahn Collection.

93. Michael J. Lewis with Sister Irene Lolli, 1 May 1990. Essay in Brownlee and DeLong, op. cit., p. 383-89. Verified in interview, author with Sister Irene Lolli and Sister Eilleen Patricia, Dominican Motherhouse, Elkins Park, PA., April 15, 2006.

94. Interview, author with Sister Irene Lolli and Sister Eilleen Patricia, Dominican Motherhouse, Elkins Park, PA., 15 April 2006; sales information in archive, site visit by author, 16 April 2006.

95. Louis I Kahn, in: Kimbell Art Museum, Light is the Theme. (Among the more important „answers" which Kahn´s buildings gave him during their construction include: the final state of the famous plaza at the Salk Institute, the last minute substitution of travertine for slate in that project or the construction of central roof of the National Assembly at Dhaka...)

Chapter 6. „I Think That Architects Should be Composers and not Designers":
Elements of a Composition: The Individual Parts and Their Separations

„We can see Hadrian´s Villa as the end of the Age of Creativity, but it is certainly also the beginning of thinking in terms of the enrichment of culture as a creation which extends over generations. The Villa is the first proof of an „Architecture of Memory" in which pieces from history have been collected and juxtaposed. It was in its idea a pluralistic concept. Each part is a discovery, a place. It is an accumulation of occurences, of pieces and fragments. Hadrian´s idea of the Villa, realised in his ideal Villa, makes visible the turning point in thinking from the metric space of unity to the visionary space of coherent relationships. It is the transition from the concept of homology, of unity, to the concept of morphology - of multiple references. In this sense Hadrian´s idea portrays a transformation of thoughts, facts, objects and conditions, all of which find themselves within a historical continuum."
O.M. Ungers, „Aphorismen zur Architektur" in: O.M. Ungers: Architektur 1991-1998 (trans. MM)

„...It is not the obvious or easy unity derived from the dominant binder or the motival order of simpler, less contradictory compositions, but that derived from a complex and illusive order of the difficult whole. it is the taut composition which contains contrapunctual relationships. equal combinations, inflected fragments, and acknowledged dualities. It is the unity which „maintains, but only just maintains, a control over the clashing elements which compose it. „Chaos is near; its nearness, but its avoidance, gives ... force". In the validly complex building or cityscape, the eye does not want to be too easily or too quickly satisfied in its search for unity within a whole."
Robert Venturi, Complexity and Contradiction in Architecture, New York, 1966, pp. 104

„I think that architects should be composers and not designers. They should be composers of elements. The elements are things that are entities in themselves."
Louis I. Kahn, Address, 1963

The emphasis of the foregoing narrative has been placed on the development of the monastery´s total plan: beginning with Kahn´s pre-architectural ruminations on the institution´s „Form", moving over the testing of that conjecture against the contingencies of context (including budget, site, etc.), to the linking and intertwining of decisions between the project´s various realties. Having traced the plan´s development from beginning to end, a considerable portion of its story has - in the interest of continuity - remained untold. For in this most fundamental manifestation of a Kahnian „society of rooms" each space is free - to a degree rarely seen in his other works - to unfold according to its own „existence will". As a result of this freedom, the design for the monastery resembles as much the design of several related buildings, each with a more-or-less independent life, as it does that for a single building. While always deferring to the whole, each of the Monastery´s components has its own history, with each space and its connections subject to intensive study. Hundreds of sketches and drawings of the individual parts and their collisions are testimony to the thought involved. Using a small selection from those many drawings, the following chapter will review the development of three major components of the monastery: the cells, the chapel and then the connections and walls. In doing so, it is hoped to gain a better understanding of what Kahn meant when he stated that architects should be „composers and not designers."

The Cells
„I believe that this place should be so that everything stems from the cell. From the cell would come the right for the chapel to exist. From the cell would come the right for the retreat and for the workshops to exist." Another Indian student (their minds work in most transcendent ways) said, „I very much agree, but would like to add that the refectory must be equal to the chapel, and the chapel must be equal to the cell, and the retreat must be equal to the refectory. None is greater than the other."
Student in Kahn´s Master´s Studio, quoted by Kahn in „The Instutions of Man", Princeton, 13 March, 1968

„ I was a hermit who had the idea of socializing elements, of bringing them together in a single self-complement."
Louis I. Kahn, quoted in Complete Works, p. 305

The quotes above are revealing in that both Kahn and his students call for the expression of balance between individual and collective as the prerequisite of a monastery´s „Form". According to Kahn´s imaginary „Volume Zero" in the history of monasteries, it is the individual´s retreat from which the institution would eventually grow: a „society of hermits" and „single self-complement". Although no longer a seperate hut-like **hermitage** as in a Carthusian chapter house, the cell should in some analogous way, then, be legible as the beginning of the modern monastery: or at the very least be legible as a discrete component. Kahn´s earliest sketches for the Motherhouse deal with those cells, dimensioning and dividing them according to their position within the congregation´s four-tiered hierarchy: postulants, novices, professed and older professed sisters. (ca. April 1966, **Fig. 6.1**) How, though, to establish a meaningful private-communal parity within the greater whole? Kahn´s first answer is direct: simple typological clarity. Here, the grouped cells, there the collective spaces. (As in the medieval chapter house.) This simple decision is then underscored through the engagement of the site´s natural features. (Scheme 1, June 1966, **Fig. 6.2**)

In the first scheme´s two-part **parti** the positioning of the cells in respect to both forest and topography strengthens the centrifugal gesture of the plan, effectively „distancing" the cells from the monastery´s communal spaces. At the same time, the open „U" formed by the cells focuses back toward the communal spaces, implying interdependence between both realms. In schemes two and three, the relationship between the individual and communal grows less resolved. Finally, with the advent of the fourth and final scheme (February 1967 onwards, **Fig. 6.3**), a new, more mutlivalent, resolution is found: the sister´s cells, while retaining their legibilty as a discrete element, now embrace the core spaces in a gesture of communality: pooling their energies into something which begins to take on the character of a very large house.

Although the early decision to house each of the individual ranks of sisters in discrete building elements was was abandoned in the final scheme (a stair in the middle of the East wing now provides the desired separation between professed sisters and novices, the collision of the refectory at this point, a geometrical sleight-of-hand providing the necessary change of depth between the shallower and the deeper cells, (**Fig. 6.4**), the early realization to place the cells so that *„each room has its own private relationship with the woods - the serenity of the woods being felt to be in harmony with the nature of the cell."*[1] remained unchallenged in all the monastery´s following versions.

In the final scheme the cells form a habitable „thickened wall" between the core spaces and the edge of the woods: a special variation of Kahn´s layered concentric type - which in its multiple incarnations includes the First Unitarian Church, the Salk Meeting House, the Phillips Exeter Library, the National Assembly at Dhaka. Analogous to the way that the „wall" of cells mediates between outer and inner worlds, at the next smaller scale, the thickened facade of the cells mediates between landscape and individual room. (**Fig. 6.5**) The mediating loggia/balconies of the first scheme - similar to those of Le Corbusier´s La Tourette - were quickly dismissed by the sisters as too expensive, though, and were succeeded by studies of the outer wall as a human-scaled, habitable „in-between", straddling outer and inner realms. **Figures 6.5 and 6.6** are early sketches showing how the outer masonry wall has been doubled up: with a „keyhole" window in the outer facade, and a wide arch in the inner layer. Within the space of this double wall Kahn has drawn a small desk and a window seat. Aside from its function as interior-exterior mediator, this facade zone gives the activities of working and contemplation their own discrete space within the small cell. Kahn: *„the window wants to be a little room."* The habitable, mediating border-space, so central to Kahn´s architecture, will be taken up at greater length in Chapter 10.

But building a double periphery was an unaffordable luxury for the sisters. Further studies in Kahn´s hand (**Figs. 6.7 - 6.10**) show attempts to reach a comparable degree of layering with a greater economy of means. The doubled masonry wall has been succeeded by a thickening of the facade zone using built-in wooden furniture elements. A desk, a window seat, a chest of drawers, as well as small vertical shafts for the heating pipes: all have been combined into a single piece of furniture which is at once continuous with the window construction

and mounted **on** rather than in the masonry wall in order to maintain that wall´s primacy. A section and a small perspective sketch (Fig. 6.7) show the wall´s „microzones" of habitable space and its body-scaled sitting space. In contrast to the rough concrete block surfaces which define virtually all of the monastery´s spaces, the materials where the nuns come into contact with the building are smooth to the eye and touch. At sitting level, natural light may be adjusted with an operable shutter, while the window´s large, fixed upper section admits light deep into the cell, preventing the phenomenon of glare. The thick sill which separates upper and lower window areas compresses the room´s scale in the sitting area. In the contemporaneous border-space of the Exeter Library (1965-71), with its study carrels built *„within the folds of the brick construction"* (Kahn), we can see approximately how the monastery´s outer wall space was intended to function. (Fig. 6.11)

Construction, Detail, Space

After Kahn´s brief consideration of stone as the primary building material, the project vacillated between brick and concrete block over the length of its gestation. Although he preferred brick, not giving up on the possibility of using it until quite late in the project, it´s worth noting that at an early stage Kahn had drawn the construction in some detail as concrete block: cavity walls both exterior and interior with 8"x 16" (circa 20 x 40 cm.) blocks in either 4" or 8" (10 or 20 cm.) width. (See „Construction" below.) The room height of the cells is indicated as 13 blocks (plus mortar joints) or 8´- 8 3/8" (circa 2.70 m.). The number of detailed and large scale sketches of the cells in Kahn´s hand from relatively early in the project show that he was intent on perfecting the basic building block of the monastery before setting his associates to work out the general plan

Kahn was apparently interested in the form-giving potential of the sister´s four-tiered hierarchy. From the very beginning of the design he considered different floor plans for each rank of sisters. In the first of these which were drawn to scale, the cells for the younger postulants and novices are a 10´x 10´ (circa 3.5 x 3.5) square (Fig. 6.8) while those of the professed sisters are deeper rectangles. (Fig. 6.9) The undirected form of the square is intended, according to Kahn, to „measure the servitude" of the younger sisters. The large freehand studies (1/2"= 1´- 0") are thoroughly dimensioned and a great deal of detail has been shown: we can see, for example, how the wooden window furniture is to insulate the masonry wall, the various ways in which the bed can be set up in the room, or the precise size of the vertical ducts, etc..

Among the details in these sketches is a small, but telling one: in the sketch for the „professed" cell, the six-foot-wide corridor has been included, complete with its facade to the interior court. (Fig. 6.9) The window from corridor to courtyard has been drawn with its central axis centered on the axis of the cell and explicitly **not** on the axes of its door and window openings. These staggered openings make the view from the corridor or court through the open cell door to the woods difficult. With this small measure, the views from the cells are oriented outwards, while the corridor is explicitly oriented toward the center of the monastery. The centrifugal gesture of the very first scheme - the cells dug into the slope and seperated from the court with a series of ambulatories and sunken gerdens - is repeated here, at a smaller scale, with a very minimum of means. With the switch to single-windowed cells (again: the budget...) this elegant detail will disappear in further studies.

The last detailed studies of the cells (office drawings from October, 1968, Figs. 6.12, 6.13) show that the spatial complexity of the earlier versions has fallen victim to the hard reality of the budget: instead of a frame-like exterior wall with two openings per cell, each cell is now given only a single window: sections of closed wall and window alternate with nearly equal surface given to each. Gone is the facade-thickening furniture to be replaced by simple recessed window elements. The exterior wall has been drawn as a double-layered concrete block wall (from outside to inside: 8" thick block, 2" air space with vapor barrier, 4" thick block) while the walls between cells are a single block width. Bathrooms and closets are treated as wooden cabinets, with floor and ceiling also of wood. (Changed from the earlier prefabricated concrete planks to a basic wooden plank and beam construction.) Although the wooden floor gives a warmer, more domestic atmosphere than concrete, its exceptionally rudimentary construction - free from any acoustic dampering - would have demanded of the

77

sisters a tiptoe tread. A final version makes the concession of concrete floors in the corridors. (See Figs. 6.14 - 6.21)

The Chapel

„...The chapel has a central space which for the moment we won´t describe; around it is an ambulatory for those who don´t want to enter. Outside the ambulatory is an arcade for those not in the ambulatory; the arcade overlooks a garden for those not in the arcade. The garden has a wall for those who don´t enter and merely wink at the chapel...."
Louis I. Kahn, „Not for the Fainthearted", 1971

The Typology of Sacred Space

Whereas in Kahn´s first sketch the cells were layed out as so many raw square feet, the chapel was the first space to be regarded in a schematic plan. (**Fig. 6.22**) After a very brief consideration of a traditional rectangular type, Kahn concentrated exclusively on square or centralized typologies for the chapel, even if this was in exception to much of Western monastic tradition. This is not just another case of what Kahn tended to pass off as a pragmatic „beginning with a square", but of his general tendency to see sacred space as multi-layered, and unfolding around a light-giving, earth-sky linking axis: akin to the archetypical space of human gathering described by Vitruvius in his First Book of Architecture[2] and which had so fascinated Kahn in the Roman Pantheon. And yet, if we study Kahn´s central sacred spaces, he would seem to be in agreement with the German architect Rudolf Schwarz, who had postulated in his **Vom Bau der Kirche** („On the Building of the Church", 1938), that the unmitigated and perfect closure of the square or ring was not well suited for the Christian sacrament: *„...ring and dome are the dreariest of all forms. Forever they remain a self-preoccupied circling, forever only a throw that begins to rise, climbs to a peak only to fall back into heaviness, as natural life returns itself to the earth."[3]* In a transformation of the closed and vertical spatial archetype, Kahn´s sacred spaces are given horizontal direction by the placement of their altars, torahs and quibla niches. Schwarz, classified this typology as the „Open Ring": *„...The Christians had at once taken over the (pagan) centralized space and broken through it by opening its periphery with an aspe... The closed space no longer rests in itself, but has become a station on a way, it is no longer center, but fluid state..."[4]* Unlike the fully centralized typology - which was considered briefly in scheme 1 - this type embodies both the closed and the open, a center and a movement away from that center. Kahn´s First Unitarian Church, the Mosque at Dhaka, the chapel for the Saint Andrew´s Priory, the Hurva and Temple Beth-El Synagogues: all are variations on this general spatial type.

Next to the Pantheon, centralized Renaissance churches are other manifestations of this spatial archetype in Kahn´s well-stocked image bank. (A copy of Wittkower´s **Architectural Principles in the Age of Humanism** - a present from the young Colin Rowe - belonged to his private library.[5]) Closer to the present, it´s tempting to speculate that Frank Lloyd Wright´s Unity Temple (1908) - with its cross-in-square plan, its „hollow columns", its inwardly-inflecting corners and nearly identical dimensions - may have been a direct prescedent for this, or other related works in Kahn´s oeuvre.[6] (For example the Exeter Library and the Hurva Synagogue.)

While the general „Form" of the chapel as a layered „Open Ring" was established early in the process, the search for an appropriate three-dimensional expression of that plan-space generated the greatest amount of variations among the monastery´s elements. The earliest drawings for the chapel, though still quite schematic, imply some sort of multi-layered snowflake or mandala in plan. The Chapel in the first scheme (June 22, 1966, **Fig. 6.23**) devotes a great deal of its area to obscuring inside and outside with colossal „hollow columns" related to those of Dhaka´s mosque: here, they were to contain indoor-outdoor „water gardens". The four tiers of sisters mezzanines radiate diagonally from the central altar; surrounding them is an elaborate matrix of galleries and secondary spaces which fluctuate between interior and exterior. A number of sketches - notably from Kahn´s associates and not from Kahn himself - in this early phase of the design continue along these lines. (**Figs. 6.24 - 6.26**) As at Dhaka or the Indian Institute of Management, the brick walls are layed up in thin membranes, which are multiplied and pierced with huge openings. The results are elaborate -

perhaps more self-conciously expressive than anything that Kahn previously considered - and the brooding light-and-shadow spaces implied by the sketches evoke images somewhere between those of Piranesi´s **carcieri** and Bruno Taut´s crystalline mountains.

Simplification

These rather endulgent excercises are soon abandoned though: beginning with the second scheme (August - September, 1966, **Fig. 6.27**) the expressionism of the early sketches is succeeded by the search for that which is at once more primary and more trusted. In the second scheme, a multi-gabled roof of thin folded plates first appears and the plan has been reduced to a simple square which has been rotated within a second square to create large ancillary spaces through **poché**. (Just how the thick poché-plan and the thin folded plate elevations were to coalesce in a single volume is difficult to imagine, as no section exists.) The third scheme simplifies matters further by removing the rotation in plan. (October-December, 1966, **Figs. 6.28, 6.29**) The resulting form evokes the image of a very large house, or of some elementary gothic church. What has been lost in this transformation, though, is Kahn´s layered space: now only a single thin wall membrane seperates interior and exterior. Both the section (**Fig. 6.30**) and an interior perspective sketch from Polk (**Fig. 6.31**) let us doubt that Kahn could have been satisfied with the results.

After the crisis which lead to the fourth and final scheme (February, 1967 - December, 1968), both the square plan and the chapel-as-large-house remain as givens. But within the new plan of unmediated collisions, the church must now accomplish the double duty of beng both both sacred space and circulation. The layered plan thus begins to fulfill the demand of Kahn´s quote at the beginning of this section: providing both proximity **and** distance. Beginning with this scheme an ambulatory zone appears, separated by a screen wall from the main space and providing a discrete means for passing without disturbing the sanctity of the chapel. Over the next months, with various awkward crossings first appearing and then being purged from the plan, the challenge of designing a chapel which is simultaneously circulation is finally resolved by the final version of August, 1968. (**Fig. 6.32**)

It´s instructive to note that common to all the schemes we´ve seen thusfar - and to the design for the Saint Andrew´s Priory as well - is an intimate juxtaposition of chapel and refectory: as if for Kahn there was a magnetism between these two spaces for „inspired ritual" which bound them together in orbit. Although that building element will not be examined in detail in this section, it in a sense „belongs" to the chapel.

Exterior Presence vs. Interior Space

As the chapel´s floor plan gravitated around a single idea toward its final **Gestalt**, so too the appearance of the chapel-as-house. By April,1967 the sloped roof clamped between four light-giving lanterns (or „hollow columns" was established, though it would take much work to arrive at a final solution. (**Figs. 6.33 - 6.36**) At issue in these variations were - among other things - the corner lanterns and exactly how they were to reflect light into the chapel; the relationship between roof and walls and the proportions of both the interior space and the exterior volume. One of the most difficult questions for the architects seems to regard the respective heights of the chapel and the entry tower. Was the tower to be the dominant volume in the composition or was the chapel to be of equal, or even greater height? These two elements would vacillate over the duration of the work: the architects adjusting and balancing the vertical dimensions of the core elements until time ran out. Of course not only the exterior proportions were an issue: the vertical dimension of the chapel´s interior space had its own „existence will" as well. It seems that the demands for the chapel´s exterior presence and an appropriate interior scale were at odds. An over-dimensioned roof construction was one solution to the problem: the concealed depth of the hefty truss mediating between exterior and interior dimensions. (**Fig. 6.36**) By the end of the project the architects had still not reached a conclusive answer, with two variations of the elevations and sections drawn for the final plan of August 1968. In Figure **6.37** the resulting interior space now unfolds around a nearly perfect cube, while smaller cubes describe both the lanterns and the ambulatories; in Figure **6.38**, the space is decidedly vertical.

The Chapel as House

It is important to note that Kahn´s designs for the Chapel are not „functionalist" in that their forms have been not been determined by the specific requirements of the liturgy, rather by

elementary ideas about the church as a space for human gathering. This is not only in accord with Kahn´s „form evokes function" philosophy: for him the Chapel seems to be firstly and foremostly a „house", a general statement on architecture. Specific religious or liturgical attributes take a second priority to this fact. Said Kahn: *„Every building is a house, regardless of whether it is a Senate or whether it is just a house."*[7] In this, he would have found himself in agreement with the monk/architect/theoretician Hans van der Laan (whom we will discuss at length later in the text): *„The house is the concilliating factor which allows man to survive in the heart of nature, the only thing able to attribute recognisabilty and measure to a work of architecture, since it is a terms of comparison known to everyone. The architect´s role is based on converting the house for other purposes. For van der Laan, the architect is essenti- ally the person who knows how to relate the two middle terms of a series of factors that are nature, materials, house and man and bases the art of construction on this ability and on this specific role."*[8] In this respect, the development of the Chapel mirrors on a small scale a more general struggle in Kahn´s later work: that between the monumental-honorific and the idea of architecture-as-homecoming, the building-as-dwelling: the sense that houses of god, houses of books, houses of state are firstly and foremostly dwellings of man.[9]

| Construction, Spirit, Light | With its spartan concrete block walls, its concrete floor and simple wooden roof and furni- ture, the chapel is truely Domincan in its asceticism. The single luxury is the space enclosed: the care and lucidity with which it was to be constructed and the generousity with which natural light was to wash and rebound from its layered walls. |

The Construction, the Connections
„Block is not a membrane. Anything made of it is inert. Concrete is just the opposite."
Louis I. Kahn, handwritten note on floorplan sketch of Dominican Motherhouse, 1968,
Folder 0.30.I.C.700.001, Kahn Collection.

| Masonry and the Search for Authenticity | Kahn belonged to that relatively small group of architects in the 1950s who had rediscove- red the „true" masonry bearing wall as a valid - because direct and elementary - means of expression. Although architects such as Aalto and Le Corbusier had, with vernacular-inspired masonry references, already distanced themslves from the new orthodoxy of the „white" moderns as early as the 1930s, at least three factors - the rise of concrete and steel frame construction, the development of the modern layered wall and the thin-membrane aesthetic of the International Style - had otherwise widely driven the monolithic masonry wall from the palette of mid-century modern architecture.[10] Kahn, who had never abandoned masonry, even in his most conventionally „modernist" phase (the rustical stone walls in the Oser House (1939-43), the Geneel House (1948-50) and the Weiss House (1948-50),the brick infill of the Mill Creek Public Housing (1951-62)) was therefore more than receptive for the inspirations of Rome and Ostia´s ancient brick and stone masonry during his stay at the Ame- rican Academy in Rome in 1951. As Kahn´s architecture began to mature, the stubborn-yet- expressive, everyday-and-authentic brick or block wall found a priviledged place in his palette. Perhaps because the handmade wall spoke so clearly of its ancient antecedents, perhaps because its comprehensible tectonics so appealed to the sense of gravity and empathy, was Kahn ready to go to great lengths to master the difficult material in order to reconcile it with the demands of the modern building industry. |

Brick plays a major role in both of Kahn´s breakthrough buildings: the Yale University Art Gallery (1950-53) and the Richards Medical Laboratories (1957-64): in both cases as rather sophisticated veneers. Kahn, though, who increasingly sought the most expressive and natural „order" for each material in play could not warm to the modern layered component brick wall: for him brick „wanted" to feel compression, wanted *„to be an arch"*[11], *„to dance like a fairy above and groan below"*[12] all of which it had no occasion do as a non-bearing veneer. With the First Unitarian Church (1958-63), he came closer to his wish for expressive and monolithic inside-outside overall-ness with a tectonic cavity wall of concrete block inside and brick outside. With his later brick-block-brick cavity wall for the Exeter Library (1965-71), he came even closer his goal of approaching the „feel" of traditional bearing walls within

the standards of a modern building industry. Only with the pre-modern building technology of India and Pakistan he was able to realize true monolithic brick walls laid up in traditional bonded patterns.[12] Concrete block - the poorer modern cousin of brick - had first appeared in Kahn´s work in the 1950s in projects with limited budgets such as the De Vore House, Trenton Bath House and later in the constructive forerunner of the Domincan Motherhouse, the Tribune Review Building of 1958-61.

The Domincan
Motherhouse:
Configuration
Before
Construction

After a brief consideration of stone, Kahn chose brick and then concrete block for the walls of the Domincan Motherhouse, apparently preferring brick but wisely considering at an early stage the less expensive material. (He had already made a similar budget-based switch from brick to block with the Tribune Review Building.) A concrete block-based planning grid was established early in the design: the width of a single cell providing the governing module. As we have seen at length in Chapter 5, the architects´ main effort was directed to the correct **configuration** of the spaces: the walls´ construction and the spatial consequences thereof being explored only very schematically until well into the final scheme. It is not until the plans and elevations of August 1967 and the plan studies of October 1967 that the architects´ pencils begin to linger at corners and connections: a precise tectonics and an appropriate three-dimensionality begin to unfold. **(Figs. 6.39 - 6.41)** This relatively late consideration of structural detail was not unique to the Domincan Motherhouse. While the Kahn of the 1960s and 70s still saw architecture as a constructive art, its form was not driven by rationalist structural determinism: rather, constructive expression was always to stand in service of more primary goals: „Form", degree of enclosure, configuration, relationship to context, etc.. Thus, Kahn: *„I would never have thought of the material first".*[13]

Core Buildings

In the Summer of 1968 as the plan took on its final configuration, Kahn and his associates proposed a wall structure derived from that of the Tribune Review Building. **(Figs. 6.42 - 6.45)** For the core buildings this meant a 14" (36 cm) thick exterior cavity wall with an outer layer of 8"x16" (20 x 40 cm) blocks, a 2" rigid insulation/vapor barrier layer and an inner layer of 4"x16" blocks. Pilasters transfering the greatest loads from beams were articulated by using 4"x12" brick-sized concrete masonry. Interior walls and partions were also of concrete masonry: either standard 8" thick blocks or of special oversized 14" blocks for taller walls and columns. Lintels, window sills and copings were finely proportioned precast concrete elements, forming an intergral ornament which added longer horizontal **legatos** to the repetitive **staccato** of the blocks. These late construction details belong to most fascinating drawings in the project´s portfolios, for through them we may finally begin to visualize the texture, light and feel of the spaces which until now had been generic. The detailing of the walls is rigorously spare and eloquently communicative: nothing is superfluous, each decision giving subtle voice to the conditions of the wall´s existence: the articulation of bearing and non-bearing, of elements in tension and those in compression, of resistance to weathering, etc.. As so often with Kahn, the wooden window frames are recessed and disappear behind the block when viewed from outside, suppressing detail at the middle scale and underscoring the primacy of the walls. Conversely, from the inside they act as frames to the view. A single course of concrete brick traces the datum of the upper floor level around the entire monastery, visually binding cells and core buildings together like a thread.

The floors and ceilings of the core buildings were to be of unfinished poured-in-place concrete, meeting the walls in unmitigated, detail-free fashion. The sloped roofs of the refectorium and the school building were to be of folded plate concrete. (The well formed by the school building´s roof being used to conceal cooling units, the hollow columns supporting the roof to be used as „servant" ducts.) The roof of the chapel, a wooden truss. (See description of the Chapel above.)

The Cells

The basic structure of the cell tracts has been described in some detail above. It shares the same concrete block cavity walls and monolithic interior walls with the core buildings. Wooden partitions separate closets and bathrooms from the sleeping area. The final expression of the exterior walls - the number of windows per cell, the proportion between open and closed surfaces - was the subject of much study. **(Figs. 6.46 - 6.52)** In the later versions, there is noticably more wall surface than window opening: the upper floor´s floor-to-ceiling

windows being one block length wider than those on the ground floor: a subtle variation of Kahn´s masonry „keyhole" type.

Expression in Plan: Tectonic Articulation vs. Plastic Continuity	Complementing the tectonic expression of the elevations and sections is the expression of that construction as worked out in plan. In spite of Kahn´s note about block **not** being a membrane (see above), he has in fact deliberately set up ambiguity in our reading of the walls: are they continuous, plastic membranes or additive, tectonic elements? Are we dealing here with a slightly articulated bearing-wall or a structural frame and filling? The degree with which either plastic continuity or tectonic **staccato** dominates is varied as the project develops: depending on which version we regard, the pilasters which are articulated in the elevations may or may not be articulated in plan. In the end the pilasters are flush with the wall surface (a „graphic" tectonic condition similar to that of the Tribune Review Building´s walls... and to Albertian palazzi), gaining weight and depth only where they become disengaged as columns. This tectonic ambiguity underscores the ambiguity between reading the spaces as collisions between discrete volumes (tectonic/additive), or as a single flow created by folding planes (plastic/subtractive). **(Fig. 6.53)** As with Kahn´s other masonry buildings, this is not a case of pure structural determinism, but something more complex. The laws of Gravity and construction are to be obeyed, yet in the end, they are not the factors involved in the making of the wall.
Intertwining Construction and Spatial Goals	The drawings generated by this search for an appropriate tectonic expression are the stuff of great delight for a student of plan-generated architecture. For it is in these fleshed-out drawings that the schematic configuration first develops its spatial nuances. A comparision of various versions of the core spaces after August 1967 shows the architects at work to articulate the schematic into a dense and precise architectural fugue. At issue are such themes as the degree of autonomy or interdependence between the individual spaces, the formulation of transitions and thresholds between them, the simultaneous centering and inflecting of spaces, the degree of *gravitas* or lightness, resolution and discord, the development of a common syntax, etc.. Formal/constructive themes are intertwined with ideas of perception and use: the structure is manipulated to make place for specific uses, to form concave spaces at transtions between rooms, to admit and structure natural light, etc.. While by 1968 the final disposition of the spaces had been for the most part established, work on the themes listed above would continue to generate new expressions. It would be strenous - and at this point of the narrative superfluous - to describe many the many variations and the subtleties at play in these drawings. A selection from the many drawings from this phase are thus presented here for study without further commentary. **(Figs 6.54 - 5.60)** While different observers may prefer one spatial solution to another - indeed, the architects themselves were long undecided - the continued increase in complexity and density is evident in the drawings: the transitions from chapel to refectorium, from refectorium to cells; the change from solid to hollow columns in the chapel; the layering of the tower, the school, etc., etc....

Having followed the genesis of the total plan in Chapter 5 and having now presented that plan **mise en pieces**, the following chapters will expand the radius of the study in order to better situate the Domincan Motherhouse in a larger sphere of thought: first by juxtaposing it with the related Saint Andrews Priory, then, in the third section, by exploring selected consequences of its method within Kahn´s **ouevre** and a modern culture of architectural space.

Chapter 6: Footnotes

1. Letter, David Wisdom to Mother Mary Emmanuel, 22 June 1966, Box LIK 10, Kahn Collection.

2. Marcus Vitruvius Pollo, The Ten Books of Architecture (trans.). See also: R.D. Dripps, The First House: Myth, Paradigm and the Task of Architecture, MIT Press, Cambridge MA, London, 1997.

3: Rudolf Schwarz, Vom Bau der Kirche, Verlag Lambert Schneider, Heidelberg, 1947, p.45. (My translation.)

4. ibid. p.46.

5. Kahn´s private library, present in Kahn Collection.

6. Robert McCarter has - with 35 references to the Unity Temple in his 2005 book on Kahn - driven the possibility of this connection home with a vigor which would perhaps like to change speculation into fact.... Mc Carter, op. cit., various pages.

7. Louis I. Kahn, Conversation with William Jordy, in Wurman, op. cit., p.237.

8. Alberto Ferlinga and Paola Verde, Dom Hans van der Laan, Architectura & Natura, Amsterdam, 2001, p.16.

9. This dwelling-monument struggle finding perhaps its most successful resolutions in the Kimbell Art Museum and the the Exeter Library.

10. Edward Ford, the Details of Modern Architecture, Volume 2, MIT Press, Cambridge MA, London, 1996, pp. 323-28.

11. Louis I. Kahn, in: Heinz Ronner and Sharad Jhavari, Louis I. Kahn Complete Works 1935-1974, Birkhäuser, Basel and Boston (2nd Ed.),1987, p. 223.

12. Louis I. Kahn, ibid.

13. Louis I. Kahn, „*I would never have thought of material first. I think of the nature of something, see the emergence of what kind of institution it would be.*" Quoted in Robert McCarter, op.cit., pp299.

Chapter 7. Excursus: Themes and Variations on a Monastery
The Project for the Saint Andrew´s Priory, Valyermo, California, 1961-1967

„Twin Monasteries"   A comprehensive study of the Dominican Motherhouse would not be complete without viewing it in juxtaposition with its unequal „twin": the project for the Saint Andrew´s Priory in Valyermo, California. In what must have seemed like some late act of retribution for years of hard work and modest rewards, that project found its place on Kahn´s drawing boards within only weeks of that for the Dominican Motherhouse. (Although both projects experienced extended preludes, Kahn´s first „official" meeting with the Benedictine monks in Valyermo to discuss their project was on March 31,1966, his first meeting with the Dominican sisters in Media following less than a month later on April 26, 1966.[1]) The two projects invite comparison not only due to their parallel developments, their nearly identical programs and their related formal syntax: but also because of their differences. For they are in certain respects complementary variations on a few basic spatial themes which have emerged in Chapter Five´s narrative and which are to be examined at greater length in Section III. As such, a juxtaposition of the two projects holds the specific promise of better understanding the Dominican Motherhouse as well as the more general potential to help better illuminate some central spatial themes at play in his mature work. In this interest, the following chapter offers a brief description of the Priory´s development.

Prelude: 1961-1965
In 1961 Louis Kahn was contacted by the Benedictine Father Rafael Viniciarelli, founder and director of Saint Andrew´s Priory in Valyermo, California regarding his thoughts on the community´s plans to build a new monastery to the Northeast of Los Angeles and the San Gabriel mountains in the high Sonoma desert. Extending a trip to California made in order to visit the construction site of the Salk Institute, Kahn accepted the prior´s invitation to visit the exisiting monastery: a cluster of simple wood frame buildings at the foot of an extraordinary hilltop site.[2] The climate there, cold in Winter, excedingly hot in Summer, and the landscape, dramatically barren and of an existential vastness, made a deep impression on Kahn. **(Figs. 7.1, 7.2)** Likewise the remarkable prior, Father Viniciarelli, who had moved the community to the Hidden Springs Ranch at Valyermo in 1955 after the monks had been expelled by the Communist Party from China, where their monastery had been located since 1929. (The founding congregation being located in Brugge, Belgium.) Under the leadership of Father Viniciarelli the new monastery in Valyermo had quickly gained a wide reputation as a center for arts and ecumenical activity in Southern California.[3]

Kahn´s enthusiasm for the prior, for his ideal program and for the impressive landscape was quickly dampered by the news that the monks had already contracted another architect, Foster Rhodes Jackson of Los Angeles, with the design of the monastery. Prohibited by his own standard of ethics (and as David Brownlee has noted, by the strict professional code of the American Institute of Architects[4]), Kahn reluctantly notified Father Viniciarelli that he would be unable to accept his invitation to procede further with ideas on the project.[5] Before he parted with the monks, however, he apparently could not refrain from painting for them in elementary and evocative images how, **were** he the architect, he **would** have gone about establishing a monastic community on that exceptional site. Even though he left Valyermo without a commission, the experience appears to have wedged itself firmly in Kahn´s imagination: for he not only used their program and site as the basis for a design problem in his Master´s Studio at Penn (1962-63, he would again use it in 1965-66), but included the monastery in at least two public lectures over the next several months. Speaking on „Law and Rule" (that conceptual dichotomy which was in the process of transforming into „Form and Design") Kahn mused on how the monastery might „grow" in harmony with climate and site and according to an order inspired by the wonder of having found water there: that the designing of the entire community would entail a continuous chain of decisions extending from the singular act of securing a foothold on the harsh land:

„Law and Rule"   *„Recently I was asked to do a monastery in California.... I was asked by the monks to tell them what I thought about monasteries.... And when I heard that they had found water in this very high desert, I felt that they have that upon which a monastery can really exist. Without water, one couldn´t begin to build, couldn´t make a plan. I realized then that water is not only necessarily in pipes. When the father asked me: „What would be your plan for*

the monastery?" I said: „The first thing I would do (and please excuse my infringing on your sense of what is important to you) but I would build a chapel where the water came from. And if you agree to do this, we can settle on the fountain. And then I think we should build the architecture of water... the architecture of water being the cisterns and the reservoirs... not just causually but very consciously in the shapes and dimensions which assert themselves very clearly. And then build whatever modest or strong aqueducts that may lead from these water sources to logical places using the law of gravity, and making good rules so that you don´t spend a cent more than necessary... And from this order of water you may place your chapel and the church and the cells and the workshop and the little community."[6]

„Law and Rule II"	*„I visited the site of a monastery which I was asked to design very recently and I did not hesitate to tell the prior almost directly how to design the buildings, because I was conscious of law and rule. I asked him whether he had found water on the site. This was a high desert near Los Angeles, California, a cold place in the winter and a very, very hot place in the summer. He said, yes, he had found water. I said, „Are you going to build a temple where you found the water?" He said, „Yes, I think I´m going to build a temple where I found the water." I said, „You don´t have to build a temple, just build a fountain. Something must be done to show your appreciation that water can be found where water is scarce." I told him that plans usually assume that water is in pipes, and of course, that is why plans look so ordinary, in my opinion, too. And I developed before him an aqueduct architecture in which the source of water fills the cisterns and these cisterns gave a system of water distribution, which I called the aqueduct system, using natural places for the accumulation of this water and distributing it in the most economic way. I said, „When you have established this architecture, only then should you think in terms of placing your buildings, your chapel and your church and the place of meditation and rest," and also the village which they wanted to have. There is, in other words, an architecture of water established; and then there was an architecture of the various functioning spaces which had to answer to the position most logical for water.*
	There is something poetic in following this law, and there was something very secure about establishing these rules which came from the law...."[7]

The Commission	The poetic seed which Kahn had planted in the monks´ imaginations would eventually bear fruit. Almost four years later, in November, 1965, he was once again approached by the congregation: first personally in Philadelphia by Father Martin and Father Debuyst and shortly thereafter in the form of a letter from Father Viniciarelli´s successor as prior, Father Philip Verhaegen.[8] The monks´ contract with Foster Rhodes Jackson had been terminated and they were now anxious to engage Kahn for their project. Father Verhaegen was impatient to get the project moving, having already contacted the monastery´s lawyer regarding the drafting of a contract. He let Kahn know that in the interest of fund-raising, the community *„...should like very much to be able to display the first plans of the monastery at our next Fall Festival, to be held on the last week-end of September,1966. Our annual festival draws as many as 40,000 visitors. Hence, it would be highly desirable to present our building project to our friends on this occasion."[9]*

Kahn quickly replied to expess his delight over the commission:[10]

Dear Father Prior:

From the first meeting with Father Martin when the objectives of the Monastery were expressed, I felt how much the project was close to my feelings about architecture. Father Frederic Debuyst has a deep love for architecture as has Father Martin. It is rare that the client of an architect feels the inspiration to express in the realm of architecture. This is historically a heritage of the Benedictine way of life and it feels good to be moved by such a spirit.

My visits to the West Coast are momentarily lessened. I have completed the first phase of the Salk Project and am waiting for the beginning of the next. Dr. Salk wants me to visit California on my way back from Pakistan in the middle of January. At that time I will be able to visit Valyermo. I will in the meantime use the brief program I received from Father Debuyst for my study. Without question I will be able to

have drawings and models ready for your Fall Festival in September.
I want to thank you and St. Andrew´s for this wonderful commission. Please convey my warmest
regards to all at the monastery and my wish for a Merry Christmas.

Sincerely,
Louis I. Kahn

Form and Design: the Project Unfolds. April - September, 1966
Kahn´s extensive work and travel schedules held him away from California until March 31,
1966, though, when he was able to visit Valyermo for 4 days together with Jack MacAl-
lister, the young project architect for the Salk Institute.[11] Once back in Philadelphia, Kahn
immediately assigned David Polk the responsibility for working with him on the project´s
development.[12] By May 12 an architect´s contract was signed by Verhaegen and Kahn, who
was apparently so thrilled at the prospect of building a monastery that he waived any fee for
his own time spent working on the project(!)[13] In contrast to the design for the Dominican
Motherhouse, with its long and strenuous genesis, that for Saint Andrew´s Priory moved
unusually swiftly and surely toward resolution: the pressing September deadline apparently
giving it priority over the Motherhouse on Polk´s drafting board during the following summer
months.[14]

The Program
The schematic program which Kahn had been presented strongly resembled that of the
Dominican sisters: both dividing themselves neatly into nearly equally-sized communal and
private realms. Whereas the nuns had originally asked for 120 cells, the Benedictine priors
required approximately 100 (80 for their three-tiered hierarchy of novices, monks and priests,
plus a guesthouse with about 20 cells and school rooms). While the sisters´ seminary work
demanded an auditorium and schooling rooms, the monks required a larger church for
their public Fall Festival (300 seats plus 72 choir stalls for the monks) as well as a series of
workshops and galleries for the pottery, mosaics and metalwork which were produced by the
community.

A Linear Parti

First Sketches
The documentation of the St. Andrews project is much less comprehensive than that of the
Dominican Motherhouse and there remain few sketches as evidence of the earliest phase
of the design.[15] The first of these is dimunitive in size but exact in deliniation: it shows four
small plan diagrams and a tenative elevation/massing study. **(Fig. 7.3)** It´s instructive to note
that as with the Domincan Motherhouse, the very first generic configuration to be consi-
dered is linear: in each of the tiny variations Kahn has thread the individual pieces of the
program along a strongly articulated spine, closing the spaces to the North while opening
them to the landscape on the opposite side. The elevation study shows the spine riding atop
the hill like a foil or wedge before coming to a halt in the vertical mass of the chapel.

The First Scheme
Kahn chose the middle diagram for further development in a small but detailed second
sketch. **(Figs. 7.4, 7.5)** This time, the topography and site have been included: we can now
see that the approach is from the North and that after passing a dry riverbed and through a
grove of trees, the long, steep drive follows a narrow rivulet to its source: the well with the
„discovered water" on the top of the hill which had so impressed Kahn during his first visit to
the site. Before being sent down the hill, this water has been collected, after having irrigated
the monastery´s gardens, in a large cresent-shaped pool which is built into the terrassed
slope.

The strongly processional approach to this hilltop precinct is dramatically underscored by the
complex´s massing. The visitor would be presented with the rather imposing outline of the
terrasses, the pool and the massive silhouettes of the buildings against the sky. Only after
reaching the plateau and penetrating the mass of the buildings, is the view to the distant

mountains - which had until now been hidden by the monastery - dramatically given free. The spatial focus is around the central garden: its giant funnel-shaped space acting like a receiver to collect and amplify the view.

The scheme is governed by a strong internal geometry and forms an artificial plateau with little concession to the local circumstances of the topography.[16] The spine acts like a watershed, dividing the monastery into two distinct sides: an arcaded public „street" for arrival and circulation and an internal realm opened to the distant view. The central garden is bordered by the triangular masses of the refectory and the library. To the west of this, the large chapel straddles between upper and lower levels. On the adjacent upper level a large terrace space is dedicated as an „open chapel". To the east, workshops and guest rooms are grouped around their own smaller garden. The cells dig into the slope one level below the central garden, describing a crescent bow which echos that of the pond. Held between the cells and the garden are the schooling and group rooms. This „centifugal" use of the natural topography in connection with the cells is reminiscent of Schemes 1 - 3 of the Dominican Motherhouse.

Kahn evidently found this first attempt unworthy of pursuit, as there are no further develop-ments of the scheme. In retrospect it´s not difficult to see why he was ready to abandon the sketch: the back-front gesture of the **parti** is perhaps a rather one-dimensional answer to the grand „all-over" of the landscape, nor does it begin to adequately fulfill Kahn´s imperative of interpreting a convincing socio-spatial diagram - an institutional „Form" - from the program. As with the Dominican Motherhouse, the very first attempt accomplishes little more than an engagement of hand and paper.

A New Approach

The next exisiting sketch from Kahn jumps forward to show him at work on a very different scheme. **(Fig. 7.6)** It is a fragment, showing the communal and public areas of the monastery without the monks´ cells, which (as we will presently see) must be to the right on a missing sheet. The guests´ cells and a service wing form an inverted L shape which is penetrated at its vertex by a driveway and which frames two sides of a nearly square entry court. The court is closed on its remaining two sides by a second L formed by the communal and public rooms: the entry tower, an octagonal chapel, the refectory and kitchen. On the periphery of this square arrangement is - to the West - a second court which has been formed by the workshops and - to the South - an open-air chapel: a cross inscribed in an octagon, its four ponds fed by the watertower. It´s instructive to note that Kahn has begun to work here with an additive, circulation-space-free, „society of rooms" method even before that principle had begun to drive the Dominican Motherhouse. As will happen in the Motherhouse, the strongly articulated individual volumes are left to „find their own connections" through collision. Other than in that project, this procedes here in a rather orderly Euclidian fashion.

The Final Scheme

The project would develop in what was for Kahn breakneck speed. Thanks to the office´s intensive late-summer **charette**,[17] the architects met the September deadline with what would turn out to be the final scheme. Drawings and a model were presented by the archi-tects to the congregation and in turn by Kahn and Father Verhaegen to the public during their fall festival in late September, 1966. Thousands were able to see the scheme during the festi-val, which was hailed by the Los Angeles Times as „... *a true fiesta of art, music and spiritual excitement.*"[18] The drawings - a site plan, main floor plan, schematic elevations and sections - as well as the large plaster model show how a version of the previously-drawn core of entry court and communal spaces relates to rest of the monastery and how the whole makes its place in the landscape.[19] **(Figs. 7.7 - 7.16)**

The monastery nestles itself around the crest of the highest hill on the congregation´s land: over 3800 feet (1150 m) above sea level and 200 feet (65 m) above the foot of the access road below. With commanding views in all directions, it, too, can be seen from a distance on Pallett Creek Road. Like a modest bastion over its valley, it is the only building of any magnitude for miles in this solitary landscape. Approaching the monastery by auto, the visitor

drives past the congregation´s existing buildings scattered in a grove on the valley floor before making a wide bowing curve on Providence Road (!) to head up the hill. The snaking curve of the road, on the one hand necessitated by the steep topography, additionally prolongs the visitor´s drive, intensifying the processional experience of the approach.

Parking at the base of the monastery, the last 10 feet (3m) of elevation are negotiated on foot over a ramp which leads up to a narrow corner gap where the continous periphery of the bastion has apparently been „broken" open. Entering here - as so often with Kahn - on the diagonal, the visitor is quickly enclosed: greeted in the entry court by the tower, the chapel and - a welcoming surprise - a large and shady grove with water channels radiating from their source in the reservior atop the tower. In spirit, if not to the letter, Kahn has remained true to his original impulse as expressed years before in the „Law and Rule" lectures: to let the monastic community unfold in celebration of the water which made settlement at all possible in this arid landscape.

Tower/Threshold The monastery has been built around the „brow" of the hill, enclosing the crest/plateau on three sides while leaving it free for the grove/water garden. Whereas in the Dominican Motherhouse, the tower or „place of arrival" was positioned at the front periphery like a gatehouse of a miniature walled town, at Saint Andrew´s the tower is first discovered by the visitor after entering the sheltering walls of the monastery. Occupying the geometric center of the complex and the highest point of the hill, it is both the tallest and most expressive building in the ensemble: crowned by a reservoir holding the all-important water. The stepped form which was used and eventually discarded at Media has - if we think of Kahn´s „Law and Rule" lectures - perhaps here found a more appropriate place: the tapering base of the tower seeming to lift its water reservoir to the sky like some sacramental cup. Indeed, the gesture of the entire complex is that of clearing and protecting a place for the precious water tower and its garden, which is elevated another five feet above the ground floor/entry court level.

The tower additionally houses functions similar to those of the Motherhouse: reception and administration at ground level, a library on the second floor, as well as a chapter house on the third floor and mechanical space in the basement. An interesting paradox: although placed at the very center of the complex, the tower marks the entry and threshold between the monastery´s „exterior" public realm and its interior spaces of retreat. A long diagonal drawn in plan through the tower and the chapel describes the demarcation between the public rooms outside of the threshold to the North (guest wing, entry court, workshop court) and the private rooms of the monks inside the threshold to the South (cells and living rooms, school rooms, private garden). Only by passing through the tower can the monks´ cells be reached from the outside. (Fig. 7.17) With this floor plan slight-of-hand, using the tower as a kind of hub for the entire ensemble, Kahn has managed to solve the central functional conflict inherent in the program, that is: the one monastery, the two realms. A problem which - as we have already observed at great length - he found anything but easy to resolve at Media.

Building and As at Media, at Valyermo the buildings´ relationship with the topography may not be descri-
Topography bed purely in terms of either contrast or harmony with the given condition. A series of different operations have been employed to establish the ensemble´s complex relationship with the ground and the topography of the hill: here revealing, here exaggerating, and there contradicting. While the shaded terraces of both the monks´ and the guests´ cells are cut as horizontal counter-forms into the slope of hill (the monks´ cells complete with something like a recessed **nymphaeum**), the prismatic communal buildings celebrate the vertical, rising from a platform which has been established at the entry court level. The strongly articulated horizontals and verticals implying together a Euclidian frame of reference which serves as a foil to the natural landforms of the hills and the distant mountains.[20] (Fig. 7.18)

Drawing a diagonal in plan across the square of the base platform, we can see that the walled kitchen garden juts like a ship´s prow into the landscape while the opposite corner of the entry court wedges itself into the crest of the hill: the horizontal plane both anchoring the individual elements and inflecting toward the landscape.(Fig. 7.19) By establishing this hori-

zontal datum in the workshop court while letting the existing topography fall away within its interior, the artificial datum and the natural slope are juxtaposed to express the tension between the plan´s ideal geometry and the circumstances of topography. **(Fig. 7.20)** Like some kind of sun-worshippers´ altar, the ampitheater-like outdoor chapel steps down the slope to the south, channeling the landscape into itself like a receiver. It is a „landscape gathering space" which seems to presage Kahn´s 1973-74 Monument for Franklin D. Roosevelt.

The Grove

Inside the **tenemos** described by the buildings, the grove is the hidden treasure of the monastery. Out of the necessity of irrigation has been made architecture: water, flowing from the tower´s reservoir, slowly follows gravity´s pull through a series of long channels, irrigating the trees which are so precious in this harsh climate. A visitor, following the water´s flow, would eventually be lead through the garden to its edge and to the tree-framed view over the landscape. Like the outdoor chapel, this too is a great „gathering space". The grove - that piece of tamed natural space - a bearer of mythical and symbolic meaning for many cultures. Foresaking the traditional cloister or the extensive galleries first attempted at Media, Kahn instead takes advantage of the desert climate to offer a different kind of „space of appearence": the orchard as a sort of philosophers´ grove or **sacro bosco**; a botanical counterpart to the sacred architectural space of the chapel. Prevailing breezes, entering over the open border from the Northeast, would have mingled with shade and water to make this a place of cool meditative respite and to temper the microclimate of the entire monastery. Not only functionally and symbolically but spatially, too, this grove is more than just some sort of pleasant landscaping feature for the monastery. Covering almost a third of the ensemble´s total area, the shady roof of the trees, the dense space under the crowns, the view out from under the leafy plane: these are all integral parts of the architectural composition, as necessary to its wholeness as any of the buildings.[21]

The Project Ends: Winter 1967

In contrast to the strenuous three-year process of designing the Dominican Motherhouse, the architects had within less than six months created a scheme which - while far from being thought through in all its consequences - was formally resolute, well-balanced in its **parti** and rich in its potential for further development. While the architects had succeeded in meeting the deadline for the congregation´s Fall Festival, Father Verhaegen´s optimism that the congregation could use the plans and model to help secure major sponsors turned out to be exaggerated. Drastically underfunded for a project of such dimensions, the monks, unlike the sisters at Media, did not ask Kahn to continue designing and to reduce his plans. With their financial means and the architect´s dreams so far apart, in a letter of February, 1967 they indefinitely postponed the work on the project.[22]

Media and Valyermo: Variations on Spatial Themes

„I think architects should be composers and not designers. They should be composers of elements. The elements are things that are entities in themselves."[23]

The „twin" monasteries, with their parallel, yet unequal developments and their divergent histories, stand in instructive relation to another. Of particular interest within the scope of this study are their means of delimiting and configuring space: including their visualization of a „Form" or spatial type, their relationships between interior and exterior, as well as their engagement with landscape: all themes which have emerged in Chapter Five´s description of the Dominican Motherhouse and which will be explored in depth in Section II. As a means of transition to the analyses in the following section, a brief description of these themes at work in Saint Andrew´s Priory in the following paragraphs.

Configurational Paradigm

Both monastery projects are prime illustrations of Kahn´s additive/juxtapositional „paradigm of order". It´s instructive to note that while the building blocks of both plans are quite similar - some of them (the tower, the church-refectorium) having been traded kit-of-parts freely between the two developing schemes - and the means of their linkage almost identical, the formal and spatial **dynamics** of the two monasteries are quite different. The character of the Dominican Motherhouse, taut, dense and not without dissonance, stands in strong contrast

to St. Andrew´s balanced repose. Of the two, the Dominican Motherhouse illustrates the far more radical and „didactic" use of this particular configurational method: so much so as to make it the apotheosis of this Kahnian way of thinking about formal and functional order. While this makes that plan the more provocative and instructive of the two for study, this quality would have at the same time certainly made it all the more challenging for dwelling: for its conceptual stringency has as its cost the necessity of demanding concessions from its inhabitants.[24]

Aside from Kahn´s need to economize the Motherhouse plan - and perhaps from his own desire to push a theme to its logical conclusion - we can speculate on the project-immanent reasons for the different **characters** resulting from the same compositional method. One of these certainly lies in the climate: the dry California desert making outdoor circulation, and thus a more sprawling composition, feasable, even desireable as the volumes seek to „find their own positions" in respect to each other. Both landscapes, too, seem in agreement with their projects´ spatial gestures: that of huddling together in a forest clearing or expanding outward to catch a breeze on a desert hilltop. The pastoral landscape at Media seems perhaps a more willing foil to the tenseness of Kahn´s final plan, with the repose of St. Andrew´s Priory a welcome respite in the rugged desert at Valyermo. Kahn himself provided us with fuel for further speculation: referring to Erdman Hall at Bryn Mawr College, he remarked that *„...A dormitory for girls is not the same as a dormitory for men. In a women´s dormitory one must feel the presence of House much more than in a men´s dormitory."*[25] Might not the informal routes and intimate juxtapositions between private and communal in the Motherhouse also be seen as an attempt to realize **House** in an institutional building?

<table>
<tr><td>„Form" and Program</td><td>Continuing to observe both in terms of configuration, the monastery plans offer instructive spatial interpretations of their „dualistic" institutions. We have seen in Chapter 5 how Kahn´s interpretation of the Motherhouse developed slowly and tenatively away from an unmistakable - even „traditional" - expression of that communal/private duality in the first scheme to a more complex overlapping of those realms in the final scheme. (Fig. 7.21) With Saint Andrew´s Priory Kahn arrived almost immediately at a simple, yet sophisticated solution to the private-public problem inherent in the type. (If we compare Kahn´s monasteries with, for example, Le Corbusier´s La Tourette, we can see how important this typological clarity, this spatial articulation between public and private was for Kahn.) By placing the tower-cum-threshold not at the edge, but at the very center of the complex, inside and outside, public and private spheres are connected as if through a single vortex. (Fig. 7.22) Important is that in both monasteries, together with their clear articulation of use, Kahn has sought an „open" or multivalent reading of the spatial „Form" or type over a more explicit or traditional interpretation of a monastery.</td></tr>
<tr><td>Figure-Ground, Threefold Enclosure</td><td>Regarding their means of enclosure and configuration, the Domincan Motherhouse and Saint Andrew´s Priory not only invite comparison as to how individual spaces relate to each other in terms of interpreting a „Form", but to how relationships between interior and exterior are established as well. In a manner related to the projects to be observed in Chapter 10, the Priory modulates space in a way which transcends a simple figure-ground, mass-void scheme: as with those other projects, a linked chain of spatial scales has been consciously established between inside and outside. Figure 7.23 shows that while the figure-ground scheme may adequately indicate the basic relationship of built figure to natural ground and how mass (including the „mass" of the grove) and void together generate a **Gestalt** pattern, it can can only give a preliminary indication of how the Priory would have been experenced for a body moving in space. Diagramming the Priory in terms of its layers of spatial enclosure can help us to better understand the superposition of progressively larger scales: from the smallest rooms to the desert landscape. (Fig. 7.24) An unbroken chain has been built of enclosed „outsides" which become the „insides" for the next larger scale, to which they refer: a sponge-like diagram results.</td></tr>
<tr><td>Enclosure: „Phenomenal Transparency"</td><td>At the smallest scale of enclosure are the walls themselves. We have already observed in the Domincan Motherhouse an uneasy ambivalence: are we dealing with a series of collisions between discrete Platonic volumes or are the spaces in fact formed by continuous,</td></tr>
</table>

Möbius-strip-like planes folding into figurative shapes? Our reading is encouraged to flicker. This ambivalence, which is at the same time an ambivalence between solids and voids, inside and outside, is in places even more strongly pronounced at Valyermo. Especially in the portion of the plan formed by the refectorium, its courts and the chapel, the individual volumes seem more to **fold** into each other than to simply juxtapose or collide (although these are also possible readings). Like a some kind of origami-architecture or like a garment being turned inside-out, „interior" surfaces become „exterior" and vice-versa. **(Fig. 7.25)** The multivalence already evident in the figure-ground scheme is given an additional dimension by this folding. This Kahnian means of establishing an inside-outside continuum - as also manifest in the imploded courts at the Fort Wayne Fine Arts Center, the „capsized" portico of the Indian Institue of Management,[26] the „reentrant" corners of the mosque of the National Assembly at Dhaka - is a uniquely original contribution to this perennial modern question: a special case of the architectural phenomenon which Colin Rowe and Robert Slutzky were at this point in time (1968) to codify as „phenomenal transparency". Bernhard Hoesli - who later expanded on Rowe and Slutky´s essay with an emphasis on plan configuration - would describe this phenomenon in a way which aptly fits the Priory´s plan: *„Transparency occurs at points in space which may be classified as belonging to two or more reference systems - and where that classification is undecided and the choice of possible classifications remains open."*[27]

Even more than in the themes described above, the way that the two monasteries relate to their respective landscapes invites comparison. For this reason, that comparison will be undertaken in Chapter 10, which has a larger section devoted to that subject.

Summary: on Reading Plans - Two Monasteries

There is a sense of a deeper link between the projects for the Dominican Motherhouse and the Saint Andrew´s Priory than their related programs or formal similarities alone can explain. Both projects are compelling not necessarily for their „modernity", but for their very funda-mental means of spatial expression. Both may be regarded as studies in constructing and accumulating meaning - in terms of use, in terms of habiatation, in terms of place - through a series of purposely fundamental - yet multivalent - acts of delimiting and configuring spaces. As such, this brief excursus has been intended to extend that which has been demonstrated by the Dominican Motherhouse in Chapter 5, as well as to prepare the reader for the explora-tions in Section III.

Chapter 7: Footnotes

1. These are the official dates of the first meetings as taken from office correspondence in the Kahn Collection (Box LIK 10). The reader may recall from Chapter 4, however, that David Wisdom had, in his letter to Mother Emmanuel of April 2,1965, stated that, *„...He (Kahn) is looking forward to working on the development of buildings and site for St. Andrew´s Priory in Valyermo, California. He has had several conversations with Father Vincent Martin, although no actual planning work has been started."* (Box LIK 10, Kahn Collection) This indicates that some sort of communication between the monks and Kahn had indeed taken place between their 1961 meeting and the official engagement of Kahn in late 1965/ early 1966. (It´s interesting to note at this point that - contrary to some accounts of the monastery projects - the start of the Saint Andrew´s Priory project actually preceded that of the Domincan Motherhouse.) The drawings used in this section are filed in the Kahn Collection under call number 715.

2. David B. Brownlee, „The Houses of the Inspirations", in: Brownlee and DeLong, Louis I. Kahn in the Realm of Architecture, Rizzoli, New York, 1991, p. 107. (Research assistance, Peter S. Reed.)

3. Ibid.

4. Ibid.

5. ibid.

6. Louis I. Kahn, „ Law and Rule", transcript of lecture at Princeton University, 1961, folder, LIK Lectures 1969 (sic), Box 53, Kahn Collection.

7. Louis Kahn, „ Law and Rule II", transcript of lecture to Royal Institute of British Architects, 1962, folder, LIK Lectures 1969 (sic), Box 53, Kahn Collection.

8. Letter: Father Verhaegen to Louis Kahn, November 16,1965. Box LIK 10, Louis I. Kahn Collection.

9. Letter: James G. Butler, attorney at law to Louis I. Kahn, 30 November, 1965. Box LIK 10, Kahn Collection.

10. Letter: Louis I. Kahn to Father Phillip Verhaegen, November 26, 1965. Box LIK 10, Kahn Collection.

11. MacAllister, situated in California to supervise the construction of the Salk Institute was Kahn´s main intermediary for the Saint Andrew´s contract and communication. See: various letters between James G. Butler, Dom Phillip Verhaegen and Jack Mac Allister, 1965-67. Box LIK 10, Kahn Collection.

12. Interview: Author with David Polk, Chestnut Hill, October 2004. Payroll cards, Boxes 71 (F2), 75 (F6), 77 (F8), Kahn Collection.

13. Standard A.I.A. Agreement Between Owner and Architect, signed by Kahn and Fr. Verhaegen, May 19, 1966. Box LIK10, Louis I. Kahn Collection.

14. Interview: Author with David Polk, Chestnut Hill, 20 October 2004, Undated note indicating priority of Saint Andrew´s deadline: Polk to Kahn. Box LIK 10, Kahn Collection.

15. There exist 58 drawings of the Saint Andrew´s Priory in the Kahn Collection. File Number: 715.

16. That Kahn greatly admired the ridge-riding Basilica and monastery of Saint Francis at

Assisi is to be noted here. See: Eugene Johnson and Michael J. Lewis: Drawn from the Source: The Travel Sketches of Louis I. Kahn, MIT Press, Cambridge MA, London, 1996, pp. 43-46.

17. Members of Kahn´s office still used the Ecole des Beaux-Arts term „charette"* to describe the concentrated last minute push to meet a project deadline. (Interviews: Author with David Polk, Chestnut Hill, October 2004; Duncan Buell, April 2006.) (*Derived from drawings which the Ecole´s students made „en charette" or „on the cart" on their way to final presentation. See: Arthur Drexler, The Architecture of the Ecole des Beaux-Arts.)

18. Shari Wigle, „The World, the Arts and Father Rafael", Los Angeles Times West Magazine, September 18, 1966, pp.32-33, 46-51. Quoted in: Brownlee and DeLong, op. cit., p. 107.

19. David Polk recalled in interview that at least one, perhaps two, additional alternatives were generated before arriving at the final version. These sketches were unfortunately not saved, nor do any minutes of the project presentation with the monks exist. Interview: Author with David Polk, Chestnut Hill, 20 October 2004.

20. Le Corbusier´s analysis of the Athenian Acropolis in his **Vers une Architecture** - and Peter Eisenman´s later interpretation thereof - strike provocative parallels to Saint Andrew´s interaction with its landscape: *„…Here the Acropolis can be considered as the horizontal plane and the columnar grid of the Parthenon as the vertical plane. These then act as the absolute references and provide the perceptual tension to the mountains beyond which may be thought of as „mass" as the specific condition. This juxtaposition of the specific form - mountains, and the generic form - the columnar grid creates a dialectic situation."* (This relationship is also hinted at by Vincent Scully in „The Earth, the Temple and the Gods".) The value of the horizontal absolute in unifying the Greek **tenemos** is also pointed out by Dr. Martienssen, „The Idea of Space in Greek Architecture"..." Peter Eisenman, The Formal Basis of Modern Architecture, PhD dissertation, Cambridge University, 1963: Facsimlie Reprint, Lars Müller Verlag, Baden, 2006, p. 67.

21. I refer once again to Kahn´s later tendency to use trees as „architectural" structure, especially at: the Kimbell Art Museum, the Franklin D. Roosevelt Memorial, Fort Wayne Fine Arts Center. See also Chapter 10´s discussion on „Reciprocity".

22. Letter: James G. Butler (Attorney for Saint Andrew´s Priory) to Jack MacAllister, February 6, 1967. Box LIK 10, Louis I. Kahn Collection. It´s interesting to note that it was on almost exactly the same date (February 16, 1967) that the architects were able to „save" their Domincan Motherhouse project with their presentation of the reduced fourth and final scheme.

23. Louis I. Kahn „Address by Louis I. Kahn", Boston Society of Architects Journal no. 1, 1967, in: Brownlee and DeLong, op. cit., p.109.

24. And work from its architects....

25. Louis I. Kahn: „The Architect and the Building", Bryn Mawr College, Spring 1962, in: Wurman, op. cit., p. 3.

26. Christian Devillers coined this fitting phrase to describe this phenomenen in his exemplary spatial analysis of the Indian Institute of Management in Casabella 571, September 1990, p. 61.

27. Bernhard Hoesli, Kommentar zu Rowe and Stutzky, Transparenz, 3rd ed., gta Verlag/Birkhäuser, Zürich,1974, pp. 72-107. (My translation).

Section III
Problems of Space:
The Dominican Motherhouse, Kahn´s Late Work and
Changing Paradigms of Architectural Space

Chapter 8. Problems of Space: Delimiting, Configuring, Re-presenting: Louis Kahn´s Evolving Spatial Agenda in the Context of a Modern Culture of Architectural Space

„If architecture can be understood as the construction of boundaries in space, this space must be understood as commonsense space, a space which posseses meanings and speaks to us long before the architect goes to work. The architect can, to be sure, build in a way which does not heed these meanings, indeed that self-conciously denies them. He or she can also be open to them, re-presenting and thus revealing them."
Karsten Harries, The Ethical Function of Architecture, 1997

„What we call space is relative to the existence of whatever structures we may choose to conceive. The architectural structure interprets space, and leads to hypotheses on the nature of space."
Paul Valéry, Introduction to the Method of Leonardo da Vinci, 1894

„The room is the beginning of architecture. It is the place of the mind. You in the room with its dimensions, its structure, its light respond to its character, its spiritual aura, recognizing that whatever the human proposes and makes becomes a life...."
Louis I. Kahn, „The Room, the Street, and Human Agreement", Lecture, 1971

Having followed the long genesis of a single project from its pre-architectural beginnings to its fruition as a construction-ripe design, the reader may now justifiably ask, what - beyond its role as an instructive and compelling single case - might be the further relevance of such an excursion? If, beyond contributing to the development of a descriptive language or method, one further promise of the descriptive case-study method is that the small may be used to shed light on the the large, what themes might in this case be instructive to illuminate in a larger context? A complex and multivalent work such as the Dominican Motherhouse will yield several answers to these questions. The following section is dedicated to the exploration of what, in light of the themes revealed in the course of the foregoing narrative and within the context of the existing literature on Kahn, I hold to be among the most fruitful of these.

Design as „Methodical Accumulation"

Over length of the previous chapters we have observed, in dozens of drawings by Kahn and his associates, a slow and methodical accumulation of architectural depth and meaning, achieved through considered and elementary acts of ordering and arranging. Based on the evidence of the drawings shown here - and on the many more which they represent in the Kahn Collection - we may now with some certainty maintain that the architects´ work has been firstly and foremostly concerned with: 1.) the definition of discrete spaces, and 2.) with the positioning of those spaces in relation to each other as well as in relation to a greater natural space of which they are parts. Based on the supporting evidence which we have culled from Kahn´s texts, we may additionally maintain that the primary goal of this work has been the creation of „dwelling" in the broadest sense of the word: that is, in the situating of the inhabitants in an ordered and comprehensible spatial continuum: ordered, that is, in respect to the natural and social worlds of which they are parts.

Architecture as a Configurative Discilpine

These conclusions may at first glance seem rather banal, and of course in the long process of developing their design the architects have indeed always engaged several levels of reality at once, accomplishing more than „just" this task of delimiting and ordering. But as the drawings have amply demonstrated, themes such as technology and methods of construction have played only secondary and supporting roles in their work, as have questions involving semiotics and symbolism as associated with the idea of „facade". The willful primitivism of their method seems to deny any claim to modernism´s ideas on rationalist methodology, be they based on either materialist or behaviorist thought. Indeed, the project seems to live less from the representation of any „Big Theory" and more from the use of purposefully limited and elementary architectural means to accumulate a linked multitude of what Cezanne had called „small sensations." This „primitivism" - or better, „essentialism" - has directed our attention over the length of the project´s development toward those fundamental architectural acts of enclosing, opening, finding distance: in short, to architecture as an **art of delimiting and configuring spaces**. For here - and not from other sources of meaning - is where **this** project draws its greatest power.

It would perhaps be difficult to defend the Domincan Motherhouse as one of Kahn´s „greatest" works: in terms of elegance of expression, this honor must belong to the Kimbell Art Museum; in terms of representing the most comprehensive embodiment of his ideas - social, technological, constructive, contextual - perhaps the Salk Institute; in terms of architecture as a humanist endeavor, the National Assembly at Dhaka.... What the Dominican Motherhouse project **does** embody is a fundamental expression of **method**: among all of Kahn´s projects it is perhaps the most literal and provocative consequence of his (deceptively) simple claim that *„Architecture begins with the making of a room."* Due to its archetypical character, the Dominican Motherhouse invites us to consider this statement in all the consequence which Kahn intended, to further explore the aspects of „essentialist" spatial configuration which it has demonstrated. We may use the project, then, as as a lense with which to view the development of these basic phenomena in Kahn´s mature **ouevre**, and that **ouevre** in turn to illuminate the modern and contemporary discourse around that theme. This, I suggest, is the source of the strongest „gravitational force" which goes out from that project.

It is a tenet of this study that Kahn´s mature view of architectural space represents a significant departure from and enrichment of the dominant modes of thinking about that subject in modern architectural culture. Rarely adequately acknowledged and not yet comprehensively described in these terms, this study sees itself as contribution to this discussion, an attempt to make explicit various aspects of the work which have until now tended to remain implicit or to be overshadowed by other themes. In exploring selected consequences of Kahn´s essentialist **delimiting and configuration of space**, Section III of this study additionally sees itself as a modest contribution to the ever-unfolding discourse on architectural space.

Before beginning an extended exploration of this aspect of Kahn´s work in the following three chapters, we must first define the limits of the discussion. For the term „space" has taken on so many meanings, has been so vaguely and imprecisely used in modern and contemporary architectural discourse as to be virtually unusable without further qualification. It is therefore necessary to digress into a brief prelude on the modern discussion of „space" before attempting to find Kahn´s place within it. While a comprehensive history of the concept of space in modern architectural theory is far beyond the scope of this study, the bibliography refers the reader to several works which have served as references to the following text.[1]

Prelude: „Space" 1850-1950

Although the history of architecture is - among other things - a history of man´s various efforts to establish and clarify spatial relationships between himself, his environment and his fellow humans, and although „space" is today (at least among architects) generally regarded as **the** immanent domain of architecture as a discipline, the discussion of „space" as an explicitly **architectural** phenomeneon is relatively new. In fact - contrary to what contemporary consensus might lead one to believe - the use of the word „space" in regard to architecture first began to surface within the profession in the late nineteenth century. How could something which is today considered so fundamental to the **metier** have entered its vocabulary so late in its history? Can it truely be that there was no use for the word in architecture before then? If this is indeed the case, as the written evidence suggests, then one possible explanation might be that for much of history architects had been born into cultures which provided them with relatively stable paradigms of „space". (The slow-changing parameters of space - natural, social, economic, technological - being the basis of this stability.) Until the onset of the modern in the seventeenth and eighteenth centuries, „space" had always tended to be „at hand": the „syntax" of reproducing architectural space, like that of its form, much like the syntax of a vernacular language: a given, which might be used and manipulated without great conscious reflection or doubt as to its validity. As intuitive or non-reflexive access to the traditional means for the reproduction of space - both the vernacular and the classical - began to disintegrate in the great upheavals of the eighteenth and nineteenth cen-

turies, the need for a reflexive means of conceiving architectural space - in short, for theories - began to be felt.[2]

Toward Theories of
Space

Since the antique, space has been a primary catagory for phliosophers, mathematicians and physicists. Architects had, to be sure, at the latest from the eighteenth century onward, begun to speak in terms of „volumes" and „voids" and had occasionally used „space" as a synonym,[3] but the true theoretical development of space as an architectural phenomenon first took place in Germany in the second half of the nineteenth century. The foundations of the discourse were laid not only by architects but, significantly, by a small group of aesthetic philosophers and within the discipline of art history. A very compacted outline follows, listing some of the milestones in the evolving discussion around architecture and „space" leading into the twentieth century.

According to the historian Henry F. Mallgrave, „enclosure" began to emerge as a central architectural theme in the mid-nineteenth century.[4] Both Gottfried Semper (**Der Stil**, 1860) and Carl Bötticher (**Die Tektonik der Hellenen**, 1846) had postulated enclosure as being one architecture´s primary purposes: one distinct from both its symbolic and aesthetic meanings. Parallel to this, building upon the new theory of empathy in regard to works of art, in the 1850s the philosopher Robert Vischer (**Ästhetik**, 1846-58[5]) introduced an additional impulse to the discourse by proposing the projection of bodily sensation into architectural form. Heinrich Wölfflin, in his **Prolegomena zu einer Psychologie der Architektur** (Prolegomena to the Psychology of Architecture, 1886[6]) extended this thought by seeing in architectural form the mirror image of human emotion and of expressive human movement: according to him, *„Unwillkürlich beseelen wir jedes Ding"* („Unwillingly we import every thing with a soul.") On a more materialist level, in his **Städtebau nach seinem künstlerischen Grundsätzen** (City Planning According to its Artistic Principles) from 1889, the architect Camillo Sitte was the first to consistently develop a theory of urban design based neither in terms of order nor function, rather on a view of the city as **Raumkunst** (the art of space): devoting his empirical study of European cities to the search for common morphologies of aesthetic urban space.[7] Writing for the most part on painting and sculpture, the sculptor Adolf Hidebrandt, in his **Das Problem der Form in der Kunst** (The Problem of Form in the Fine Arts, 1893) was the first to postulate that space itself was the subject matter of art.[8] Although not specifically about architecture, Hildebrandt´s influential text further opened the door for the discussion of space in that discipline. In the same year that Hidebrandt had published his book, August Schmarzow offered the premise that architecture´s aesthetic derived from its space rather than from its material conditions, while explicitly transfering the object of empathy from form to to space.[9] (**Das Wesen der Architektonischen Schöpfung**, The Essence of Architectural Creation, 1893). While architecture was, in Schmarzow´s words, „the creatress of space" (**Raumschöpferin**); this space exists through our own mind´s projection of the body´s senses (**Raumgefühl**). In a third publication on space from that same year (**Raumästhetic und Geometrisch-Optische Täuschungen**, 1893) the aesthetic philosopher Theodor Lipps extended the theory of empathy in regard to space.[10] After this introduction of space as an architectural category into the academies, it was only natural that historians - lead by Alois Riegl and Paul Frankl - began to persue the history of architecture as a history of the sense of space.[11]

In brief: in the roughly fifty years before the First World War an atmosphere of discourse and a set of theoretical preconditions had gradually established which for the first time defined architecture as a **spatial** art and which attempted to sketch out the basic terms for discussing architectural space in regard to philosophical, psychological, aesthetic and historical questions. The discourse which first began in German-speaking academia gradually filtered into other cultural circles and into the body of the architectural profession, this new view of space being presented, for example, as an architectural theme by the English writer Geoffery Scott in his influential **The Architecture of Humanism** from 1914.[12]

The Space of
Architects

The ground prepared for them by theoreticians, around the turn of the twentieth century architects began to increasingly discuss their work in terms of space: H.P. Berlage and Peter Behrens among them.[13] If these architects tended to define space in ways similar to Semper, Bötticher and Sitte before them - that is, in terms of its **enclosure** - by the 1920s an explo-

sion of a decidedly different use of the term „space" was to take place among a younger generation of architects. Rudolf Schindler seems to have broken ground in 1913 with his essay entitled **„Modern Architecture: a Program"**,[14] to be followed by the De Stil group, the teachers of the Bauhaus, the Futurists and the Constructivists, Mies van der Rohe, Walter Gropius, Le Corbusier and Frank Lloyd Wright.... So varied their individual goals and their use of the word „space" may have been, in their understanding of that term they tended to have one thing in common: that „space" would be **the** singular quality which would allow architecture to transcend historicism, eclecticism and tradition, which would be that which could become the **sine qua non** of a truly modern architecture. If we listen to Schindler, Wright or Mies around this time, it is as if the architectures of the past were in some way entirely non-spatial, (as if this were at all possible), as if space were a quality which could only beginning **now** be „set free" through the new technolgies and a liberated „New Vision". According to Schindler: *„...the architect has finally discovered the medium of his art: SPACE."*[15] or Wright on the „reality of the room as the space enclosed" as described by Lao Tse: *„... he had described it, but I had finally built it."*[16], or Mies: *„...Only now can we articulate space, open it up and connect it to the landscape...."*[17]

If the theorists of the late-nineteenth and early-twentieth centuries had attempted to construct their theories using psychological, historical and body-image criteria (Hildebrandt, Schmarzow, Lipps), had used empirical observation in an attempt to codify objective criteria for the judgement and planning of spaces (Sitte), the protagonists of the architectural **avant gardes** of the 1920s - while at least in part aware of the research of their predecessors - gave their works quite selective readings. While, for example, Riegel and Frankl had proposed that vision and thus spatiality was historically conditioned, thus favoring an evolutionary view of artistic styles and seeking continuities between epochs, the members of the modern architectural **avant garde** saw their position as being in the midst of a unique revolution which would sever them from the bonds of history. While the fledgling historical, psychological and empirical methods of the academics seem to more truely approach that which deserves the name „theory" - if we define that word as a method for accumulating a body of knowledge for use - their involved and sometimes hair-splitting arguments were obviously ill-suited to the spirit and rhetoric of revolution, which called for simpler, more polemical „truths" as a basis for action.

„Modernist Space"   What were the properties of this „new" space, then? At the risk of oversimplification[18] the modernist definition of space was, in the spirit of revolution, in some ways similar to a „negative metaphysics"in that it largely defined itself by what it was **not**: in this case, everything which it had been for the modernist´s predecessors: contained, figural, relative to structural mass or bodily perception, etc.. Beginning as a matter of faith, this definition soon took on the character of an unchallenged truth, which it was to retain for the next decades. Some of the common primary characteristics of „modernist" space may be described as follows: 1.) the liberation of space from volume (Moholy Nagy: *„...if the side walls of a volume are scattered in different directions, spatial patterns or spatial relations originate."*[19]) ; 2.) the divorce of space from human perception and from the body as a reference; 3.) the idea that circumscribed or figural space belonged to history and was thus irrelevant. In general, a paradigm of space as being continuous and neutral, a transparent ether or ground in/against which the modern architect might form and place his objects. Upon closer observation, though, „The New Vision", as it was most commonly interpreted, was in fact a manifestation of a not-so-new paradigm of space grounded in the ideas of Newton and Descartes and the ancient atomist paradigm of Plato, in which space forms a neutral and absolute background for the objects which inhabit it.[20]

Forwarded in countless texts from the 1920s onward, this „new reality of space" found perhaps its greatest emissary in Sigfried Giedeon. His enormously influential **Space Time and Architecture** (1941 and various revised editions until 1965) established a double geneology of modern architecture, which was rooted on the one hand in the dynamic movement of the Baroque, on the other hand in the inevitable and unstoppable forward march of technology.[21] Read in retrospect, the thesis of Gideon´s text - a well-crafted attempt to construct a wide-band teleological „Theory" or „History" of modern architecture based on space - falls

quickly apart: the space-time neighborhood-seeking with the (more prestigious) disciplines of cubism, physics, philosophy a bit too transparent for the contemporary reader, by now wary after decades of similar interdisciplinary elbow-rubbing.[22] Perhaps more important than the text´s message, though, is what Giedeon **did** accomplish: to show the profession the „look" of this new „spatial" vision.[23] For decades Giedion was enormously successful in positioning himself as guardian of a modern canon, determining just who possessed and who did not posess the „New Vision". If Le Corbusier and Gropius were „in", such contemporary masters of spatial mediation such as Asplund, Lutyens or Plecnik were definitely „out".

Critiques of
Modermist Space

As often told, the „coming of age" of modern architecture in the decades after the Second World War was accompanied by its first major crises. As the ideas of the modernist **avant garde** were for the first time applied at a large scale, many of their conceptual limits and internal contradictions began to become apparent: the blind faith in the application of technological means to social ends, the difficulty in differentiating between formal and functional goals, the problem of representation and public acceptance, the ease with which modernism´s socialist-utopian forms could be usurped by a capitalist economy, etc.... Significantly, many of the major crises of the modern were results of its abstract and universalist way of **thinking space**. Beginning in the 1940s voices of criticism arose from various directions: one of these was from within the metier itself. In 1943 a position paper, **„Nine Points on Monumentality"** by Siegfried Giedeon, Fernand Léger and José Luis Sert postulated the necessity of a „new monumentality".[24] The question posed - how the new architecture might establish significant signs and places which represented commonality and societies´ highest values - was not only a problem related to the new „abstract" and non-figurative form canon, but inherent in the modernist view of space. How - if space was a homogenous, neutral background - to establish hierarchy, difference and cultural significance through spatial configuration? Not incidentally, Kahn´s first widely-read text, **„Monumentality"** of 1944, was written as a contribution to a symposium on this debate - a text which, while it still finds its reason more in pure construction than in space, opens the door to his thinking about that subject.[25]

Charged Space

While many modernist architects continued to speak of space as if it were immutable and absolute, throughout the 1950s their view was increasingly the subject of a series of critiques from outside the metier: critiques intended to demonstrate that space is always relative, is always in innumerable ways „charged" before the architect even begins to think about it. In 1951 Martin Heidegger - a philosopher who would increasingly be associated with architecture - delivered his influential essay **„Bauen Wohnen Denken"** („Building, Dwelling, Thinking") at the Darmstädter Gespräche.[26] According to Heidegger, and contrary to the „New Vision" space does not exist independently of existence: *"Space is not something that faces man. It is not an external object nor an inner experience. It is not that there are men, and over and above them space..."*[27] and furthermore, space does not exist independently from its specific place in the world, *„...spaces receive their being from locations and not from „space."*[28] With Maurice Merleau-Ponty´s **Phenomenology of Perception** (1945) human perception and the spatiality of the body returned to the discourse on space.[29] Against modernism´s drive toward objectivism, positioned Merleau-Ponty a radical subjectivism: *„The world is not an object whose constitutional law I would have in my power: it is the natural environment and field of all my thoughts and all my explicit perceptions. The truth does not only „inhabit" the „inner" man; better still, there is no inner man, man is in the world, it is in the world that he knows himself."*[30] The phenomenalism of Heidegger and Merleau-Ponty was later popularized among architects through the writings of Christian Norberg-Schultz (**Intentions in Architecture**, 1963)[31] and Jan Steen-Rasmussen (**Experiencing Architecture**, 1959).[32] In her **The Human Condition** of 1958, the philosopher Hannah Arendt described the spatial nature of human social and political action and the necessity of constructing what she called a „space of appearance" within which that action might first become visible. Although this „space" was as much metaphorically as concretely meant and her text was not specifically about architecture, the architectural consequences of Arendt´s thoughts were apparent for those open to its message.[33] Gaston Bachelard, in his popular **The Poetics of Space** from 1958, painted an explicitly subjective „interiorist" view of space: space inhabited and charged by personal and cultural memory [34]...etc.. While doubtless not as widely read among archi-

tects as Giedon´s texts, the combined effect of these and many other voices would by the late 1950s contribute to undermine the premises of modernism as it had been understood; would create a climate of a „new relativity" in regard to space, so that by 1961 the Dutch architect Aldo van Eyck could declare: *„I arrived at the conclusion that whatever space and time mean, place and occasion mean more, for space in the image of man is place, and time in the image of man is occasion. Split apart by the mechanism of determinist thinking, time and space remain frozen abstractions.... A house should therefore be a bunch of places - a city, a bunch of places no less."*[35] „Space" which had in the nineteenth century first sought the various sources of its theoretical basis, which in the early-mid twentieth century had become among architects an immutable and abstract ether, had by 1960, at least in certain progressive circles, returned to the search for its reasons.

Kahn in the 1950s: Setting a Spatial Agenda

The intent of the foregoing excursus has been to sketch a brief - and in no way comprehensive - outline of the discourse around the idea of space within architectural culture during the first half of the twentieth century. For it is against the background of this discourse which Kahn´s mature architecture and own spatial paradigm would would begin to unfold.

Kahn, by no means a facile designer, needed to verbally come to terms with the „what" of his architecture before the „how" of his mature work was to unfold. After two decades as a „journeyman" modernist, in the 1950s he began to formulate his first original statements on architecture, gradually setting and redefining a „spatial agenda" for his work: an agenda which in many points echoed the contemporary critiques of modernist space outlined above. Although a teacher at some of the most prestigious universities in the United States, Kahn was anything but „academic" in his means of aquiring and imparting knowledge. Rumitive, repetitive, with a probing and provisional vocabulary: his statements are, to a greater degree than most architects´ texts, as much struggles to set things straight for himself, or to question his own premises on architecture, as they are attempts at making „theory". (This elliptical, „work in progress" quality of his texts and lectures accounts for what is at times their cloudy opacity and at others, their infectuous magnetism.) Over decades of the 1950s and 60s Kahn incessantly reworked his agenda in the form of lectures, letters, interviews and short texts: „poetically thinking aloud" while purposefully steering clear of modernist tropes and academic jargon, willfully circling toward an ever more comprehensive and precise descriptions of how architectural spaces might come into being.

„Nature of Space," „Order," „Design"

Kahn´s first attempt to explicitly install architectural space at the center of his agenda seems to have taken place in the early 1950s. In 1953, apparently dissatisfied with the way in which his students would quickly procede from a shallow analysis of the program (and perhaps of some mildly historical precedents) to the design phase, Kahn proposed to them a threefold process of creation which began not with an analysis of „function", construction or precedents, but with the search for what he provisionally called the **„nature of space"**.[36] A search which, after the student had proposed an appropriate „nature of space" for the institution at hand, then proceeded with the search for a comprehensive principle of „order" and ended with the addressing of the circumstances of „design". (Later, this „nature of space" would become „Form" in his „Form/design" dyad.)

In asking his students to begin by questioning the „nature of space" (or later, the „Form") of an institution, Kahn was asking them to visualize the basic spatial nature of that institution in terms of what we might call its „existential or social structures", and furthermore, to consider the means of making these structures comprehensible. Kahn´s „nature of space"/"Form" was, then, in many ways akin to Quatremere de Quincy´s original idea of „type": the search neither for a one-to-one fit with „program", nor for a specific „model" as a basis of architectural form, rather for something more fundamental and irreducable, a starting point which is at once powerful enough to drive the design and to invest with it its cultural meaning, and at the same time something „vague and uncertain" enough (Quatremere) to invite invention and change.[37]

„Form" as Spatial Representation	Quatremere´s „type", Kahn´s „Form" and the Ecole des Beaux-Arts´ idea of establishing a building´s „parti" as the point of departure from which the design would unfold: while each of these terms has its own connotations, the borders between them are somewhat fuzzy, allowing their meanings to overlap. What they all share is that they represent a search for an iconic or „message value" as the basis for the design which transcends mere function or material necessity. Thus, Alan Colquhoun, in his seminal essay, „Typology and Design Method", comes close to describing the deeper meaning behind Kahn´s „Form": *„...what was true of primitive man in all the ramifications of his practical and emotional life - namely, the need to* **represent** *the phenomenal world in a way that it becomes a coherent and logical system - persists in our own organizations and more particularly in our attitudes toward the man-made objects of the environment. An example of the way this applies to contemporary man is in the creation of what are called socio-spatial schemata. Our senses of place and relationship in, say, an urban environment or a building, are not dependent on any objective fact that is measurable; they are phenomenal. The purpose of the aesthetic organization of our environment is to capitalize on this subjective schematization and make it socially available. The resulting organization does not correspond in a one-to-one relationship with the objective facts but is an artificial construct which* **represents** *these facts in a socially recognizable way. It follows that the representational systems which are developed are, in a real sense, independent of the quantifiable facts of the environment, and this is particularly true if the environment is changing very rapidly. However, no system of representation, no metalanguage, is totally independent of the facts which constitute the objective world...."*[38]
Space Grounded in Being	While in a pre-modern vernacular or classical tradition, the conventional answers to these questions of producing socio-spatial schemata were „at hand", the modern had attempted to replace the subjects of representation with the - (ontologically) much less fundamental - subjects of technology, scientific metaphor or „function". Kahn, like many others in the the decades after the Second World War, proposed a requestioning of these premises. Where Kahn´s analysis of space goes further than both his „functionalist" predecessors (Meyer, Gropius...) and his „typologist" successors (Rossi, Aymonino, Venturi...) - and this is what puts him in the company of Heidegger, with whom he has often been brought - is that it begins with an analysis of Being-in-the-world. His metaphorical search for what he called „Beginnings" or „Volume Zero" is in the end a search for the spiritual/ontological/phenomenal bases of architectural space, rather than its materialist or behavioralist foundations. Much as Heidegger argued that modernism´s fragmentation of knowledege was undertaken at the cost of understanding the wholeness of Being, Kahn argued that an architecture which limited its sources to its particular and immediate circumstances could never address the general reasons for its own existence. (What does it mean to inhabit a space - **this** space? What does it mean to bring spaces - and their inhabitants - together? What is the significance of the enclosing materials for the space? What does it mean to delimit this architectural space from a greater natural space? Etc.) While many would question the capacity of architecture to consciously seek its meanings at this level, others would argue that it is exactly the belief in the abilty of architecture to communicate on (and of) these fundamental levels which gives (Kahn´s) spaces their profoundest strength.[39]

„Problems of Space"

Just as Ludwig Wittgenstein postulated that there is no meaningful way of speaking of „philosophy **an sich**", only of philosophical **problems** in relation to questions raised in the various arenas of life,[40] so is it fruitless for the architect to speculate on „space **an sich**" as an abstract or universal phenomenon. „Space" first becomes a meaningful catagory for the architect intent on designing a building or a situation when it is conceived of as relative to the various phenomena which are immanent to Being-in-the-world. As the philosopher deals in „problems of philosophy", the architect must think in terms of „problems of space". (This is said here in a non-reductionist spirit, and to speak in terms of concrete „problems of space" in no way meant to objectify space, nor to contradict the fact that the capacity to shape space will always remain one of architecture´s wonders.... And so Kahn: *„We may never know what space is ..."*[41])

Kahn continued to expand his spatial agenda from the 1950s onward. Instructively, he used the word „space" sparely in his texts: and where he did use it, it was most often in its concrete form: „a space". But if he **explicitly** avoided that term, his texts were most **implicitly** about space and spatiality. If we take a sample from his more well-known texts and aphorisms, we can see that a great deal of them address specific elementary „problems of space": ontological, perceptual, morphological, social.... When, for example, Kahn began to repeat the simple claim that, *„Architecture beings with the making of a room",* [42] he was implictly contradicting the universal space of the modernist **plan libre** while reintroducing the ideas of bodily perception and empathy as fundamental prerequisites of architectural space. *„Nothing must intrude to blur the statement of how a space is made."* [43] Or: *„I could no more place one column in one space and another in a separate space than I could sleep with my head in one space and my body in another."* [44] While Schmarzow and Merleau-Ponty might have smiled at Kahn´s homespun expressions, they would have certainly understood what he meant.) At the same time the simple idea of beginning with the construction of **a** discrete space sets up the preconditions for redefining an inside-outside morphological play as defined by the modern. (**„The window wants to be a little room"** [45] Or, **„Reflect on the great event in architecture as the walls parted and columns became,"** [46] or, **„The plan does not begin with the space which (the architect) has enclosed..."** [47]) Thirdly, a „topology" of space results from the corollary idea that a house is **„a society of rooms"** which **„...talk with each other and make up their minds where their positions are"** [48] The „topological" idea of „society of rooms" furthermore highlighted the social dimension of space, as did Kahn´s antedote for the modernist idea of circulation: his idea of an **„architecture of connection."** Finally, the making of a discrete space depends upon the making of border or **tenemos**, implying the establishment of specfic **places** and not just „space".

Whereas in Kahn´s early essays such as **„Monumentality"** there is an enthusiasm for the constructive/material basis of architecture, whereas in the mid-1950s his attempts to define „order" were mainly in terms of construction, geometry and spatial hierarchy, by the late 1950s, „space" in Kahn´s texts - and more importantly in his architecture - increasingly addressed phenomenal, social, and often emotional or spiritual dimensions: (*„One quality of space is measured by its temperature by its light by its ring...."* [49] *„The room is place of the mind:"* [50])

In brief, the student of architecture who makes the effort to sort out and penetrate Kahn´s - admittedly idosyncratic and unsystematic - texts will be rewarded to find that they add up to one of the twentieth century´s most cogent analyses of architectural space: how it may be conceived, how it is perceived, how it may become part of collective experience. Though never assembled by Kahn as a „theory" (as one predisposed against normative theories, this was indeed never his goal), when taken together, we may consider Kahn´s texts, lectures aphorisms to provide us with „protoelements of an open theory".

In light of Kahn´s essentialism, a brief etymological plumbing of the term „space" and its counterparts is both fitting and helpful in a narrowing the framework for a further discussion. Three links seem especially instructive in this case. Firstly, the Latin **spatium**, in contrast to the abstract and „all-over" connotation of the English „space", tends to stress space as distance, as in the „spacing" between things, thus directing our attention towards certain „topological" aspects of space: the position of things or spaces in relation to another: over, under, inside, near, at a distance.... Secondly: from the old German **rum,** a term originally used to denote a walled-off parcel of land, evolved the modern German **Raum**, a word which connotates much more than its English counterpart space as a delimited or enclosed entity, thus directing our view to various morphological aspects of space: to that which separates inside from outside and the physical **Gestalt** of this enclosure. Finally, the Greek **topos** is inseparably associated with a specific, non-abstract locale: in contrast to abstract „space", we begin to speak of concrete „places", with all of their ontological, ecological, cultural and symbolic dimensions.

Using the catagories suggested by the different connotations of space listed above - **spatium**-topology, **rum-Raum**-morphology, **topos**-symbol-place - as an appropriate framework,

in the following three chapters I will attempt to explore the development and consequences of three elementary aspects - or „problems"- of space which have emerged from the narrative of the Domincan Motherhouse and which had evolved as central to Kahn´s mature architectural thought. Firstly, in Chapter 9 the „topological" problem of bringing discrete spaces together will be explored by comparing Kahn´s metaphors of a house as a „society of rooms" and of an „architecture of connection" with the modernist metaphor of „circulation". In Chapter 10 the (morphological) problem of defining a border and a specific relationship between an inside and an outside will be explored under the concept of „reciprocity". In Chapter 11 the connotation of space as **topos** - as a specific place - will be observed in connection with Kahn´s mature work. What follows is by no means an exhaustive exploration of these catagories, nor can it include numerous other important and intertwined themes in Kahn´s architecture. What it does propose to do, is to illuminate specific consequences of Kahn´s spatial thought at work, and in this exploring demonstrate a method with might be expanded in further studies. I propose that the themes chosen here may be helpful in establishing a more complete understanding of Kahn´s work: for they are fundamental, yet often overshadowed by other, oft repeated themes. While various other studies have been based on the „what" or „why" of Kahn´s spaces, I have placed the emphasis here on the „how" of their making: posing my questions from the position of one urgently interested in a metier-immanent „handwork of space".

Chapter 8: Footnotes

1. Among those texts noted in the Bibliography, the following were essential references for the outline of modern theories of architectural space in this chapter.
- H. F. Mallgrave and E. Ikonomou, Empathy Form and Space, Problems in German Aesthetics 1873-1893, Getty Center, Santa Monica, 1994.
- Adrian Forty, Words and Buildings, Thames & Hudson, New York, 2000, pp. 254 - 275.
- Cornelius van de Ven, Space in Architecture (3. ed.), Van Gorcum, Assen/Maastricht, 1987.
- Wolfgang Meisenheimer, Das Denken des Leibes und der architektonischer Raum, Verlag der Buchhandlung Walther König, Köln, 2000.
- Francesco dal Co, Figures of Architecture and Thought: German Architectural Culture 1880 - 1920, Rizzoli, New York, 1990.
- Joan Ockman (ed.), Architecture Culture: 1943 - 1968, Columbia/Rizzoli, New York, 1993.

2. These upheavals are well known: be they material/technological, conceptual/existential, scientific, political, social/economic: all posed challenges to what had tended to be relatively stable paradigms of Being and space.

3. John Soane spoke in terms of „void spaces". „Royal Academy Lectures" 1810-1819, in: D. Watkin, Sir John Soane: Enlightenment Thought and the Royal Academy, Cambridge University Press, London, 1996. (Quoted in Forty, op. cit., p. 256.)

4. H. F. Mallgrave and E. Ikonomou, Empathy Form and Space, Problems in German Aesthetics 1873-1893, Getty Center, Santa Monica, 1994.

5. Robert Vischer, „On the Optical Sense of Form: a Contribution to Aesthetics" (1873), in: H. F. Mallgrave and E. Ikonomou, op. cit, pp. 89-123.

6. Heinrich Wölfflin, „Prolegomena to the Pyschology of Architecture", in: H. F. Mallgrave and E. Ikonomou, op. cit., pp.149-90.

7. Camillo Sitte, Der Städtebau nach seinen künstlerischen Grundsätzen (1889), Facsimile of the 3rd. ed.,1901, Schriftreihe des Institutes für Städtebau, Raumplanung und Raumordnung der Technischen Universität Wien, Vienna, 1972.

8. Adolf Hildebrandt, „The Problem of Form in the Fine Arts", in: H. F. Mallgrave and E. Ikonomou, op. cit., pp. 227-79.

9. August Schmarzow, The Essence of Architectural Creation (1893), in: H. F. Mallgrave and E. Ikonomou, op. cit, pp. 281-97.

10. Theodor Lipps, Raumästhetik und geometrisch-optische Täuschungen (1893), Summary in: Forty, op. cit. pp 261-262.

11. Alois Riegl, Paul Frankl Stilfragen (Problems of Style,1893 Spätrömishe Kunstindustrie, 1901) Principles of Architectural History (1914),

12. Geoffery Scott, The Architecture of Humanism (1914), The Architectural Press, London, 1980.

13. Adrian Forty, op. cit., p. 262.

14. Rudolf Schindler: Modern Architecture: A Program (1912), (Trans. H. F. Mallgrave) in: Lionel March and Judith Scheine, R.M. Schindler: Composition and Construction, Academy, London, 1992, pp. 10-13.

15. ibid.

16. Frank Lloyd Wright: An Autobiography, Duell, Sloan and Pierce, New York, 1977.

17. Mies van der Rohe: „Was wäre Beton, was Stahl ohne Spiegelglas?" unpublished pamphlet for the Verein Deutscher Spiegelglasfabriken, 15 March 1933. In: Fritz Neumeyer, Mies van der Rohe: Das kunstlose Wort, Siedler Verlag, Berlin, 1986, p. 378.

18. Of course „modernist" is a crude catagory: being used to describe architectures of most different character. (Wright´s and Haaring´s understanding of space being worlds away from that of Gropius or Meyer, yet all being „modernists".) For the sake of argument, I use the term here in its admittedly somewhat narrowed connotation, depicting the shadow-side of the modern: its tendency toward reductionsm, abstractionism, teleology, positivism, etc.. At this point one must also differentiate between text and architecture: while the universal modern **language** of space tended to stress the abstract and absolute, the actual **built** spaces of architects such as Schindler, Scharoun and Wright were likely to be relational and „embedded", in comparison to the more true spatial absolutism of a Walter Gropius or a Hannes Meyer.

19. Moholy-Nagy, The New Vision (1928), 4th ed., trans. D.M. Hoffmann, G. Wittenborn, New York, 1947. Quoted in Forty, op. cit., p. 267.

20. On Plato´s concept of space, Newton´s concept of space, see, „Space Perception", in: Encyclopedia Britannica, from Encyclopedia Britannica Online, accessed June, 2005.

21. Siegfried Gideon: Space Time and Architecture (1941), 3rd ed., 12th printing, Harvard University Press, Cambridge, MA, 1959.

22. The modern history of architectural theory may also be read as a history of architecture´s borrowing and (oft purposeful) misreading (streamlining) of **Gedankengut** from other disiplines - science, philosophy, art, etc.. (See, for example: scientific metaphors of organic growth, systems theory, literary deconstruction, etc.) In Gideon´s case, the „steamlining" of physics´ space-time relation so that it might in some way be „portrayed" in architecture.

23. I use quotation marks as this vision was as much formal as it was spatial.

24. „Nine Points for a New Monumentality", Siegfried Giedeon, Fernand Léger and José Luis Sert (1944), in: Joan Ockman (ed.), Architecture Culture 1943-1968, Columbia/Rizzoli, New York, 1993, pp. 27-30.

25. Louis I. Kahn, „Monumentality" in: Paul Zucker (ed.), New Architecture and City Planning: A Symposium, Books for Library Press, Freeport, New York, 1944.

26. Martin Heidegger, „Bauen, Wohnen, Denken", in: Mensch und Raum: Darmstädter Gespräch 1951, Neue Darmstädter Verlagsanstalt, Darmstadt, 1952, pp. 72-84

27. ibid.

28. ibid.

29. Marcel Merleau-Ponty, Phenomenology of Perception (1945), trans. C. Smith, Routledge and Kegen, London, 1962.

30. ibid.

31. Christian Norberg Schultz, Intentions in Architecture, Scandanavian University Books, Oslo, and Allen & Unwin, London, 1963.

32. Jan Steen-Rasmussen, Experiencing Architecture (1959), 26. printing, MIT Press, Cambridge, MA and London, 1997.

33. Hannah Arendt, The Human Condition, University of Chicago Press, Chicago, 1958.

34. Gaston Bachelard, La poétique de i´espace (1957), Poetik des Raumes, Fischer Wissenschaft, Frankfurt/Main,1987.

35. Aldo van Eyck, „The Medicine of Reciprocity Tenatively Illustrated", in: Forum, vol. 15, 1961, nos. 6-7, pp. 237-38. By the beginning of the sixties, the space of architects was ripe for reinterpretation and critique. From the 1960s onward, the spatial critique of the 1950s was continually expanded in respect to cognitive, political, social, economic and gender issues.

36. Anne Tyng, Louis I. Kahn to Anne Tyng: The Rome Letters 1953-54, Rizzoli, New York, 1997, pp. 79, 211-12.

37. Quatremere de Quincy, Dictionnaire Historique de l´Architecture, Paris, 1832. (Reproduced in: Oppositions 8, pp. 629-30).

38. Alan Colqhoun, „Typology and Design Method", first published in Arena, vol. 83, June 1967, in: Colqhoun, Essays in Architectural Critcism, Oppositions Books/MIT Press, Cambridge MA and London, 1981, pp. 43-50.

39. Certainly not every building assignment allows, over even calls for, the plumbing of architecture´s capacity to represent this kind of depth. And yet, it is instructive to note those cases where Kahn found opportunities for doing so where many others would not have even attempted to try. And so, for example, the Trenton Bath House, a minmal „no budget" structure, makes of its seemingly banal program - dressing rooms for a suburban swimming pool - an act approching ritual, potentially lending the everyday depth and transparence..

40. Ludwig Wittgenstein, quoted in: Alberto Perez-Gomez, Questions of Perception, a+u special issue, July, 1994, p.41.

41. Louis I. Kahn, quoted in: Max Bächer, „Return to Sources", in: Charlotte Frank (ed.), Axel Schultes Kunstmuseum Bonn, Ernst & Sohn. Berlin, 1994, p. 25.

42. Louis I. Kahn, „The Room, the Street, and Human Agreement" (1971), in: Alessandra Latour (ed.), Louis I. Kahn, Writings, Lectures, Interviews, Rizzoli, New York, 1991, p. 263.

43. Louis I. Kahn, „Architecture is the Thoughtful Making of Spaces" (1957), in: Joan Ockman (ed.), Architecture Culture 1943-1968, Columbia/Rizzoli, New York, 1993, pp. 271.

44. Louis I. Kahn, in. Alexandra Tyng, Beginnings: Louis I. Kahn´s Philosophy of Architecture John Wiley & Sons, New York, 1984, pp. 174

45. Louis I. Kahn, in: Wurman, op. cit., p. 180.

46. Louis I. Kahn, „Architecture is the Thoughtful Making of Spaces" (1957), in: Joan Ockman, op. cit., p.271.

47. Louis I. Kahn, „Monumentality"(1944), in: Alessandra Latour (ed.), op. cit., p. 25.

48. Louis I. Kahn, „Architecture and Human Agreement", in: David Brownlee and David DeLong, Louis I. Kahn: In the Realm of Architecture, Rizzoli, New York, 1991, p. 109.

49. Louis I. Kahn, „Architecture is the Thoughtful Making of Spaces" (1957), in: Joan Ockman, op. cit., p. 272.

50. Louis I. Kahn, „The Room, the Street, and Human Agreement" (1971), in: Alessandra Latour (ed.), op. cit., p. 263.

Chapter 9. Problems of Space I:
Configuration, Movement and Space:
From „Circulation" to „an Architecture of Connection"

„Space is more than a neutral framework for social and cultural forms. It is built into those very forms. Human behavior does not simply happen in space. It has its own spatial forms. Encountering, congregating, avoiding, interacting, dwelling, teaching, eating, conferring are not just activities that happen in space. In themselves they constitute spatial patterns.... One thing is clear, (these activities) are not attributes of individuals, but patterns, or configurations, formed by groups or collections of people. They depend on engineered patterns of co-presence, and indeed co-absence. Very few of the purposes for which we build buildings and environments are not „people configurations" in this sense. We should therefore in principle expect that the relation between people and space, if there is one, will be found at the level of the configuration of space rather than the individual space."
Bill Hillier, Space is the Machine, p.30

„Circulation" has without question been a successful metaphor - indeed, one might say, far too successful. What started as an innocent analogy is now perceived as a fixed catagory.... So deeply ingrained has this essentially modernist catagory become that for most of us it requires a positive mental effort to think of architecture without „circulation". When we ask to what we may attribute the success of this particular metaphor, it is clear that it is not due to any exactness of correspondence between the flow of substances around bodies and around buildings. Instead, I suggest, its success is due to two more structural reasons: firstly, it made architecture amenable to scientific method, and secondly it satisfies a wish to see buildings as enclosed, self-contained systems against all evidence to the contrary. It allows people to talk about what is untrue as if it were true."
Adrian Forty, „Spatial Mechanics - Scientific Metaphors", in: Words and Buildings: a Vocabulary of Modern Architecture, p. 94

I begin this chapter with the quotations above in reference to the modern paradigm of space sketched out at the beginning of this section in Chapter 8. As described in that chapter, at the core of this paradigm has been the collective tendency - consistent with an inherited Cartesian-Newtonian view of space - to see that space as a neutral and absolute background against which the properties of objects are defined. As Bill Hillier has postulated in his social/morphological theory of space, *„This view of space seems to most of us quite natural, no more than an extrapolation of the commonsense. Unfortunately, once we see space in this way, we are doomed not to understand how it plays a role in human affairs. Culturally and socially, space is never simply the inert background of our material existence. It is a key aspect of how societies and cultures are constituted in the real world, and, through this constitution, structured for us as „objective" realities."*[1] Building upon the arguments presented in these quotes, and expanding upon the configurational narrative of Chapter 5, in following I will attempt to sketch a means for better understanding one aspect of Kahn´s spatial thinking based on the fundamental conceptual split between the modernist idea of „circulation" and Kahn´s notion of an „architecture of connection".

„Circulation"   Corollary to the modern paradigm of buildings as self-contained systems operating in neutral space has been the spread of the biological-mechanical analogy of „circulation". The analogy relating the movement of people in buildings to fluids in the human body seems to have gained acceptance beginning in the mid-nineteenth century, gradually replacing earlier terms for describing and thinking about the configuration of buildings in regard to movement such as „distribution", „communication", or „dégagements".[2] In accordance with the positivist spirit of the times, by the early twentieth century, that analogy had become such an integral part of the architectural vocabulary that it had now become difficult to separate metaphor and fact. While the Ecole des Beaux-Arts had, for example, by the end of the nineteenth century adopted the term „circulation", it still supplemented this way of regarding human movement with other, non-quantifiable aspects such as cadence (**„marche"**), hierarchy, ritual and decorum.[3] (Charles Garnier´s Opéra de Paris - simultaneously a circulation-and-decorum-machine - remains perhaps the apotheosis of that method.) Soon, though, a more literal interpretation of the biological-mechanical analogy began to inform planning at virtually all scales of the built environment: Schütte-Lihotsky´s Taylorized kitchen plans, Alexander Klein´s comparative movement analyses of house and apartment plans, Richard Neutra´s „Rush City Reformed", Le Corbusier´s „straight path of the modern man": for much of the twentieth century, the ideal that human movement was something to be streamlined, channelled and

„optimized" became the norm, overshadowing those other multifarious phenomena generated through movement, be they perceptual, social or symbolic. The general poverty - as an influential case in point - of Walter Gropius´ plans as aesthetic moments or as „people configurations" may be directly traced to their tendency to rationalize human movement down to its most rudimentary form: the connecting lines of a bubble-diagram. (A method canonized and spread in publications such as Ernst Neufert´s **Bauentwurfslehre** and countless floor-plan atlases, and which - not incidentally - has found favor with building owners and investors as it tends to keep - non-rentable - circulation space to a minimum.) For all its talk of form following function, the modern movement was - with a few notable exceptions - largely incapable of generating a viable and vital new architecture from the spaces which linked those functions together.[4]

Defining an „Architecture of Connection"

A New Term,
New Types

The perception of a thing is indeed closely linked to its naming. In what must have been an attempt to free himself from the conceptual fetters of that analogy, in the late 1950s Kahn gradually purged „circulation" from his vocabulary and replaced it with his own term: **„architecture of connection".**[5] By this time he had come to see the architect´s first duty as being to the institutions which he served, and integral to his search for new means to „democratic" or „society of rooms" plans for public institutions and to his tendency to see cities, streets and buildings as synergetic, multi-use „forums of availabilities" was the development of appropriate means of configuration and movement. For, as we have already heard Kahn state, *„...it is precisely this architecture of connection which gives the man on the street a sense of the institution".* The models which lay most readily at hand - and which he had alternately employed in previous stages of his career - now only partially satisfied his redefined needs. The neo-classicist and Beaux-Arts systems, while perhaps holistically conceived, were in the end „closed works", too rigid in in their hierarchies for Kahn´s progressive ideals; those of the functionalists - based on the analogy of „circulation"- were too deterministic, too linear and shallow to foreground the desired element of personal choice; while those of the structuralists tended to be too diffuse to generate the possibilties for indentification and social density for which he was searching. Beginning in the late 1950s Kahn developed a number of configurational types which come as suprising exceptions in twentieth century architecture: often transforming or hybridizing existing systems; balancing their inherent quailties in dynamic equilibriums between open and closed, provisional and stable, etc.. In his attempt to transcend the restrictions of modernist types, Kahn began to reconsider certain elementary pre-modern configations: the court, the agora, the ambulatory, the hall, the Palladian matrix of rooms: all reappear - compellingly transformed - in his late work.

Resisting Subjugation
to Program

What were to be the primary characteristics which set this „architecture of connection" apart from the modernist concept of „circulation"? To begin with: if - in accordance with the credo „form follows function" - the orthodox modernists sought to bring spaces together in unambiguous, cause-and-effect relationships, Kahn´s new typologies of connection - which tellingly appear in his designs only after his change of vocabulary - are first of all marked by their **multivalence** and by their foregrounding of **personal choice**, by their **loose fit to program** and their **conceptional robustness.**[6] While most modernist methods tended to rationalize „circulation" space down to a tightly-tailored (even Taylorized) minimum, thus binding it closely to its program, Kahn began to see „circulation" as worthy of as much consideration as the programmed spaces themselves: a virtually seperate and equal „architecture of connection", which in its independence resisted a complete subjugation to program. Concretely, this meant a preference for „open" means of distribution: for redundance rather than a tight fit; for configurational loops, rings and matrices in plan, in contrast to the linear and branched systems preferred by the moderns.[7] Accompanying this **openess** was often a tendency toward a greater **depth** in plan than typical modernist types would tolerate.[8] „Depth" meaning here the duty of use-space to act simultaneously as distribution-space: the chaining together of rooms. (As was often the case in pre-modern plans.) This creation of double use and ambiguity further contradicting the modernist goals of transparence and of unambiguous relationships between uses.

Corollary to the loose fit or „robustness" of Kahn´s „architecture of connection" is often a generosity to a not-yet-known end; a sense, as in nature, old towns or in many vernacular building types, that the number of possiblities for use exceeds those which will be demanded by the inhabitants. In connection with areas for movement, apparently serendipitous „found spaces" abound in Kahn´s mature architecture, generated as if off hand by the space-defining structural algorithim: the great porches at the Kimbell Art Museum, the human-scaled loggias of the Salk Institute, the public plazas of the National Assembly at Dhaka, the „picnic" garden of the Roosevelt Memorial, the oversized „playground stair" of the Korman House, etc, etc.... These spaces serve no particular need, as need is defined by the program, rather they seem to exist in order to express the fulfillment of some undefined potential, some as yet unspoken desire. As Kahn said of the Kimbell Museum: *„You know what´s so wonderful about those porches? They´re so unnecessary."*[9] Or, more concretely, in ruminating on the generosity of a school: *„In school as a realm of spaces where it is good to learn, the lobby measured by the institute as so many square feet per student would become a generous Pantheon-like space where it is good to enter. The corridors would be transferred into classrooms belonging to the students themselves by making them much wider and provided with alcoves overlooking the gardens. They would become places where boy meets girl, where the student discusses the work of a professor with his fellow student. By allowing classroom time to these spaces instead of passage time from class to class, it would become a meeting connection and not merely a corridor, which means a place of possibilities in self-learning...."*[10] And indeed, in certain cases it´s difficult to tell exactly where the emphasis of Kahn´s buildings lie: in the discrete programmed spaces awaiting their users or in the users arriving to make use of those facilities. Non-programmed Movement-space and programmed Use-space often become like form and counterform, engaged in a sort of fluctuating figure-ground ambivalence. It is the very non-programmed, non-instumental character of these spaces which reveals their potential as true „spaces of appearance" in the sense of Hannah Arendt.[11] The potential - or perhaps, propensity - implied by them serving as a foil to those necessarily more tightly determined architectural spaces.

While the terms „loose fit" and „generousity" tend to evoke images of indiscriminately sprawling configurations, we know that with Kahn planning was not simply a case of „bigger is better" and that there is nothing flabby or uncontrolled about his plans. To his **ouevre** belong both those projects in which budget, site and program called for and allowed ample and wide-ranging „architectures of connection" (the Salk Institute, the National Assembly at Dhaka, the Indian Institute of Management...) as well as those with quite dense and economical plans (the Dominican Motherhouse, Erdman Hall, the Phillips Exeter Library...). With the Dominican Motherhouse we have already seen a single case which in the course of its development covered the entire economic spectrum between ultra-generous and extremely compact: and ultimately gained its unique character in the process of doing so.

Beyond the issues of absolute size and economy, it´s necessary to understand that for Kahn, next to the element of choice and the expression of potential, the most important measure of configuration and movement was the idea of **meted spacing** between uses. He observed: *„The spaces speak to each other and make up their minds where they want to be...."* [12] And furthermore: *„Buildings (rooms) must be like a good position on the chessboard. For its symbolic value no building (room) must be in the wrong place."*[13] Akin to the duration between musical notes, the in-between „duration" of the spaces connecting various uses becomes as relevant to the meaning of the plan as the actual shaping of the discrete programmed spaces.

Beyond the figurative visualization of a „Form" or type, it is this relative positioning of uses within the plan which Kahn employs as a primary means for „interpreting" the institution at hand. On the one hand, it is this positioning which establishes the spatial structure for inter-human relationships which Hillier has called *„engineered patterns of co-presence and co-absence"* within the building or urban scheme. On the other hand, just as important as these **factual** relationships established between people through spaces, are the **felt** synergies, **implied** magnetisms via „neigborhoods", the **suggested** powers of attraction or repulsion, etc.. The sense that the nature of the individual spaces is more akin to that of interdependent

„monads" than of independent „atoms", that each seemingly discrete space is at the same time a **partial** space, first deriving its full meaning from its relationships with other spaces. (We should bear in mind that this idea of „partial space" in regard to use and connection intertwines with a parallel discussion in regard to the relationship between architectural and natural spaces in Chapter 10 and with the idea of „inflection" discussed in Chapter 5.) In this sense, it is easy to agree with Christian Devillers´ proposal that, *„...For Kahn, space equals spacing".* [14] (Or, in a similar tone, with Schopenhauer´s *„Space is the potential for juxtaposition."*[15])

Developing an „Architecture of Connection": 1949 - 1974

Kahn´s path from „circulation" to an „architecture of connection" was more evolutionary than revolutionary in nature. For over a decade he successively worked his way through both modernist and Beaux-Arts typologies in his institutional buildings before he was to reach a mature expression of this theme in his work: the Y-plan Philadelphia Psychiatric Hospital (1949-53, **Fig. 9.1**) for example, with its single and double-loaded corridors, is still a conventional modernist trope; the third project for the Trenton Jewish Community Center (1953-59, **Fig. 9.2**) revives quite literally the Beaux-Arts tartan grid, with Guadet´s differention between **surfaces utiles** and **circulations**; while the Richards Medical Laboratories (1957-64, **Fig. 9.3**) evokes the typical linkage scheme of a structuralist chain. This probing proceded at all scales of the built environment. At the scale of the house, the Weiss Residence (1948-50, **Fig. 9.4**), still a zoned, Breueresque modernist type (Kahn himself referred to it ironically as „a bi-nuclear Harvard plan"), was succeeded ten years later by the Fleischer House´s provocatively „Palladian" room matrix and the Goldenberg House´s courtyard ambulatory. **(Figs. 9.5, 6.6)** While at the scale of the city Kahn´s traffic studies and public housing projects for Philadelphia from 1948-53 **(Fig. 9.7)** still relied heavily on the modernist „circulation" metaphor, with branched and cul-de-sac plans, analogies with „rivers", „docks" and harbors", etc., by his later career he was apt to emphasize neutrality and choice over subdivision and hierarchy in urban plans such as the gridded scheme for Abbas-Abad in Iran (1973-74) or the „forum of availabilities" for the Bicentennial Exposition in Philadelphia (1973, **Fig. 9.8**).

In order to better understand what Kahn was searching for with his „architecture of connection" and how this aspect of spatiality intertwines with those aspects discussed in the accompanying chapters of this section, a selected group of his mature projects including the Dominican Motherhouse are briefly outlined in terms of this theme below.

The Salk Institute

After a decade of probing, with the Salk Institute for Biological Studies (1959-65, **Fig. 9.9**), Kahn achieved for the first time a truly mature expression of spatial configuation and of an „architecture of connection" in a large public building. The building´s total configuration - or „Form" - projects a strong image of how Kahn envisioned the institution: as a community of individual researchers dedicated toward an idealistic common goal: biological research in the service of mankind. (In the spirit of the Institute´s founder, Jonas Salk, the discoverer of the first vaccine for polio.) The closed, excluding and enclosing exterior facades; the open, textured and human-scaled interior facades; the scientists´ small private studies craning toward the ocean, the larger research groups´ laboratories behind them, the great central plaza which is shared by all.... The series of concentric layers, of surfaces open and closed, the linked chain of proximities and distances: all these phenomena are orchestrated to imply a finely-tuned yet open dialog between public and private, individual and community: a dialog which finds its expression at virtually all scales of the building´s existence. Kahn said, *„Essentially it is a laboratory building, but you must not forget that the place of meeting is of utmost importance."*[16] The project´s consistant development of this expression has lead Sarah Williams Goldhagen to see in the Salk Institute one of the prime examples of Kahn´s desire to create a socially tranformative architecture, a monumental proposal for *„...a society in which people´s pursuit of personal satisfaction did not overwhelm their capacity to participate in their community."* [17]

To speak more concretely of the Salk´s „architecture of connection" and how it contributes to this expression: the finished project - perhaps better described as an „environment" than

than a „building" - has a total of twenty staircases and fourteen elevators, arranged around a plaza which is thus transversable in virtually countless combinations. In contrast to the modernist practice of efficiency, here **redundancy** is seen as a virtue: is indeed integral to the concept. The plan, which might superficially suggest a centralized baroque or classical scheme, is left purposefully open at both ends, linking ocean and land while refusing to define a single main entry or a branched hierarchy of movement.[18] Arriving by auto (this is California), the visitor is presented with any number of ways for approaching the complex and discovering its central plaza. That famous plaza, linking land, sky and sea together in one of the twentieth century´s most sublime architectural spaces, prohibits any movement along its central axis: instead, due to the placement of the stairs sets up a pattern of perpendicular and diagonal criss-crossing which is profoundly non-classical. In terms of program, the plaza is both a void devoted to „Silence" and a pure „Space of Appearence": its form denying any kind of specific instrumental use while at the same time - through its various bordering surfaces, niches, ledges, loggias - suggesting a wide variety of possibilities for meeting, lingering, conversing, eating, etc..

The plaza is the largest in a series of generous „spacings" both horizontal and vertical which „interpret" the institution. A spacing best understood when seen in the intended - yet incomplete - total plan for the Salk: with its unrealized meeting house and scientists´ residential village. **(Fig. 9.10)** The three complementary parts of the institution were so disposed as to take maximum advantage of the distances offered by the site around the ravine, and a meted chain of distances establishes the relationships between the respective parts and to their context: the primary setback of the building groups from the street behind a eucalyptus grove, the large spacings between the Institute´s major elements. (All set in scene by natural and landscaping features.)

The linked chain of spacings was to be continued within each of the three major elements. In the meeting house **(Fig. 9.11)** the plaza of the laboratory tract is echoed on a smaller scale as an unprogrammed central space - in Kahn´s planning alternately conceived of as open to the sky or enclosed. The plan seems to take the earlier centralized scheme of the First Unitarian Church one step further toward the looser, more the explictly „juxtapositional" plans such as that for the Dominican Motherhouse. The peripheral spaces gravitate gently around sub-centers which in turn border an unprogrammed interior meeting court. The combination of three different dispositional typologies: court, ambulatory and room matrices generates a deep and labyrinthine plan - one which seems to be rooted more in the antique than in the modern.[19.]

In the completed laboratory tract, the individual/community theme of proximites and distancing is most finely played in the spatial fugue of movement which links the studies, the loggias, the stairs and the laboratories. Kahn felt the need to seperate and give different spatial structures to each use. The 36 private studies („*the realm of the oak table and the carpet*"[20]), are individually articulated and given the most prominent position on the edge of the plaza (in reference to the primacy of conception, of formulation of the hypothesis in the creative act), while the laboratories in which these hypotheses are tested („*the realm of the stainless steel counter and the test tube*") are set back by the width of the stair and the walkway. **(Fig. 9.12)** These spacings are established in section as well: by staggering the studies on every second floor, adjacent to the Vierendeel/mechanical levels, an additional vertical half-step between the studies and the laboratories has been created: in answer to Kahn´s rhetorical question, „*how near is too near and how far is too far?*" **(Fig. 9.13)** As if off-handedly, „coffee break" loggias are generated below the studies and adjacent to the labs: supplementing the movement-space with regular „offerings" to chance meeting and sereindipitous communication. The structural „algorithm" lays down an order which simultaneously intertwines movement and use. In fact, virtually all the different layers of the Salk´s realities - the symbolic, the functional, the technical, the constructive and the social - are so densely intertwined as to make their separate discussion difficult: in the end, it seems that we can speak of them only wholistically and never in isolation.

Erdman Hall

Although at first glance only remotely related, in terms of distribution and plan configuration, the final design for a women´s dormitory, Erdman Hall at Bryn Mawr College (1960-64, **Fig.**

9.14), is an important predecessor to the Dominican Motherhouse. Although outwardly dissimilar, in Erdman Hall the primary problem of „Form" was similar to that of the Motherhouse: that of representing the individual and the collective within a single building. As at Media, Kahn found the final realization of this „Form" anything but an easy task, accomplished only after a long and strenuous search. As at Media, in early versions of the Erdman Hall design the communal and private orders of its component parts - in this case, the students' individual dormitory rooms and the larger communal spaces - had been clearly separated in plan. (Fig. 9.15) The sketches from this phase show an uneasy balance between a structuralist, „molecular" linkage of the small rooms and a more classical ordering of the larger rooms.[21] In the final version both orders coalesce in a new hybrid, which may be alternatively read in plan as three symmetrically linked pavillions or as a section of an unfinished structuralist chain. (Fig. 9.16) (The actual experience of the building in situ - with its irregular silhouette, its superimposed diagonal and orthogonal orders and its folded peripheries - being much more complex than either of these two-dimensional readings would suggest.[22]) The final distributive scheme combines both ambulatory and linear means. The three great communal rooms are at once usable space and „circulation": unconventionally skewered together over the entire length of the building by a great diagonal enfilade. (Fig. 9.17) The corner-as-connecter is a provocative answer to the problem of the otherwise „dead" corner of the square in plan. Says Kahn: *„I discovered at Bryn Mawr that you can connect a room over its corner."*[23] Distanced to and partially buffered from the communal spaces by the thickened walls of „servant" spaces, the ambulatories provide access to the individual dormitory rooms. The linear and ambulatory systems, in combination with a series of both extroverted and hidden stairs, give the students the choice of a number combinations of both exposed and hidden routes through the building, the choice between „remote or direct association" with others and with those communal „availabilities" which the house offers to its inhabitants.

The Dominican Motherhouse

The Dominican Motherhouse represents a special, and especially dense variation of Kahn's „Society of Rooms" configurations. In Chapter 5 we have studied at length the earliest bipolar scheme, with its hermetic cells and its more active communal „Forum of Availabilities": the scheme's great gallery space and courts being the primary architectural means of both distancing and bringing the individual spaces together. (Fig. 9.18) With the development of the fourth and final version, this original theme had been inverted: instead of being presented with a free choice of various discrete volumes from the vantage point of a generous and unprogrammed „space of appearance" (as at Fort Wayne, as at Ahmedabad...) we are now, from our position within a single discrete volume, presented with the free choice of movement in any one of at least three directions: something approaching an „ordered labyrinth" is the result. (Fig. 9.20) An inversion has taken place: the matrix has replaced the counterform and the entire complex has become an „architecture of connection". While the Kahnian imperative of free choice has remained, that of „indirect association" has collapsed. Robin Evans' description of Raphael's Villa Madama comes to mind:

„...Once inside it is necessary to pass through one room to the next, then to the next, to traverse the building. Where passages and stairways are used, as inevitably they are, they nearly always connect just one space to another and never serve as general distributers of movement. Thus, despite the precise architectural containment offered by the addition of room upon room, the villa was, in terms of occupation, an open plan relatively permeable to the numerous members of the household, all of whom - men, women, children, servants and visitors - were obliged to pass through a matrix of connecting rooms where the day-to-day business of life was carried on. It was inevitable that paths would intersect during the course of the day, and that every activity was liable to intercession unless very different measures were taken in order to avoid it. As with the multiplying of doors, there was nothing unusual about this; it was the rule in Italian palaces, villas and farms - a customary way of joining rooms that hardly affected the style of architecture (which could equally well be gothic or vernacular), but certainly affected the style of life...The matrix of connected rooms is appropriate to a type of society...which recognizes the body as the person, and in which gregariousness is habitual. The features of this kind of life can be discerned in Rafael's architecture and painting. Such was the typical arrangement of houshold space in Europe until it was challen-

ged in the 17th century and finally displaced in the 19th century by the corridor plan, which is appropriate to a society... which sees the body as a vessel of mind and spirit, and in which privacy is habitual... There is surely another type of architecture that would seek to give play to the things which have been so carefully masked by its anti-type; an architecture arising out of the deep fascination that draws people towards others; an architecture that recognizes carnality and sociality. The matrix of connected rooms might well be an integral feature for such buildings."[24]

This sense of gregarious inhabitance - so typical of a 16th century Italian villa, so unexpected in a modern monastery - may in the end be that which gives the Motherhouse less the character of an institutional building than that of a very large house: a quality it shares with its predecessor, Erdman Hall. (For all that building´s castle-like ambience.) With a certain warpage of scale, it´s not difficult to imagine the cells as bedrooms, the refectorium as dining room, the school as study, the chapel as salon, etc.: the monastery plan becomes, perhaps, a Roman villa....[25] This said, we must remember that not only human gregariousness is to be served by the plan, but the celebration of sacred ritual as well. The layered ambulatory of the chapel (and, to lesser degree, of the refectorium) are intended to create both proximity and separation: Kahn´s „wink at the chapel" without going in. *„First you have a sanctuary, and the sanctuary is for those who want to kneel. Around this sanctuary is an ambulatory for those who are not sure but want to be near. Outside is a court for those who want to feel the presence of the chapel. And the court has a wall. Those who pass the wall can just wink at it."*[26] And so, Kahn presents us with another way of looking at the plan: if we divide the spaces into those which are linked together in a continuous distribution band and those in which activities are either private or come to rest, the plan begins to read like a small „Nolli plan": a miniature urban scheme with streets, widenings, squares and buildings. **(Fig. 9.21)** If we are to consider the plan in this manner, then it becomes apparent that the act of entrance does not cease at the front door in the tower, but the entire building may be seen as a „continuous threshold." An apparent paradox: Kahn´s at first glance so static volumes are used to generate a dynamic sense of movement and simultaneousness: qualities which are typically associated with the modern free plan.

The Matrix of Rooms as Social Condenser

Regardless if we wish to see it as a big house or a miniature urban plan (or both), the Dominican Motherhouse is doubtless one of Kahn´s most radical creations in terms of its „architecture of connection": refusing to see „circulation" as a separate building system, foresaking both the conventions of the classicist and the free plan for an additive conglomeration of discrete rooms: a matrix of rooms as a „social condenser." Best described by prepositions (next to, behind, above, tangent to....), each space engages in differing synergies with its neighbors. More than the tension of its geometry, this radicality of configuration has likely been the single feature which has caused both the plan´s critics and its advocates to linger: the latter finding promise in the plan´s hypothesis, the former, meeting it with scepticism. For there are few institutional models of this scale which we can use to help us imagine its inhabitation. How **would** it have been to live in the monastery/house/urban plan? We can only imagine the plan´s unfolding: the criss-crossing, the multiple alternative routes, the chance encounters both agreeable and disagreeable... all these qualities generating in movement and experience a tension which is at least equal to the formal tension of the plan´s geometry. In the end it´s difficult not to sense something more than a little demonstrative or didactic about the plan: as if Kahn were teasing the limits of this particular mode of bringing spaces (and thus people) together. Unbuilt and so untested, the plan seems to beg the question of its model character, its potential use. While a similar matrix of rooms might be quite easily imaginable in the case of a museum or a villa, the overlapped public/private interface of the monastery begins to stretch - in both positive and negative senses - the imagination. How might one apply this hypothesis in other institutional buildings or urban configurations, and what would be the gains? In answer to these questions we can only sense an optimism on Kahn´s part: a faith that that which draws humans together is in the end stronger than their wish to withdraw. While the three-dimensional models presented in the portfolio may begin to give a hint at the spatial unfolding of the monastery´s various **promenades architecturales**, they necessarily leave this question of its habitation unanswered.

The description above and the narrative of Chapter 5 have, among other things, hopefully demonstrated the following: firstly, the Dominican Motherhouse, while stretching the limits of Kahn´s „architecture of connection" is in no way an exception to its basic premises; secondly, for all its collage-like dynamicism, the Motherhouse, like Kahn´s other related juxtapositional plans, was not merely an excercise in formal composition. In strong contrast to modernist practice, which generally aimed at tightly binding use and movement together in unambiguous „cause and effect" relationships, Kahn first directed his efforts to identifying the varied forces which brought the elements of a program together in a „society of rooms" and subsequently let those forces work as vectors in an equation which included the complementary vectors of ordering geometry, structure, the imaging of the institution and the conditions of site. In Chapter 5 we have observed the considerable work required to identify those forces and to configure those spaces: work which when seen in retrospect was always directed toward developing a plan which guaranteed the greatest potential of freedom for the inhabitants, the least element of force. The diagrams presented in **Fig. 9.22** review the work towards that goal. In Chapter 7 a discussion of Kahn´s Saint Andrew´s Priory, with its formally similar juxtapositional plan and instructively different „architecture of connection", has also intimated further facets of this particular Kahnian paradigm of order.

Excursus: on Movement and Diagonal Planning

Common to the projects discussed above - and to so much of Kahn´s later work - is a combining of diagonal movement and orthogonal ordering principles. By rotating the square pavillions of Erdman Hall, Kahn had not only elegantly arrived at a solution which „circumstantially" overcame the problem of linkage, but, as David Brownlee has observed, „... *once the entire system of planning had been realigned along the diagonals, the ad-hocism of the design vanished, and a majestic sense of classical order settled over the composition. Its commanding new axis was celebrated by the great stairways of the central hall. Kahn had used the diagonal armature to reaffirm the authority of Beaux-Arts plan-making, purging it in the process of some of its real and theoretical dead ends."* [27]

While the use of the diagonal in Kahn´s later plans is almost without question a direct carry-over from the the non-orthogonal, „structuralist" experiments of the 1950s (the first Trenton Community Center scheme, the Philadelphia City Tower project, the first Bryn Mawr schemes), the combining of order-giving classical or Beaux-Arts axiality with diagonal and non-axial movement in his later works is also strongly reminiscent of some of the great works of Frank Lloyd Wright´s Prairie Phase. With both Wright and Kahn, a center-defining square is first established and then broken open at its corners and diagonal movement - either imaginary or real - is employed as an active principle to play against the stasis of the axis and symmetry. (While Wright had made this opening explicitly programmatic with his „destruction of the box", Kahn tended to half-ironically pass it off as the pragmatic avoidance of the difficult architectural problem presented by the corner.) With both architects, axes tend to become displaced or imbedded in the plan; in those many cases where axial symmetry has been established, both entry and movement are typically blocked or discouraged along the axes, shifting instead to the corners and peripheries. (We have observed this above with the Salk Institute.) Both Wright´s Unity Temple (1904) and Kahn´s Trenton Bath House (1955) are textbook illustrations of this principle at work.[28] **(Figs. 9.23, 9.24)**

The principle of opposing diagonal and orthogonal orders, employed at the scale of a single building at Bryn Mawr, could with Kahn be shrunken to the scale of a House (the Goldenberg House, the Fisher House) or magnified to the scale of a group of buildings (the Dominican Motherhouse, the Indian Institute of Management, the Fort Wayne Fine Arts Center) or even of an entire urban ensemble (Sher-e-Bangla-Nagar in Dhaka, the Baltimore Inner Harbor Project, the Abbas-Abad District near Teheran).

The Indian Institute of Management

In terms of the interrelationship between geometric order, perception and movement, the Indian Institute of Mangement (1962-74) is most likely Kahn´s **tour de force**. In that ensemble, orthogonal and diagonal geometries combine with the principles of serial repetition and subtle variation to establish something akin to a great spatial fugue. Reading the plan/

partita we can see that the relationship between geometry and movement is inverted in the complementary parts of the ensemble´s composition. The orthogonally-ordered main court and its bordering library, seminar rooms and administration tract are respectively „charged" by the diagonal movement generated by the main entry sequence, library portico and gallery porches. (Fig. 9.25) Inversely, orthogonal paths superimpose upon and form the main linkage of the diagonally-ordered dormitory blocks. (Fig. 9.26) Kahn´s profoundly static volumes are used as foils to the complementary directions of movement in order to simultaneously establish and challenge both stasis and centrality. The spatial variety generated by the students´movement between the solids of the serial blocks and the interstital voids may only be described as „kaleidoscope-like." Not only in its use of diagonal movement, but in the way it intertwines its programmed Use-space and nonprogrammed „Appearence-space", in the way in which it meters its distances and establishes a simultaneously centered and open matrix of choice, in the way in which it engages light, shadow, wind and rain, is the Indian Institute of Management one of Kahn´s richest examples of what an „architecture connection" might be.[29] *„As one walks around the complex silently... one gets the vibrations of conversations, dialogues, meetings, activities. The spaces that are created for these activities link the the entire complex."* [30]

<div style="display:flex">
<div style="width:25%">Later Works</div>
<div style="width:75%">

While symmetry and an enveloping sense of classical repose reappeared in many of Kahn´s later works - among them the Phillips Exeter Library (1965-72), the Kimbell Art Museum 1966-72), the Yale Center for British Art (1969-77), the Hurva Synagogue (1968-74) and the Graduate Theological Union Library (1972-74) - his diagonal excursions of the late 1950s and the early and mid-1960s provided him with means for „opening" their otherwise closed classical forms. In this respect, the juxtapositional works of the „middle" period may be studied not only for their own sake, but for their transformational potential in Kahn´s later works as well. The Yale Center for British Art is a subtle case of this transformation. An apparently neutral and directionless structural frame - that most generic of modernist tropes - is delicately charged by the use of diagonals in plan. (Fig. 9.27) As at the Indian Institute of Management, the entry is over the corner, immediately challenging the square-columned grid and the symmetrical **parti** which it has established. The open-cornered partitioning of the gallery spaces overlays the orthogonal frame with long „virtual" diagonals: the longest of these are not in the form of movement but of sight-lines: over the atrium spaces, out of windows, bringing views of adjacent neo-gothic buildings deep into the galleries. The repose established by the concerted phenomena of the neutral frame, the symmetrical plan, the silky-matte materials and silvery natural light is thus delicately, yet palpably charged with vectors of movement and vista. Details are used to subtly underscore these diagonal vectors: in the two courts wooden panelling reveals the grid´s columns on the side walls while concealing them on the corners: which are thus perceived as „open" and inflecting diagonally outward. The mitered corners of the deep, champhered skylights repeat this theme on the overehead plane. (Figs. 9.28, 9.29) The final result posesses a lightness of touch rare in Kahn´s **ouevre**. (Indeed: so light that the effect of these diagonals stubbornly denies portrayal in plan and photos.)

If the creation of an „open" work, the activation of agency in the user is the goal, then Kahn´s combination of repetition and symmetry with opening, non-directional diagonals in a single work finds provocative parallels in contemporaneous minimal art: *„We know of two ways to unfocus attention: symmetry is one of them; the other is the over-all where each part is a sample of what you find elsewhere. In either case, there is the possibility of looking anywhere, not just where someone arranged you should. You are then free to deal with your freedom just as the artist dealt with his, not in the same way, but nevertheless, originally."*[31]

„An Architecture of Connection": The Body Moving in Space
While the emphasis of the descriptions in this chapter have been on those aspects of configuration and movement which consider the spatiality of social behavior and regard built environments as „people configurations", it is important to note that buildings were strongly, but not **only** social configurations for Kahn. Intertwined with the social logic of the plan are numerous other phenomena - programmatic, experiential, symbolic, atmospheric, poetic, and formal - which are equally integral to his „architecture of connection". With Kahn

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there remains a sense that the final purpose of architecture is neither social reform nor the achievment of materialist goals, is rather, spirtual in nature: the enrichment of the world by reestabishing access to its „origins". The moving and feeling body being a means of access to this preverbal world of understanding.

While not wishing to shift the emphasis of this chapter away from the social/topological aspects of space, before concluding this theme, it is necessary to at least touch upon two additional aspects of movement in Kahn´s architecture, for they are inseperable from his ideals of agency and openness.

Propensity
and Movement:
Exeter Library

There are several instructive ways of looking at the Phillips Exeter Library (1965-71): a work which is most often studied in terms of its construction or for its typological manifestation of „Form". A third way - a way which is indeed integral to the understanding of the first two - is to consider the building in terms of the unfolding generated by a visitor´s movement. The dense and apparently aloof cube, located on the edge of the school campus on a lawn criss-crossed by a network of footpaths, initially does little to acknowledge the approaching visitor, neither in offering a hint as to its exact function, nor even as to where it might be entered. **(Figs. 9.30, 9.31)** An „ambulatory" arcade brings the visitor - at first perhaps somewhat irrita-ted by this aloofness - into the building´s realm, directing him or her to its North side, where the glazing has been tenatively pushed out from the back layer of the arcade to the periphery in order to make the slightest possible gesture of entry. Leaving jacket and street mentality behind on the rather dim and compressed ground floor, the visitor ascends a sensuous and ceremonious „baroque" stair to dicover the secret of the enigmatic cube: a great six story central space which announces the building as a treasury of books. In a manner related to Labrouste´s Bibliotheque Ste. Genevève (1838-50) or Asplund´s Stockholm City Library (1924-27), Kahn´s library stages a dramatic passage from a compact ground-floor vestibule to an expansive first floor communal space. The unmistakable spatial gesture is that of leaving the marketplace of the everyday behind (the library´s first „spacing") for an exhaulted realm of knowledge: a passage symbolically enacted by the visitor as one from from darkness into light. For one who has arrived in the library´s great unprogrammed „space of appearence", an „invitation of the books" (Kahn) is emphatically issued from the rows of shelves which announce themselves from behind great circular openings. Following this „invitation" to one of the upper levels (a second „spacing"), the vistor is engaged in the process of searching for and finding a book in the compressed, artificially-lit stacks and then being drawn with that book to a naturally-lit periphery where a choice of podiums, tables, carrels and armchairs await. (A final „spacing.") The dark-to-light passage is thus repeated at a smaller scale. By setting up the use and experience of the library around this simple, yet profound propensity, an active, poetic link between reader and book is made possible in a way which no purely functionalist or bubble-diagram method would have generated.[32] We are left with a deep sense that action begins to transcend mere „function" and to approach something like ritual. A ritual which has been evoked, but not fixed: for as Kahn recognized, *„books and the reader do not relate in a static way."*[33]

The Kinesthetic
and the Conceptual

As movement and symbolic content are repeatedly intertwined in Kahn´s later works (see again, for example Chapter Five´s description of the Dominican Motherhouse in regard to approach, siting and „meaning"), so may the kinesthetic and the conceptual be inseperably bound. The Memorial for Franklin D. Roosevelt (1973-74, **Fig. 9.32**) was planned around the changing perceptions of its visitors moving up and down a choice of ramps and stairs, with views of city and horizon being repectively hidden or given free by its architecture and landscape architecture. Its dense choreography creates „distance with little dimension." leaving the urban world behind. (Harriet Pattison, Kahn´s collaborator on that project: *„It´s all very calculated... It´s not about structure, it´s about experience."*[34]) The Kimbell Art Museum´s entry approach with shifting and crunching gravel under foot, cool shading trees overhead; Erdman Hall´s central stairs, in which the building´s spatial structure and light become almost palpable; the „Piranesiesque" light-and-shadow/stair-and-ramp realm of the National Aseem-bly at Dhaka... repeatedly the user experiences his or her greatest sense of bodily self and of the building´s ordering algorithim in this „architecture of connection".

„An Architecture of Connection": Experience, Personal Agency and the Search for Commonality

Like few architects of his time or of the present, Kahn directed his energies toward recognizing and making manifest the architectural and social potentials of those aspects of spatiality which the modern had tended to reduce to mere „circulation". (And which contemporary capitalist culture tends to instrumentalize as a mere commodity.) By redirecting our attention to the oft-neglected „in-betweens" of architectural connection and movement, and to the spatial nature of human behavior, Kahn attempted - among other things - to provide a means of conceptualizing a **participatory** architecture of „human agreement". Choice, „remote" contact, multivalence, resistance of subjugation to a specific program: all these terms may be used to describe Kahn´s „architecture of connection". These aspects combined with other phenomena which tended to impart in the user a heightend sense of bodily awareness while revealing the formal structure of the work: in short, to intertwine concept and percept.

References to these multiple aspects of spatiality are frequent in Kahn´s texts, culminating in what was perhaps the most succinct expression of his mature thought: the 1971 acceptance speech for the AIA Gold Medal, entitled **„The Room, the Street, and Human Agreement".** In that speech, beginning at the scale of a stair and working up to that of a city street, Kahn emphasized the **associative** quality of connective space. For Kahn, the room, the court, the street, the city: all these architectural spaces are at the same time „institutions", and thus based on the establishment of „human agreement". For a generation of architects raised on rationalist bubble diagrams and the quasi-scientific analogy of „circulation", his words must have seemed exceedingly romantic... or like a breath of fresh air: *„...The society of rooms is knit together with the elements of connection which have their own characteristics. The stair is the same for the child, the adult and the old. It is thought of as precise in its measures, particularly for the young boy who aspires to do the floors in no time flat, both up and down. It is good also to consider the stair landing as a place to sit near a window with possibly a shelf for a few books. The old man ascending with the young boy can stop here, showing his interest in a certain book, and avoid the explanations of infirmity."* .... *„The street is a room of agreement. The street is dedicated by each house owner to the city in exchange for common services. Dead-end streets in cities today still retain this room character. Through streets, since the advent of the automobile, have entirely lost their room quality. I believe that city planning can start with the realization of this loss by directing the drive to reinstate the street where people live, learn, shop and work as the room of commonality."* .... *„One realizes the deadliness of uninterested movement through our streets which erases all delicacy of character and blots out its sensitive nature given to it of human agreement. Human agreement is a sense of rapport, of commonness, of all bells ringing in unison - not needing to be understood by example but felt as an undeniable inner demand for a presence. It is an inspiration with the promise of the possible."*[35]

While his efforts were among the most remarkable of his time, Kahn was not alone in unearthing neglected and potential dimesions of movement-architecture. Beginning in the mid-1950s a number of architects and theoreticians - some of them in Kahn´s personal circle - were engaged in a revision of modernism´s paradigm of „circulation". About the same time that Kahn had coined his term „architecture of connection", the architect Aldo van Eyck began, in a related fashion, to speak of „thresholding" - changing the noun into a verb - and of architecture as a „**Gestalt gewordene Zwischen**". His famous orphanage in Amsterdam (1955-60) - a revelation for Kahn - was for him a portrayal of the „medicine of reciprocity" at work through its connective spaces.[36] Alison and Peter Smithson, at the first CIAM congress to be organized by Team X in 1956, had presented a challenge to the modernist idea of the functionally subdivided community in the form of the concept of „clusters" related according to movement between „scales of association".[37] Kevin Lynch attempted, first in his **Image of the City** (1960)[38], and later in his **View From the Road** (1966)[40] codify the means in which the city is perceived and mentally processed by its moving inhabitants, while in a contemporaneous effort, Jane Jacobs directed architects´ attention toward the disappearing social life of the urban street. (**The Death and Life of the Great American Cities** (1961).)

The preceding exploration of aspects of space and spatiality bound up with Kahn´s idea of „an architecture of connection", though by no means exhaustive, opens a seldom-taken view into Kahn´s architecture. In the following chapter we will extend this exploration to include futher aspects related to the situation of the human body within a structured spatial continuum.

Chapter 9: Footnotes

1. Bill Hillier: Space is the Machine, Cambridge University Press, Cambridge, 1996. See also: Bill Hillier and Julliene Hanson, The Social Logic of Space, Cambridge University Press, Cambridge, 1984.

2. It is important to observe that - similar to the term „space" - before the nineteenth century the theme of movement was handled quite sparely in architectural theory, and virtually never as a seperate „system". In the Rennaissance, Daniele Barbaro spoke of „room sequence", while Alberti spoke in terms of „partitio": partitioning or position in plan. Whereas, for example, in his **Précis des Lecons d´Architecture** of 1802 J.N.L. Durand used the - primarily configurational - terms „distribution", „communication" and „dégagements" to describe the arrangement of spaces in regard to human movement, 100 years later Julian Guadet, in his **Eléments et Théories d´Architecture** of 1902, devoted an entire chapter to „Les Circulations", treating movement as an independent system in architectural composition. For a succinct discussion of the rise of modern paradigms of movement and the metaphor of „circulation" in architecture, see Adrian Forty´s „Spatial Mechanics - Scientific Metaphors" in: Words and Buildings: A Vocabulary of Modern Architecture, Thames and Hudson, New York, 2000. pp. 86-101.

3. See: David van Zanten: „Architectural Composition at the Ecole des Beaux-Arts" in: The Architecture of the Ecole des Beaux-Arts, Arthur Drexler (ed.), Seckler & Warburg, London, 1977, pp.111-324.

4. To be sure, there **were** great exceptions to this rule: among them Le Corbusier is to be mentioned as perhaps the most provocative, having presented us with intriguingly „bipolar" models based on a simultaneously mechanistic **and** aesthetic/experiential view of movement: the „promenade architectural" of Maison La Roche, the double-helix served/servant stair of the Maison Baizeau, the people-moving-and-sorting ramp architecture of the Palace of the Soviets, the snaking viaduct/apartment megastructure of the Plan Orbus for Algiers, etc.... Here, both functional metaphor and aesthetic experience seem to have been driven to their respective extremes so that it is impossible to judge which of the two has been priviledged in the equation. (*„Circulation is a word which I have applied unceasingly in Moscow to explain myself, so often that it finished by making some representatives of the Supreme Soviet nervous. I maintained my point of view. A second outragous fundamental proposition: architecture is circulation! Think it over, it condemns academic methods and consecrates the principle of the „pilotis".* (Le Corbusier, Précisions, p.46) Otherwise, among the moderns the members of the „organicist" wing - Wright, Häring, Aalto, Scharoun - were most likely to see beyond an entirely rationalized approach to movement and connection. Especially in Scharoun´s works, we sense a flowing between use-spaces which has nothing to do with „circulation" and everything to do with a view of human life which is gregarious, intertwining and constantly unfolding in its various aspects.

5. Although I have not been able to establish the first date when Kahn used this term in a text, it had been installed as a part of his vocabulary by the late 1950s.

6. „Conceptional robustness" being used here to describe a certain form-function independence: the „robust" capacity of buildings to exist in time, regardless of their changing functions. Aldo Rossi´s description of Padua´s Palazzo della Ragione in his **L´architettura della citta** of 1963 is a famous case-in-point, another being the well-known Berliner Wohnung, with its neutral rooms and multiple points of access. (Walter Nägeli: unpublished lecture, Universität Karlsruhe, **„Sieben Begriffe"**, 2000.)

7. For a well-known critique of this way of seeing „circulation" on an urban scale, see: Christopher Alexander, „A City is Not a Tree", first published in Architectural Forum, April 1965 (part 1) and May 1965 (part 2), in: Joan Ockman, Architecture Culture 1943-1968, Columbia/ Rizzoli, New York, 1993, pp. 379-88.

8. The theoretician Bill Hillier has developed in great detail the concept of „spatial syntax" to describe and qualify „plan depth". Although it would certainly be instructive, I have refrained from a detailed application of his theory to Kahn´s work here. Hillier´s theory, however useful and inspiring it may be, does tend to be behaviorist/functionalist to the degree that it pushs toward a one-to-one fit between how spatial configurations are engineered and how people actually behave in them. (Although he does admit that buildings are in the end only „probability generators".) Kahn more strongly acknowledged the fundamentally **artificial** nature of architecture: that is, its role in making ideas available: in Kahn´s case, we are left with the feeling that the **idea** or **possibility** of social contact is of equal staus to how the spaces are finally used. (See: Hillier, footnote 1.)

9. Louis I. Kahn, in, Light is the Theme: Louis I. Kahn and the Kimbell Art Museum, Neil E. Johnson (ed.), Kimbell Art Foundation, Fort Worth, 1975, p. 28.

10. Louis I. Kahn, Lecture:„Form and Design", 1961, in: Alessandra Latour, p. 114.

11. *„Action requires a space of appearence"... „It is the space of appearence in the widest sense of the word, namely, the space where I appear to others as they appear to me, where men exist not merely like other living or inanimate things but make their appearance explicitly."* See: Hannah Arendt, The Human Condition, University of Chicago Press, Chicago, 1958, p.199.

12. Louis I. Kahn, in: Wurman, op. cit., p.133.

13. Louis I. Kahn: Telegram to K. Ahmad, 22. January, 1961, Box LIK 117 Kahn Collection.

14. Christian Devillers: „Louis Kahn´s Indian Institute of Management, 1962-1974", in: Casabella 54, September 1990, pp. 36-63.

15. Schopenhauer, in: preface to On Will and Nature.

16. Louis I. Kahn, „On Form and Design", (1960) in Alessandra Latour (Ed.), Louis I. Kahn, Writings, Lectures, Interviews, New York 1991, p.108.

17. Sarah Williams Goldhagen, Louis Kahn´s Situated Modernism, Yale University Press, New Haven, 2001, p. 4.

18. The addition to the Salk Institue by Anshen and Allen in 1995, having „completed" the eastern end of the central axis with its entry pavillions, thus creating a neo-baroque **parti**, has severely altered the spatial intention of Kahn´s purposefully open-ended fragment. (For an apt critique of the addition, see: Robert Venturi and Denise Scott Brown, „Genius Betrayed", in: Architecture, July 1993, p. 43.) A comparision to the „completion" of Jefferson´s University of Virginia campus by McKim, Mead and White´s library is at hand.

19. An argument for the verity of the account by Kahn´s assistant Tim Vreeland in which he told of tracing a portion of Hadrian´s Villa as a generator for the Salk´s Meeting Place. See: Daniel S. Friedman in: Brownlee and De Long, op. cit., p.443.

20. Louis I. Kahn, quoted in Brownlee and De Long,op. cit., p. 333.

21. The transformation of the bi-polar „Form" of the Dominican Motherhouse and Erdman Hall has interesting parallels to Kahn´s description of reinstatement of the First Unitarian Church´s „Form" after a client induced, bi-polar intermezzo. (See: Chapter 5.)

22. This ambivilance results in part from the way the spatial structure tends to give equal emphasis to the three centers and the two linking in-betweens, to orthogonal **and** diagonal geometries. The long and difficult genesis of Erdman Hall - a process somewhere between a cooperative effort and an internal competition between Kahn and Anne Tyng (as unwillingly

moderated by David Polk) - tellingly illustrates the configurational crossroads - between an ebbing paradigm of structuralist „growth" and a dawning one of „compostion" - at which Kahn stood at this point of his development. See Michael J. Lewis´ account in Brownlee and DeLong, pp. 352-57 or Anne Tyng in „Louis Kahn to Anne Tyng: The Rome Letters 1953-1954, pp. 203-206.

23. Louis I. Kahn, in: Wurman, op. cit., p.142.

24. Robin Evans, „Figures, Doors and Passages", in: Translations from Drawings to Buildings and Other Essays, AA Publications,1997, p. 64-65, p. 88-90. (In our case, the reader may wish to qualify Evans´ quote when used in regard to a monastery by omitting the word „carnality".)

25. Or, at any rate, we may safely maintain that a monastery in which one of the sisters might be tempted to take a shortcut through the chapel while **en route** to a midnight snack in the kitchen has a fundamentally more domestic character than one in which this option did not exist.

26. Louis I. Kahn, „Form and Design"(1960) in, Latour, op. cit., p. 116.

27. David B. Brownlee, „The Houses of the Inspirations", in: Brownlee and DeLong: Louis I. Kahn: In the Realm of Architecture, Rizzoli, New York, 1991, p. 102. For an in-depth discussion of Kahn´s diagonal planning, see: David B. Brownlee: „Turning a Corner With Louis I. Kahn", in: Das Bauwerk und die Stadt: Aufsätze für Eduard Sekler, W. Boehm (ed.), Boelau Verlag, Vienna, Cologne, Weimar, 1994, pp. 48-58.

28. Robert McCarter has written several astute and instructive spatial analyses of Wright´s work which intertwine the themes of geometry, perception and movement. See, for example: „The Integrated Ideal: Ordering Principles in the Architecture of Frank Lloyd Wright", in: McCarter (Ed.), Frank Lloyd Wright: A Primer in Architectural Principles, Princeton Architectural Press, New York, 1991, pp. 239-287. Regarding the possibility of a Wright-Kahn connection, Kahn himself remained markedly silent on the subject, preferring to emphasize Le Corbusier as a spiritual mentor. While Wright and Kahn shared common architectural roots and Wright´s latent influence was indeed quite likely on several levels, the role of this influence tends to be somewhat overtaxed, though, by McCarter in his 2005 monograph on Kahn, with its 121(!) references to Wright.

29. For a more complete description, I refer the reader to the formidable formal and spatial analysis of the Indian Institute of Management by Christian Devillers: „L´Indian Institute of Management ad Ahmedabad 1962-1974 di Louis I. Kahn" in: Casabella 571, September 1991, Milan, pp. 36-63.

30. Balkrishna Doshi „Louis Kahn in India", in: Louis I. Kahn: Silence and Light, Architecture and Urbanism 3, vol. 2, no. 1, Tokyo, 1973, p. 310.

31. John Cage, „On Robert Rauschenberg", in Silence, Wesleyan University Press, Hanover, NH, 1961, p.100.

32. The notion of **propensity** in architectural space has its parallel in the Chinese concept of **shi**. Expressed by that term is the tendency of emptiness to „draw" forth as a chimney „draws" smoke or a target „draws" an arrow.... There exists a sense of evocation or tension, as in Kahn´s **„Form evokes function"** See: Stanislaus Fung, „Mutuality and the Cultures of Landscape Architecture" in: Recovering Landscape, New York 1999, p.144.

33. Louis I. Kahn, „Space, Form, Use" (1957) in: Alessandra Latour (ed.), Louis I. Kahn, Writings, Lectures, Interviews, Rizzoli, New York, 1991, p. 69

34. Interview: author with Harriet Pattison, 21 October 2004.

35. Louis Kahn: „The Room, the Street, and Human Agreement": From „Draft - AIA National Gold Medal - 1971", folder, Box LIK 52, Kahn Collection.

36. Vincent Ligtelijn, Aldo van Eyck: Werke, Birkhäuser, Basel, Boston, Berlin, 1999, pp. 88-109.

37. Alison and Peter Smithson. The Charged Void

38. Kevin Lynch. At Lynch´s request Kahn had in 1955 reviewed his Master´s Thesis which would later become The Image of the City. See: Sarah W. Goldhagen, Louis Kahn´s Situated Modernism, Yale University Press, New Haven, 2001, p.120.

Chapter 10. Problems of Space II:
Between Inside and Outside, Between Object and Embeddedness:
„Dichotomous Things" or the Theme of Reciprocity

„We must build something that satisfies this, and (something that) satisfies the other. We must express
dichotomous things. we must express them because dichotomous things inspire."
Louis I. Kahn, May 1965, letter to landscape architect, Karl Linn, Box LIK 58, Kahn Collection

„The plan does not begin nor end with the space he (the architect) has enveloped, but from the adjoining
delicate ground sculpture it stretches beyond to the rolling contours and vegetation of the surrounding
land and continues farther out to the distant hills."
Louis Kahn, „Monumentality", 1949

„Thirty spokes join together in the hub.
It is because of what is not there that the cart is useful.
Clay is formed into a vessel.
It is because of what is not there that the vessel is useful.
Cut doors and windows to make a room.
It is because of its emptiness that the room is useful.
Therefore, what is present is useful for profit.
But it is in absense that there is usefulness."
Lao Tse, Tao Te Ching, verse 11, Trans. Charles Miller, Toyo Gauken University Press, 2004,

Architectural Space Within Natural Space

The previous chapter centered its inquiry on selected „topological" aspects of space: on the architectural potential immanent in the juxtaposition and meted distancing of discrete spaces, and especially, in this spacing´s role in architecture´s function as a „people configuration". Beginning with this chapter our focus shifts from architecture´s engagement with the social world to its relationship with the natural world: to those aspects of enclosure and configuration which concern the delimiting and inhabiting of a built space within a greater natural space. Starting in this chapter with the fundamental (physical/morphogical) problem of defining relationships between that which is „inside" and that which is „outside", we will move in the following chapter to those phenomena which begin to differentiate between „space" and „place". Although seldom dicussed in these terms, it is a premise of this study that Kahn´s mature work represents a continuous and concentrated attempt to reconceptualize the relationship between interior and exterior, between architectural and natural space as it had been defined by modernism. The results of this **recherche patiente** amount to a significant enrichment of 20th century´s human culture of space: one which has yet to be fully acknowledged, let alone comprehensively described. Building on the lessons of both his classicist training and his modernist experience, by the mid-1950s Kahn began to reconsider interior and exterior space in terms of their interrelationship and to develop means for engaging both realms in a dialog which would eventually transcend purely classicist or modernist modes. By the early 1960s he had expanded his field of inquiry, moving beyond general inside-outside schemata to engage the specific sites and the wider contexts in which he planned. The explorations of the following chapters are attempts to describe the development of these themes in Kahn´s architecture.

Reciprocity versus „Either-Or", Continuity

The following chapter will unfold around a single term which is to be used to describe a potential relationship between architectural and natural space: that of **„reciprocity"**. A dictionary definition of that term calls for the **„mutual dependence, action or influence"** between two things.[1] The idea of reciprocity, then, transcends a purely architectural „strategy" or technique, ultimately suggesting a non-dualist **Weltanschauung** or paradigm for being in the world. If, to begin with, we leave ontological/metaphysical consequences aside and apply this notion to the purely physical „how" of architectural space, we will see that in contrast to orthodox modernist hierarchies, which have tended to either privilege architectural space over that of its surroundings or have attempted to dissolve the differences between inside and outside into a single, undifferentiated continuum, the concept of reciprocity presupposes the coexistence of two distinct, yet inseperable realms.[2] It is a way, then, of seeing architectural space which regards both interior and exterior space as equally necessary components of a linked and highly complex system of relationships. The architectural setting-in-work of this phenomenon means the simultaneous articulation of each of these components and their coupling in a resolved and comprehensible form. Paradoxically, then, each component,

while retaining its capacity for completeness, inflects beyond itself to its complement: is thus simultaneously complete and incomplete. While this kind of interrelationship between architectural and natural space has experienced innumerous manifestations in history - belongs, indeed, to so much of architecture´s vernacular and classical traditions - it has tended to disappear to the extent that binary or exclusivist thinking - whether in some form of Platonic atomism or Newtonian-Cartesian dualism - becomes the dominant mode of thinking in (architectural) culture.

With Kahn, complementary thinking returns with an unsettling richness within the binary „either-or" context of mid-twentieth century mainstream architecture.The theme of reciprocity between built space and unbuilt space, between interior and exterior being consistent with Kahn´s general tendency to articulate and differentiate between things while at the same time establishing their interdependence: be it at the scale of a joint between bearing and non-bearing building materials, between „servant" and „served" spaces, or at the scale of a building´s complementary uses, such as in the articulated rings of spaces in the Exeter Library, in the Domincan Motherhouse´s mutually inflected squares or in the „dichotomous space" of the Salk Institutes´ laboratories: *„Kahn realized (at Salk) that a research laboratory was „really two buildings" a „fireplace and a study" kind of building (the offices) and a „microbe and test tube" kind of building" (the laboratories). He decided that these differences should be exaggerated rather than elided... later he realized that from this parti a general principle could be derived."*[3]

„Coincidentia Oppositorum"

This „general principle" of mutually dependent complements was not merely a „method" to be applied to the making of buildings, but best describes Kahn´s own non-dualist metaphysics of a universe composed of „twin phenomena", be they called „Silence and Light", „Form and Design", „the Measurable and the Unmeasurable", or „matter as spent light", etc.. A universe not of mutually exclusive, but interdependent and cogenerative things. In this, Kahn´s thought - philosophically ambitious without being particularly philosophically versed - finds perhaps its closest parallels in the non-dualism of Taoism, or in that strain of Western thought exemplified by Aristotle´s Holism or by the fifteenth-century philosopher/bishop Nikolaus von Kues´ concept of the **„coincidentia oppositorum"**: the coincidence of opposites. According to Cusanus, truth is neither to be found in the choice between two opposites nor in their resolution in a third term (as later proposed in Hegel´s historical dialectical process), but in the recognition of their very coincidence. Indeed, as Kahn might have been pleased to read, Cusanus recognized that it is only through the coincidence of contradictions that the meaning of „unity" may be understood at all.[4]

Four Steps Toward Reciprocity

In the following chapter we will explore selected physical consequences of this **coincidentia oppositorum** in Kahn´s mature work: more particularly, how it applies to the relationship between built and unbuilt, between architecture and natural space. Beginning with the description of basic morphologigal aspects of space as represented by the complements of figure and ground, mass and void, we will then refine the exploration to question the role of the wall or border-space in establishing reciprocity. In a next step, the „dyad" figure ground-scheme will be expanded to consider the role of a „third space" in relativizing interior and exterior. Finally, we will move on to question how this theme may be set into work on other conceptual levels.

Seeing Space as Mass and Void:
Seeking Reciprocity through Figure/Ground Ambivalence

Giambattista Nolli´s famous plan of Rome from 1748 **(Fig. 10.1)** reminds us that the figure-ground scheme has served as tool for thinking architectural and urban space long before its codification in the twentieth century by Max Wertheimer, Wolfgang Metzger, Rudolf Arnheim **et al.** as part of Gestalt psychology´s theory of perception.[5] **(Fig. 10.2)** Employed as a planning tool to varying degrees in architecture´s history, the figure-ground scheme has been an indispensable part of more recent academic and professional culture at the very latest since its inclusion in the pedagogy of the University of Austin, Texas in the 1960s and its subsequent world-wide dispersal by those first analysts and codifiers of the modern such as Colin

Rowe, Robert Slutzky, John Hejduk, Werner Seligmann and Bernhard Hoesli.[6] (The canonical twentieth century text on the figure-ground scheme being doubtless Rowe and Koetter´s **Collage City** of 1978.[7]) **(Fig. 10.3)** In spite of the timeliness of its reintroduction into the architectural repertoire, in spite its usefulness as a conceptual tool, the scheme´s capacity to make comprehensive and accurate statements regarding space has often been overestimated by planners and architects: if only due to the fact that that which so clearly appears as „figure" or as „ground" to the stationary reader of a two-dimensional plan is seldom as legible for a person moving through the complexities of the actual space represented by that plan. In spite of its limitations, though, the figure-ground scheme has provided an indispensable means for „seeing" and thinking architectural space on paper in terms of mass and void, positive and negative, convex and concave, foreground and background, object and texture, etc..

As it remains one the architect´s most fundamental and conventional means for discussing and shaping architectural and natural space, and as its black-white nature is so quintessentially „contrary", it is appropriate to begin this part of our discussion on reciprocity here. For exploring this theme in Kahn´s architecture, the planning method of the nineteenth century Ecole des Beaux-Arts - Kahn´s first major architectural touchstone as a student and young professional - provides us with a natural starting point.

The Ecole des Beaux-Arts as Touchstone
While the compositional system of the 19th century Ecole des Beaux-Arts was much critcised by its successors as a tired repetition of worn-out formulae, out of touch with the needs of a modern world, the widespread success of that system was at least in part due to its quality as a teachable and applicable means for resolving **spatial** relationships while dealing with a wide spectrum of programs in a wide range of situations. As Alan Colquhoun has noted, while justified in their critique of its academic formalism, the Ecole´s modern successors were for the most part unable to see that *„...inherent in that method was a way of regarding space as a total field which is ordered and totally humanized... which symbolized a certain relation of man to the world."*[8] In the Beaux-Arts´ method, this „certain relation" was not only made manifest in the architect´s first act of establishing a comprehensible „figurative" layout of a building´s plan diagram or **parti** [9]: it could be additionally set into work at various scales by drawing upon what had become an institutionalized repertoire of planning plays and „readymade" elements for ordering mass and space: the use of **poché**, of major and minor axes, of greater or lesser **salles,** of collonades, galleries, courts... an architectural repertoire which - regardless of its inevitable degeneration into a series of tired tropes - provided the initiated architect with tried means for establishing hierarchies, negotiating spatial boundries and differences in scale, for balancing centers and peripheries, programmed and unprogrammed areas, figure and ground... in short: for situating its inhabitants in an ordered and comprehensible spatial continuum. As Colqhoun has described, in the best cases the all-important space-modulating floor plan/site plan was developed as a sort of **Gestalt** pattern, in which the black which intimated three-dimensional built mass and the white which stood for unbuilt or captured voids were to be seen and manipulated as two inseperable and co-generative parts of a single whole. **(Figs. 10.4, 10.5)** In this respect, at least, the method of the Ecole may be seen as an attempt to foster something approaching a „holistic" view of architectural and natural space. Kahn, through his education under Paul Phillipe Cret at the University of Pennsylvania was a late heir to this simultaneously scripted and comprehensive method, which even as he studied was being succeeded by the modernist paradigm of individual **objects-typs** set in a boundless and abstract space.[10]

The Development of the Figure-Ground Scheme in Kahn´s Work
While he was at home in the Beaux-Arts system, Kahn´s own work of the 1930s and 40s may be seen as an attempt to to jettison what he must have come to regard as the conservative influence of his academic training and to develop buildings in more a „progressive" modernist interpretation of form - and space. The early houses and housing projects (ca. 1939-50), the Philadelphia Psychiatric Hospital (1949-53), the Yale University Art Gallery (1950-53): in all these works „site" equals little more than „setting" for relatively autonomous architectural objects. Beginning in the mid-1950s, though, concurrent with his slowly unfol-

ding thoughts on the nature of institutions, monumentality and hierarchic space, he began to reconsider the potential of the Beaux-Arts concept of the site as a comprehensively ordered field consisting of equally-weighted exterior and interior spaces. In following, we will trace his explorations of the 1950s and 60s with a group of related projects.

DeVore and
Adler Houses

With the De Vore and Adler House projects - both designed in 1954-55 - Kahn worked for the first time in his mature practice with the idea of an elementary space-cell seeking appropriate „spacings" to its neighbors. (Figs. 10.6, 10.7) In these two projects structural-space and use-space begin to coincide in an early denial of the modernist free plan and in premonition of Kahn´s later, more complex „society of rooms" compositions. As briefly noted in Chapter 5, Kahn had set a programmatic goal for himself with these houses: to begin to regard the **configuration** of spaces as important as their individual shaping: *„In searching for the nature of the spaces of a house, might they not be separated theoretically before they are to be brought together. A predetermined total form might inhibit what the individual spaces want to be."* [11] While this statement may evoke the functionalist credo of developing a building „from the inside out", with at most only secondary regard for how exterior space is to be shaped by the resulting **object-typ**, the drawings for the De Vore - and especially for the Adler House - show that this at first reading purely functionally-motivated thought was to simultaneously provide a means of ordering a larger spatial field.

With the Adler House a segment of a chessboard grid provides the frame of reference for the spaces to be ordered. (Fig. 10.8) This segment - its generic form resembling a nine-square plan - is allowed to slip and is subsequently occupied by pavilions roughly sized to house the program´s needs - or by the now equally figural „captured air" which forms the intervals between the program´s parts and which begins to mediate between built and natural space.[12] As suggested by the floor plan´s graphics - which are essential to understanding Kahn´s intent - „figural" space is not only defined by the enclosures of the pavilions themselves, but also **implied** by a second layer of a more ephemeral „texture" which represents both human and natural life occupying the abstract structure. In spite of Kahn´s claim about „what the spaces want to be", there is a purposeful looseness of fit between structural space and texture which allows interior and exterior to intermingle: „nature" occupies the grid in the form of three square grass carpets, while two paved areas project the life of the house into natural space. The entire composition spirals loosely around the paved square of the entry foyer: the former center of the nine-square grid and the only field in which an „exterior" texture has infiltrated an interior space. The „empty" pavilion of the carport (the DeVore House sports two such pavilions) makes this loose fit explicit while at the same time announcing the scheme´s structural principle in **Reinkultur**: in early anticipation of the Kimbell Art Museum´s voided porches or the Salk Institute´s loggias. Kahn´s intent did not go unrecognized by his clients, as Mrs. Adler remarked: *„I share so many of your ideas, Lou - the texture of a surface-live-space."* [13]

The incompletely filled-in grid, the „captured air" of the voids, the layered and interlocking textures, the plan´s irregular contours: all suggest a house conceived of as a segment of a mass-and-void mosaic, a fragment of a larger ordered spatial field. While the spiralling house inflects outward, we have been given no further information as to how the rest of the site might be filled: merely a retaining wall and a set of steps hint at its presence. The plan fragment has been left to float on the white of the page in a gesture of reciprocity which seems to promise more than it has shown. While suggesting a new take on the modernist inside-outside problem as it had been established by the free plan, the Adler House project still remains mute as to how this new take might be worked out on a greater scale.

The Fleisher House

The mass-and-void play of the DeVore and Adler Houses would be taken up again by Kahn in his 1959 project for the Fleisher House. (Fig. 10.9) Here, the grid is made strongly manifest and the pavilons of the earlier houses have become discrete cells in a nearly „Palladian" plan, while the grass and paved „carpets" have been transformed into something which we might call „gardens wrapped in ruins". Space has become much denser now, the „captured air" of the gardens almost palpable. Although structure-space and use correspond more closely than in the DeVore and Adler Houses, again a certain „loose fit" between structure

and texture has been sought as gardens and paved areas are allowed to invade the Palladian grid. Instructively, the Fleisher House does not seem to beg the question of a specific site to the same degree as the Adler House. The formal geometry and regular periphery of the house making a more general and „robust" statement of the mass-void scheme, imaginable in a variety of situations, whether urban or suburban.

The Trenton Jewish
Community Center

It was a project contemporary to both the Adler and Fleisher Houses which would provide Kahn with the site and program needed to explore the potentials of the figure-ground / mass-void scheme on a scale worthy of a Beaux-Arts public work: the Trenton Jewish Community Center of 1954-59. In early versions of that project, Kahn´s (in retrospect still rather rudimentary) insight into the servant - served hierarchy of spaces, paired with the geometric-constructive paradigm inspired by his associate Anne Tyng and his friend Buckminster Fuller, generated a structuralist mat consisting of alternating octagons and squares which translated in three dimensions to a complex, „molecular" tetrahedron-and-cube structure. (Fig. 10.10) While the mat´s „woven fabric" might have ideally been stretched over the site in order to regulate and pattern its exterior spaces in a manner analogous to the interior (a weaving of architectural and natural space similar to Wright´s hexagonal-grid projects such as the 1939 Hanna House comes to mind), Kahn decided to end this potential figure-ground play at the ribbed edge of the building, effectively strengthening its object character and isolating it on its site. The resulting 1956 site plan is a curious collage of objects, attempting to balance the autonomous/antagonistic geometrical figures formed by its hexagonal architecture and its circular landscaping elements. (Fig.10.11)

The more conventional third version of the Trenton project from 1957 not only reinstalls Beaux-Arts axiality and its tartan grid, with its differention between servant and served, **espaces utilies** and **espaces circulations**; the extensive site has - albiet tenatively - now been treated as a comprehensive whole, with architecture, newly-planted groves of trees and open spaces beginning to create in concert a unified spatial field. (Fig.10.12) The site plan is tightly ordered to the North, with both trees and architecture (the natural grove and the day camp pavillions) allowed more freedom to the South. The site may begin to be read as a series of hierarchically ordered „insides", shaped by trees and architectural mass: a pattern which may potentially be extended to the adjacent sites. Although through these means Kahn succeeded for the first time in convincingly modulating a large and rather characterless suburban site, the spatial linkage of the scheme is comparatively weak at the scale of the transition from the exterior to the interior of the multipurpose building. (The reason for this weakness of linkage will be discussed below.) It is the little Bath House - with its fluctuating pattern of (implied) mass and void, of servant and served, covered and open spaces - which begins most perfectly to set the theme of figure-ground / mass-void reciprocity in work. (Fig.10.13) For more than one reason a breakthrough, Kahn later remarked that, *„If the world discovered me after I designed the Richards Medical Research Building, I discovered myself after designing that little concrete block bathhouse in Trenton."*[14]

Fort Wayne
Fine Arts Center

In his project for the Fort Wayne Fine Arts Center of 1961-73, Kahn continued to explore the potentials of figure-ground ambivalence: for the first time in an urban context. (Fig.10.14) Situated on the edge of the city´s grid backing up against a railroad embankment, the new Fine Arts Center was conceived of as a cultural „town in the town" with Philharmonic Hall, Theater of Performing Arts, Historical Museum, Art Gallery and a School of Art. Its ideal program was first broken down by Kahn into building blocks sized to match the existing scale of the city and then so composed as to attain a delicate ambiguity: the blocks alternately legible as individual objects in a field or as segments of a single continuous urban texture. Kahn´s earliest charcoal studies (Figs.10.15, 10.16) show that the challenge of attaining this flimmering recirocity between mass and void was from the start a prime motor. As the work progressed, the captured exterior voids gradually lost their initial „left over" character and attained something approaching parity with the solid volumes, which in turn had been successively eroded. In the final version, the individual parts of the program inflect towards each other in a gesture of synergy. Interior and exterior are not only equal and cogenerating in terms of size and figure-ground **Gestalt**, but through the use of keyhole-like „negative bay windows" and punched-out courts, both spaces have been interlocked like pieces of a jigsaw

puzzle. The treatment of the facades as Möbius-strip-like surfaces which „fold" into the concave mass of the built spaces strengthens this sense of „all-over", of positive-negative, figure-ground ambiguity. In order to complete the block-filling scheme, small groves of trees have - as at Trenton - again been treated as „architectural" mass. The interior-exterior ambivalence of the site plan is restated with different means at the smaller scale of the theater building (the only part of the complex to be realized): the auditorium, „the violin in its case" is intended to be experienced as a house-in-house with overtly „exterior" foyer and distribution spaces.

A comparison of the figure-ground schemes for the Fine Arts Center and the Dominican Motherhouse highlights a corollary source of ambivalence in Kahn´s late work: the general tension between the additive and the subtractive, between the **zusammengesetzt** and the **zusammengewachsen**. (Fig. 10.17) If the final project for the Dominican Motherhouse reads as an interrupted **fusion** of individual building elements, the Fine Arts Center tends to give the impression that it has been developed from the opposite direction, as if through **subtraction** from a great rectangular block. Morphologically, much of Kahn´s work straddles this border between the - classical/functionalist/additive - idea of linked pavilions and the - baroque/organicist/plastic - tendency toward „grown" organisms. (A phenomenon first mentioned by Maria Bottero in 1967 and which has been described in both Chapter 5´s analysis of the Dominican Motherhouse and Chapter 7´s discusssion of Saint Andrew´s Priory.[15])

Figure-Ground:
Further Ensembles

The Fort Wayne project was parallelled by other unrealized urban ensembles such as the Philadelphia College of Fine Arts (1964-66), the Broadway Church-Apartment Tower (1966-67), the Inner Harbor Development for Baltimore (1970-73) and the De Menil Foundation in Fort Worth (1973-74), in which Kahn expanded upon Fort Wayne´s vocabulary for defining „figural" urban space through the use of free-standing architectural objects. (Figs.10.18 - 10.21) The projects in Philadelphia and New York not only expand upon Fort Wayne´s scale, they additionally begin to explore the potential of mass-void play in section.[16] (Fig. 10.19) The project in Baltimore extends Fort Wayne´s vocabulary in that it uses a modernist structural frame - in itself an inherently additive system - to generate through an origami-like folding of its surfaces a plastic ensemble which once again begins to flimmer between the additive and the subtractive. (Fig. 10.20) The project for the De Menil Collection in Fort Worth is exemplary for the way in which it superimposes a series of masses over a suburban block in order to distinguish a small cultural district: simultaneously creating the desired institutional presense while preserving the neighborhood´s residential scale. (Fig. 10.21) In contrast to the then-unfolding postmodernist and „Collage City" strategies (or those of contemporary „new urbanists"), which often proposed the insertion of traditional „textural" and European models within the context of the modern American city, Kahn´s attempts at creating urban „forums of availability"- being at once loose-fitting and dense, expanding upon, yet never fully discarding the free-standing object as the primary building block and the grid as the organizing matrix - seem in retrospect uniquely appropriate answers to the American tradition of the object-filled grid.[17] A fact which, considering the paucity of attractive alternative urban and suburban planning models in the United States in recent decades, makes their status as unbuilt projects even more regrettable.

Parallel to these projects, the idea of space as a continuously structured field of mass and void reached its perhaps most original and complex realization in Kahn´s Indian Institute of Management in Ahmedabad (1962-74, Fig. 10.22). Describable neither in terms of Beaux-Arts nor structuralist precedents, the final plan may be seen as the result of a long process of working to generate a geometric field or „algorithim" which describes a structure in which the **parti** and individual functions may unfold. This „algorithim"not only lays down the order and sequence of use, hierarchy and means of movement, but in the same gesture generates an almost complete and interlocking parity between figure and ground, solid and void. While the radical geometry serves as a foil to the contingencies of use, its consciously „ornamental" quality is used as a means to encompass and interlock the Institute´s many scales, ranging from building detail to landscape space.The method which had begun so tenatively in the DeVore and Adler Houses has here reached its apotheosis within Kahn´s **oeuvre**. And here we are confronted with a great paradox in the reading of Kahn´s work: while many would cite the stark geometric purity and „ornamental" quality of Kahn´s plans as evidence of their „ob-

jecthood" or aloofness to context, it is precisely this formal „ornamental" stringency which is used as a device to intertwine architectural and natural space.[18]

<div style="display:flex">
<div style="width:25%">The Dominican Motherhouse</div>
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While the projects described above all unfold into figure-ground parity on relatively „neutral" sites, the Dominican Motherhouse „figure-grounds" itself into a specific and „charactered" situation. In Chapter Five we have seen how the figure-ground scheme was varied in order to underscore the project´s evolving „Form" or **parti** in relationship to the site and forest. In the first scheme, the dominant impression is of a „figural" interior court framed by a „ground" of building mass **(Fig. 10.23)**; this first impression is then given a second, more ambiguous reading by the growth of the forest over the court. **(Fig. 10.24)** By the arrival of the final scheme, we tend now to read the inverse of the first scheme: that open spaces define the ground of the figural built spaces. **(Fig. 10.25)** Reading the final plan in the context of its site, we have then seen that the forest, the irregular spaces of the clearing, the monastery´s blocks and the spaces between them have all been assigned equal and reciprocally-acting status in terms of figure and ground: that architecture and landscape are thus cojoined in a continuous field. **(Fig. 10.26)** While the figure-ground/mass-void scheme has provided an indespensible tool for seeing and describing this phenomenon in this case, Chapter Five´s narrative has demonstrated that the subtle reciprocities which were slowly and assiduously established between the two spatial realms were based on more than the mere contrast of figure-ground planning schemata, but include a multi-layered and intertwined system of relationships including inflection, linkage of scales, the perception of the body in space, symbolic imaging, etc..

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Further Steps Toward Reciprocity: From Membrane to Border-Space, From Dyad to Triad, From Figure-Ground to Threefold Spatial Demarcation

In light of what has been said above we may regard the basic figure-ground scheme (and by „basic" I mean here the conventionally-used scheme which represents buildings as mass and all else as void) as a first, as yet incomplete means for describing - or developing - reciprocity between architectural and natural space. While the basic figure-ground scheme provides a schematic means for seeing and manipulating plan-space in terms of mass and void, positive and negative, convex and concave, etc., it remains limited in regard to the projection of our experience into those spaces. One simple reason for this is because within the „dyad" scheme we tend to picture ourself **either** within the black **or** the white: or as Colin Rowe observed, while we are able to recognize **both** the two faces **and** the vase in the classic figure-ground diagram, we seem to be able to experience them only **sequentially**, rather than **simultaneously**.

<div style="display:flex">
<div style="width:25%">Relativity of Inside and Outside Space</div>
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What is apparently missing, then, in the simple twofold figure-ground diagram is an additional dimension to aid us in experiencing both realms simultaneously... or more exactly, in experiencing our own position in regard to these realms. In short: a way of experiencing that **inside and outside are not absolute, but always relative to each other. That each architectural space is a „partial space": a portion of a greater space from which it has been divided**. If we continue to consider plan notation as a means of representing spatial intent, then we tend to experience this sense of relativity much more naturally while reading older **poché** floorplans - such as the Nolli Plan and those of the Ecole des Beaux-Arts which we have observed earlier in this chapter - than we do in reading modernist figure-ground plans. **(Fig. 10.27)** In those older plans, there are at least two phenomena which we miss in modernist plans and which we have missed so far in the above description of the „basic" figure-ground diagrams. Firstly, in the **poché** plans there is generally the **mass** of the walls which creates the distance necessary to perceive inside and outside as **independent** spaces; a mass which in some Beaux-Arts plans is considerable enough to begin to achieve parity with void spaces. Secondly, there is the („ornamental") **Gestalt pattern** character of these plans (which Colquhoun has so accurately described) which tends to generate third, mediating spaces between those which are purely „inside" and those which are purely „outside".

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At this point in our discussion on reciprocity, we might continue to explore the remaining „rules of seeing" layed out by the Gestalt principles, for the figure-ground scheme is based on only one of these: the property which that theory calls „multistability". There are complementary properties belonging to the Gestalt theory which describe additional ways of seeing „wholes through parts": properties which the theory names „emergence", „reification", „invariance", „prägnanz" (conciseness) and which, when used together give a more comprehensive set of rules than any single scheme alone. While it would doubtless be instructive to view Kahn´s spaces under these aspects, I have chosen another - because architecturally immanent - theory as an aid in the exploration of reciprocity.[19]

Hans van der Laan: Architectonic Space

The two „missing" phenomena described above - firstly, a means of dividing space which has the property of a **body** rather than of a membrane; and secondly, a „third space" which makes the relativity of inside and outside apparent - are two cornerstones of an architectural theory which finds fascinating parallels in Kahn´s mature work. This is the theory developed by the remarkable Dutch architect-scholar-monk, Dom Hans van der Laan (1904- 1991) after a lifetime of work and study in his **magnum opus**, De architectonische ruimte of 1977 (English: **Architectonic Space**, 1983).[20] In what is doubtless the twentieth century´s most ambitiously fundamental analysis of architectural space, Van der Laan set about to do nothing less than to lay out a theory which begins with the existential need of bodily shelter, then moves over an empirical/perceptual analysis of how we experience form and finally procedes from this to develop a rational system for proportioning mass and space. These three levels of the theory are evident in van der Laan´s simple claim: *„The space of nature has three aspects which leave us at a loss: it is unlimited, without form and without measure.... Architecture is nothing else but that which must be added to natural space to make it habitable, that is, delimited in relation to our bodies, visible to our senses and measurable to our intellect."* [21] While a critical summary of van der Laan´s theory is well beyond the scope of this study, a brief outline of that theory in respect to the two phenomena mentioned above will provide us with a helpful lense with which to bring Kahn´s work further into focus.

From Membrane to Border-Space
„(The) Greco-Roman decides to separate himself from the fields, From „nature", from the geo-botanical cosmos. How is this possible? How to withdraw himself from the fields? Where will he go, since the earth is one huge unbounded field? Quite simple: he will mark off a portion of this field by means of walls, which set up a contrast between an enclosed and finite space and an amorphous and endless space"
José Ortega y Gasset

Enclosure and Opening

If for Abbé Laugier, architecture began with the divine revelation of order which created the first house, and if for Gottfried Semper this **Urhütte** had its origins in the less divine sources human handcrafts, for Hans van der Laan architecture began with man´s first separation of a section of space from the larger undivided whole of natural space. Following van der Laan´s first tenet that architecture´s primary function is that of **mediation**, the space-dividing element of the **wall** is assigned the major role in this task. While Ortega y Gasset ends his description of human habitation with enclosure, for van der Laan, this separation is only is only a first step: for once separated, a space must be brought back into relation with the space of nature in order to create a true human dwelling place. Thus, van der Laan argued that only a space which arises between between formed walls can engage in a **genuine** relationship with natural space. After establishing this hypothesis, his theory extended to work out a means for establishing empirically-derived, perception-based proportional relationships between enclosed spaces and the depth and openings of their enclosing walls.[22] (This last aspect will not be worked out in respect to Kahn´s work here, but would certainly be a theme for future study.)

Paradox of the Membrane-Wall

At the same time that van der Laan was developing his theory - and Kahn was building his mature work - modern technology had been at work to maximize roof-spans and minimize wall thickness, with the result that the for van der Laan necessary relationship between

room-width and wall-thickness was lost. As walls were reduced to bubble-like enclosing surfaces, the enclosed space took on a self-contained quality which was for van der Laan no different in principle from that of a cave. In contradiction to the modernist assumption that with the help of this technology „...*Only now can we articulate space, open it up and connect it to the landscape....*" (Mies van der Rohe), van der Laan recognized the paradox that if a room´s walls are completely of glass, such a space is perceived as divorced from the space outside.[23] Van der Laan´s premises find echo in Louis Kahn´s insistence on enclosure as the first act, on the „making of the room" as the primary act of inhabitation. Only after this enclosure was established could „...*the walls part and architecture begin*".[24]

<table>
<tr><td>Rediscovering
the Wall</td><td>If Kahn´s attempts at designing in the modernist genre in the 1930s and 40s were never completely convincing, this was in no small part due to his own lack of conviction in completely dissolving the wall. In comparison to the self-assured transparency of the contemporary works of Mies, Breuer or Johnson, for example, his own works seem tenative and clumsy. By the 1950s he had gradually begun to question literal transparency as the sine qua non of a modern architecture and to sense the loss of the wall as a bearer of meaning and as a necessary „third term" between enclosed and natural space. Writing home from Rome during his 1951 fellowship at the American Academy he waxed enviously on ancient Roman architecture: „...*all of our stuff looks tinny compared to it.*"[25] Although the literal constructive mass of the pre-twentieth century wall was not an option for him, he began in the mid-1950s at first tenatively (Adler House, Trenton Bath House), then with a conscious fervor (the First Unitarian Church, the Esherick House, the Salk Institute, the Indian Institute of Management...) to redefine the modernist membrane as a shaper of a spatial layer: folding it, capsizing it, doubling it, „wrapping ruins around buildings"... Through these means he gradually devised a uniquely original mediating architectural space, which in a sense resembled a hollowed-out poché wall. He had in fact rediscovered what untold generations of arcade-, gallery- and cloister-builders had known: that depth could be virtual: „captured air" instead of mass. Indeed: if anything, the separating effect of the layered or house-in-house scheme was even stronger than that of a massive wall of the same depth, giving both inside space and outside space an emphatically separate „facades". (Fig. 10.28)</td></tr>
</table>

This necessity of depth, of a „border-space" for defining inside and outside, applied not only to the vertical plane of the wall, but to the horizontal plane of the roof as well. Accordingly, there are never conventional „greenhouse" skylights in Kahn´s work: top-lit spaces are always illuminated by reflecting natural light around a corner or obliquely through an intermediate space. This virtual horizontal „border-space" is at least as palpable as its vertical partner and establishes the interior-exterior relationship in a similar way. (This being one of the reasons that the ubiquitous central spaces in Kahn´s public buildings „want" to be read as courts or „dislodged" segments of outdoor space.)

Not only the **means** for establishing depth, but the **uses** assigned to that depth were varied in the late work according to the circumstances at hand: functioning as as **brise solie**r, (American Consulate at Luanda, Salk Meeting House, National Assembly at Dhaka) as gallery or loggia (Salk Institute, Kimbell Art Museum), as „servant space" (Richards Medical Laboratories, Salk Institute), as „hollow columns" (Mikveh-Isreal and Hurva Synagogues) or as human-scaled habitable space (First Unitarian Church, Exeter Library, Domincan Motherhouse). Robert Venturi noted in his **Complexity and Contradiction** that Kahn´s thickened wall-zones simultaneously violated two modernist dogma: in their redundancy, they broke with the modernist rule of efficiency; while in their double-active quality, they broke the rule of functionalist cause-and-effect clarity.[26] But for Venturi and Kahn the wall was the locus of architecture´s appearence, and modernism´s great mistake was to reduce it to the smallest necessary climatic barrier. According to Venturi: „*I would say that architecture occurs at the meeting of particular interior forces of use and space, and particular and general forces of environment. Architecture as the wall between inside and outside becomes the spatial record of this reconciliation and its drama.*"[27] Kahn´s morphology of the wall-as-border-space would provide the stuff for an extensive study: its tectonics, its habitablity, its reintroduction of the window, its evocation of antecedents, it spatial nuances.... For the purposes of this study, though, it must suffice to establish its existence as a tangible and multivalent border bet-

ween inside and outside. **Figure 10.29** diagrams selected uses and means of establishing the vertical „border-space", while **Figures 10.30** traces this theme on the horizontal plane.

From Twofold Figure-Ground to Threefold Demarcation

According to van der Laan´s theory, the establishment of the wall as a „border space" fulfills the first prerequisite for separating and thus establishing reciprocity between architectural and natural space. Corresponding to the „third space" in the Gestalt diagrams and **poché** plans mentioned above is the next precondition for reciprocity in van der Laan´s theory. Van der Laan named man´s image of the piece of natural space involved in his own existence his **„experience space".** He then went on to explain that this experience space may be further described according to man´s vital activity in the world. A threefold superposition of progressively larger spaces is the result of this bodily activity: the immediate **„workspace",** the larger **„walking-space"** and the still larger **„visual field",** a hierarchy in which the smaller always lies at the center of the larger. After defining the existence of these three spatial zones, van der Laan proceeded to map out their architectural consequences:

„...The threefold nature of our experience-space has its architectonic consequences. We have already seen that the functional role of the house lies in the fitting of the architectonic space that comes into being between the walls to the space of our experience. We have presented this fitting together as a fusion of two space-images. On one hand we have the space of nature, within and from which a limited space is set free between vertical walls; on the other a limited piece of space in the midst of nature which we, as its core, involve in our presence. We have seen the combination of images result in the dyad inside-outside: habitable human dwelling inside, natural space made habitable outside.
If we experienced space in one way only, a single boundry would be enough to separate the totally inner from the totally outer. It appears, however, that our experience-space has various zones; therefore several boundries are needed, and architectonic space is necessarily composite.
It is therefore not enough to mark out only the intimate space needed for work. We may well withdraw into this limited space for a while, but inevitably we soon feel the need of a larger space to walk in, and this too must be drawn into our existence by vertical walls. Lastly, our visual field is too much restricted even by this second boundry, and therefore needs a wider enclosure of its own. So the complete human habitat demands a threefold demarcation of space.
Each of these spatial boundries is wider than and contains the one before. the architectonic effectiveness of the boundries decreases progressively as they get wider, because the wider the space, the weaker the directional force of the vertical wall. In relation to the breadth of the visual field, or even the walking-space, the height of the wall is very slight, and therefore provides a very weak basis for the space around us that we relate to ourselves.
So although after staying some time in the intimate space we work in we seek relief in these wider spaces, it cannot be for long. Within the vast enclosure of the visual field, which divides the inside from nature, we again feel the need of a more confined demarcation that relates space more strongly to ourselves.
Thus the human habitat is like an interplay between three demarcations that alternately call for and reject each other; we call them, in order of size, cell, court and domain."

„Since the architectonic effect of the three demarcations is not equally strong, a different „inside" arises in each case. For the intimate interior of the cell the wider walking-space of the courts counts as an outside, though compared to the large domain it counts as an inside. the threefold articulation of the absolute inside in the midst of the absolute outside of nature introduces us to two secondary relations between inside and outside - on the one hand between cell and court, and on the other between court and domain.
Thus the same thing takes place at a secondary level within architectonic space as occurs between architectonic space and natural space. We shall meet this phenomenon again in relation to form and size. the advantage of this is that it enables us to experience and invisage in a comparable way, within the limits of the finite space its relation to the infinite space, within the limits of the formed mass its relation to formless space, and within the limits of

the measured quantity its relation to measureless quantity...."[28]

Spatial
Embeddedness:
A Linked Chain
of Insides

If we are to accept van der Laan´s tenet that architectural space is composite, that a simple boundary is not enough to adequately separate inside and outside, and if we are to view his linked chain of threefold spatial demarcation as a means of relativizing the experience of architectural space in respect to natural space, then we are equipped with a richer means of seeing and thinking about space than the „basic" figure-ground scheme provides. If the twofold figure-ground scheme directs our gaze **sequentially** toward the complements of mass and void, the threefold demarcation supplements this scheme with an extra dimension and directs our attention toward the **mediating** capacity of mass and space and the **relativity** of interior and exterior in respect to the active human body. Van der Laan´s linked chain of spatial scales, while extant in much pre-modern and vernacular architecture, is largely absent in the modern, which in its attempts to either fetishize or dissolve the object, tended to eliminate the middle spatial term. Kahn´s „porous" plans are provocative exceptions to this rule. As his thought and architecture strongly parallels van der Laan´s thought regarding the wall, so too does his work echo van der Laan´s concept of linked spatial demarcation.

If we review the works which we have described above in terms of the figure-ground scheme once again in terms of the linked chain of scales described by van der Laan, we can sense the establishment of a hierarchy of concentric spatial enclosure in Kahn´s work closely corrosponding to van der Laan´s „cell", „court" and „domain". **(Fig. 10.31)** What in the Trenton Community Center is a still-schematic interpretation of the middle scale of „court" or „walking-space", has, with the advent of later works taken on much a greater richness. In situations where a large-scale landscape demands it, the linked chain of demarcation is especially strongly stated: the Salk Institute, the Indian Institute of Management, the National Assembly at Dhaka.... The Salk Institute, for example, may be seen as a development of threefold superpositions of progressively larger scales: from the small studies over the loggias to the plaza; from the grove to the plaza to the Pacific landscape, etc.: a threefold (or here even fourfold) layering informs the entire ensemble. **(Fig. 10.32)** The Fort Wayne Fine Arts Center, the Dominican Motherhouse, Saint Andrew´s Priory, the Indian Instiute of Management: all may be used to further illustrate van der Laan´s theory.

Central Spaces
as „Courts"

If we are to additionally regard Kahn´s beloved large, top-lit communal spaces as the equivalents of „courts" (for this **is** how Kahn would like us to see them: see his quote on the „first" communal meeting place below), then the sponge-like spatial diagram reveals a further dimension. The sanctuary of the First Unitarian Church, the central spaces of the Exeter Library, the Hurva Synagogue, the halls of the Yale Center for British Art: all „want" to become „courts" to their surrounding „cells" of space. **(Fig. 10.33)** The treatment of these spaces with explicitly „exterior" materials and „ambivalent" roofs serves to strengthen the impression of exteriority.

Reciprocity as an Exchange Between Opposites
This chapter´s exploration of the theme of reciprocity has centered on the (physical/morphological) terms of bringing mass and void, indoor and outdoor space into resolved, comprehensible and complex relationships with each other. There are however further (conceptual) manifestations of the term which both underscore and expand upon the meanings outlined above. In closing this chapter, I would like to briefly sketch out two of these.

Reciprocity:
Mass-Void,
Inside-Outside

A further interpretation of the term recipriocity may be as the redefinition of a thing as its traditional opposite. While the descriptions above have dealt with with how Kahn brought mass and void, inside and outside into **resolved balances**, in his later work he attempted to take a step further than „mere" balance and to make these phenomena virtually **interchangable**. In a remarkable statement on the National Assembly at Dhaka, he wrote, *„In the assembly I have introduced a light-giving element to the interior of the plan. If you see a series of columns you can say that the choice of columns is a choice in light. The columns as solids frame the spaces of light. Now think of it just in reverse and think that the columns are hollow and much bigger and that their walls can give light, then the voids are rooms, and the column is*

the maker of light and can take on complex shapes and be the supporter of spaces and give light to the spaces. I am working to develop the element to such an extent that it becomes a poetic entity which has its own beauty outside of the composition. In this way it becomes analogous to the solid column I mentioned above as a giver of light."[29] (Fig. 10.34)

If solid and void, light and dark might exchange places in a Kahnian world, so may interior and exterior. Just as Kahn´s tendency to treat major interior rooms as pieces of „dislodged" exterior space was essential to his spatial vision, corollary and complementary was his treatment of exterior spaces as discrete „insides". We have already observed this at work in the Dominican Motherhouse and other works: it is a principle which would also apply at the scale of urban planning, such as in his „viaduct" and Bicentennial plans for Philadelphia, which treat the city as a great „inside" or a „society of rooms". With Kahn there is a purposeful willingness to confuse architecture with urbanism and vice versa: *„The street: it is really the first communal space. From this outside room with the sky as a roof must have come the notion of having the first meeting place, which, because of the weather conditions suggested that a roof make an enclosure, which you called also a meeting house, within which you put some benches and with the simplest devices transfer the street into a building. The street is really a room by agreement. I can tell you that as soon as I thought this simple thing, I could design any city in the world."*[30]

Reciprocity: Built and Grown

A further way in which reciprocity becomes manifest with Kahn is in his conscious use of phenomena traditionally associated with landscape or landscape architecture as „architecture" and his use of architecture as „garden".[31] We have already briefly discussed the use of newly planted groves as „architectural mass" in the Trenton Jewish Community Center and the Fort Wayne Arts Center as well as the modelling of the the existing forest edge at Media in order to create a figure-ground continuum with the constructed mass of the Dominican Motherhouse. From the late 1950s onward, Kahn increasingly formed that which is „landscape" in order to complement architecture while forming architecture so as to complement landscape or to accept her as an equal within the limits of its structure. The Dominican Motherhouse, Saint Andrew´s Priory, the Kimbell Art Museum, the Salk Institute, the Levy Memorial Playground, the Graduate Theological Union Library, the Presidential Estate in Islamabad, the plan for the Phildelphia Bicentennial... in all these works architecture and landscape are so cojoined as to be incomplete without each other. While modernism´s ideal of „the machine in the garden" tended to treat landscape architecture as a naturalistic background for its **objets typs** and while ecological issues tended to dominate much of landscape architecture in the 1960s and 70s, Kahn was virtually alone at this time in his rejection of „naturalism" and the Corbusian **tapis vert** and in his rediscovery of this - essentially classical - view of seeing built mass and vegetive mass as interdependent.[32] In conclusion two projects will briefly illustrate Kahn´s use of built-grown reciprocity.

Roosevelt Memorial

One of Kahn´s most compelling examples of setting this theme in work was the project for the Franklin D. Roosevelt Memorial on the tip of New York´s Roosevelt Island in the East River between Manhattan and Brooklyn (1972-74 **Fig. 10.35**), which we have briefly regarded in terms of movement in the previous chapter. Unhindered by a program and the necessity of creating enclosed space, and working in close cooperation with the landscape architect Harriet Pattison, Kahn´s first insight into the memorial was as a reciprocal pair of spaces: *„a room and a garden".*[33] The „room", a 60 foot square enclosed on three sides by huge granite blocks, was open on its fourth side to the horizon. The „garden", a triple-sloped earthen wedge planted with trees was to form the vistors´ route to and from the „room" from the island. The ambiguity of the Memorial is heightened by the extremely subtle manner in which the moving vistors´ perception is choreographed to gradually trade wide views of the cityscape for a concentrated view of sky and horizon. „Architectural" elements and landscaping are treated as equals in the compostion. In an inversion of the usual hierarchy, the architectural „room" is the most exposed and „exterior" experience in the memorial: upon entering it the skyline of Manhatten slips away and is replaced by an unobstructed view toward the horizon while the the sky serves as a ceiling. In contrast, the botanic „garden" offers the visitor the most sheltered and „architectural" space, using its exactly calculated and tightly spaced tree trunks and crowns as enclosure.

The Kimbell Art Museum (Figs. 10.36 - 10.38)is one of Kahn´s most subtle cases of grown/ built reciprocity at work. (The landscape plan, once again in cooperation with Harriet Pattison.) Ambivalence is already set up in the building´s plan: are we to read the symmetrical **parti** of the building as a „classical" solution to the problem of museum-making (and thus a type with a long-standing tradition), or are we to see the whole as an additive „modernist" rowing of identical modules? (Such as a warehouse or train station....) The building presents itself to us simultaneously in both of these ways without indicating a preferred reading. „Classical" at first glance is also the use of trees - here the existing **allées** - as well as the disposition of fountains and paths, to strengthen major and minor axes and to set up relationships between museum and park. Yet, a small, dense bosque of yaupon holly trees which has been planted directly in front of the parkside entry portico blocks the main axis in an exceptionally „non-classical" manner: again, the ambivalence between symmetry and asymmetry, closed and open systems. The bosque „grafts" the museum onto the **allée** while forming a shaded and welcoming entry area which seems to belong equally to park and museum. (Kahn thought it appropriate that the undecided visitor might be given a chance to peek into the museum before deciding whether or not to go in.)

As always in Kahn´s mature work, the building´s floor plan tells only half of the story. Viewed both in site plan and in site section, the intended built-grown reciprocity first becomes apparent: here, the museum´s regular gridded framework supporting its great vaults; there, the park´s regularly gridded **allées** with the spaces defined beneath their crowns. (Especially after studying the section it´s tempting to think of architecture as tree-mimetic and of an architecturalized garden plan.) Between enclosed spaces of the galleries and the open tree-space of the park is a rich and ambivalent threshold band formed by both architecture and trees. One the one hand, the gallery module has „dissolved" to become the two great porches and an entry portico, on the other hand, the space defined by the park´s trees has densified in the form of the bosque. Said Kahn of the porches: *„It is the same realization behind Rennaissance buildings which gave the arcade to the street, though the buildings themselves did not need the arcade for their own purposes. So the porch sits there, made as the interior is made, without any obligation of paintings on its walls, a realization of what is architecture. When you look at the building and the porch, it is an offering. You know it wasn´t programmed, it is something that emerged."*[34] Like their antecedents, the Kimbell´s exterior vaults are „made as the interior is made". The bosque, on the other hand, begins to „interiorize" outside space: Michael Benedikt has pointed out that here *„one is already in."*[35] Approaching on the crunching gravel surface underneath the low branches, one is given views both to the park and to the entry portico. After having ascended the steps to the portico, the view back into the park is now blocked by the crowns of the trees: one is now even more „in". Through this built-grown plan-section reciprocity Kahn and Pattison have woven site and building into a dense and multivalent experience: at once transforming the character of the rather ordinary semi-suburban site and expanding the breadth of the rather small musuem.

Reciprocity, Complementary Thinking vs. Binary Thinking

In terms of architectural and natural space, this concept of reciprocity invites a richer way of thinking about human dwelling and the built environment than modernist and contemporary hierarchies have tended to produce: whether by priviledging one type of space over the other or by to attempting to eliminate the differences between them. More generally, in contrast to binary or polar thinking, this complementary thinking in terms of „twin phenomena" or a **coincidentia oppositorum** begins to call into question the traditional boundries between disciplines, without calling the souvereignity of the disciplines themselves into question. Through it, if we read deeper, we will find a critique not only of our particular metier´s way of thinking but of a deep-seated cultural paradigm. In architecture, reciprocal thinking fosters an Albertian vision of a house as a collection of unique places, as well as that of a city as big house. Interiors may be conceived of as exteriors and vice-versa without blending the necessary differences between these two realms. The promise of all this being an architecture as an instrument of connection rather than separation, a more true „habitation" of both city and house. Columns may be massive, or hollow, or may grow to the size of a room; shadow

and light may trade places; we may begin to understand Kahn when he says, *„The plan does not begin nor end with the space he (the architect) has enveloped, but from the adjoining delicate ground sculpture it stretches beyond to the rolling contours and vegetation of the surrounding land and continues farther out to the distant hills."*[36] Through this way of thinking we may begin to understand how a work may at the same time be both big and small, simple and complex, monist and pluralist....[37]

In the preceding pages I have attempted to intimate ways of approaching Kahn´s spaces based on the idea of reciprocity: firstly by describing them in terms of the dyad of figure-ground, solid-void; then, by juxtaposing Kahn´s work with a richer „threefold" scheme as described in the theory of Dom Hans van der Laan. Finally I have briefly sketched out other manifestations of reciprocity in Kahn´s work. All these ways of looking transcending the object-oriented view which has colored much of the reception of Kahn´s work. In the following chapter I wish to extend the explorations of this chapter to include one final spatial characteristic based the poles of the universal and the specific: the idea of how „space" becomes „place" in Kahn´s architecture.

Chapter 10: Footnotes

1. The Penguin New English Dictionary, Penguin Books Ltd., Hammondsworth, England, 2000. p. 1147.

2. For an extended view of the term „reciprocity" in architecture, see: Aldo van Eyck, „The Medicine of Reciprocity Tenatively Illustrated", in: Architects Year Book, Nr. 10, London, 1962, pp. 173-178; and „Steps Towards a Configurative Disipline", in: Forum, Nr. 3, Aug. 1962. pp. 81-94; for a more limited view, see: Linda Pollack and Anita Berrizbeitia, Inside Outside: Between Architecture and Landscape, Rockport, Glouster, MA., 2003. pp. 14-42.

3. Sarah Goldhagen, Louis Kahn´s Situated Modernism, Yale University Press, New Haven, 2001, p.193.

4. Nikolaus von Kues (Cusanus): De coniecturis II 1,2. According to Cusanus, the highest truth which resolves all opposites is to be found in God. See: Kurt Flasch: Nikolaus von Kues: Die Idee der Koinzidenz, in: J. Speck (ed.) Grundprobleme der Großen Philosophen, Göttingen 1992, pp. 221-261. Of course, Kahn was not alone in the profession at this time in his attempt to break out of the mold of dualist thinking. (Of course the greatest of the moderns - Wright, Le Corbusier, Aalto - had refused to see reductionism as the highest virtue.) In the late 1950s Aldo van Eyck began to call for relativism, „twin phenomena" and architecture as an attempt to portray „the medicine of reciprocity" at work; Venturi´s „gentle manifesto" for complexity and contradiction soon followed in 1966. The architect O.M. Ungers first applied the Cusanian **coincidentia** as a conceptual/architectural principle in his Architettura come thema (Die Thematisierung der Architektur, 1983), etc..

5. Although Max Wertheimer is credited as the founder of the **Gestalt** psychology movement, the concept seems to have been first introduced into modern phiosophy and psychology by Christian von Ehrenfels in the nineteeth century. The idea of **Gestalt** has its roots in the theories of Goethe and Kant. See: Bruce, Green, and Georgeson: Visual Perception, 1996, p. 110.

6. See Alexander Caragonne´s **The Texas Rangers** (MIT Press, Cambridge, Mass,1995) for a detailed overview of the analytical teaching method at Austin in the 1960s and a description of its subsequent spreading and world-wide influence. The figure-ground scheme could take on different intonations in its various interpretations: Rowe and Koetter´s **Collage City** tended to stress basic morphological aspects of space and mass, while Hoesli and Hofers´ **„Dialogische Stadt"** stressed the role of the surface in mediating between figure and ground. O.M. Ungers´ later **Die dialektische Stadt** (1999) tended to explore the „topological" aspects of thinking with the figure-ground scheme.

7. Colin Rowe and Fred Koetter: Collage City, MIT Press, Cambridge MA and London, 1978.

8. Alan Colquhoun, „The Beaux-Arts Plan", in: Essays in Architectural Criticism, MIT Press, Cambrridge, MA. and London, 1981. pp. 161-168.

9. In the Ecole´s method the establishment of a **parti** (or today, „concept diagram") was to be the first act of the architect. See Chapter 5, footnote 5.

10. Alan Colquhoun, op. cit..

11. Louis I. Kahn, in: H. Ronner and M. Jhaveri, Louis I. Kahn Complete Works, Birkhäuser, Basel and Boston, 2nd. ed., 1987, p. 70.

12. The perfectly fitting term „captured air" was coined by Alison and Peter Smithson in reference to the Adler House: „We tend to think of our architectural mentors quite often. Last week, thinking of Kahn, we wrote, „The most mysterious, the most charged of all architectural Forms are those which capture the empty air...." in: Wurman: What Will Has Always Been,

Rizzoli, New York, 1986 . (Original: The Architect´s Yearbook, 1980).

13. Letter, Mrs. Adler to Louis I. Kahn, 17 June,1954, Box LIK 32, Kahn Collection. That Kahn explicitly sought this texture-structure ambivalence is also evidenced by the fact that he let columns and texture be illustrated separately in a first publication of the house: „Two Houses´´, Perspecta: The Yale Architectural Journal, no. 3, 1955, pp. 60-61.

14. Louis I. Kahn, in: Susan Brady, The Architectural Metaphysics of Louis Kahn´´, New York Times Magazine, 15 November 1970, p.58.

15. Maria Bottero, „Organic and Rational Morphology in the Work of Louis Kahn´´, in: Zodiac no. 17, 1967.

16. David Polk, who in addition to the monastery projects worked with Kahn on the Broadway Tower, recalled that as that project was being developed, „...Lou came into the office with a book on the ancient Indian rock-cut temples: those which have been hewn directly out of the cliffs. „How do you make architecture out of that?“ he wanted to know. He was really interested in poché architecture and how to achieve something analogous with modern means.“ Interview: author with David Polk, 20 October, 2004.

17. For more on the grid as American Vernacular see: Vincent Scully, Architecture and the Manmade, Harvill, London, 1991, Ch. 11. Or: Terence Riley, „The Landscapes of Frank Lloyd Wright: a Pattern of Work“ in, Frank Lloyd Wright: Architect, Museum of Modern Art, New york, 1994, 96-107. Or, particularly in respect to Kahn: Robert Venturi, „Genius Betrayed´´, Architecture, July, 1993, p. 43. (On the extension to the Salk Institute.)

18. In an excellent lecture, David van Zanten has described this phenomenon in a comparison between the compositional/drawing methods of Sullivan, Wright and Kahn. On Sullivan´s drawings: „... I would propose that not only were the switches in scale from ornament to building space a fact **but also the whole point** - and that these switches embraced many scales, especially the cartographic.“ On Kahn´s drawings: „... And what is the scale of these images? That of a building plan? Or merely a pattern? Or doesn´t that matter: might not the whole point be that the largest relationships mirror the smallest to bind the design at all scales to achieve a kind of flicker in scale?“ My thanks to David van Zanten for the use of, „Kahn and Architectural Composition´´, unpublished manuscript of lecture at Yale University Kahn Symposium, 23 January 2004. On the subject of the Indain Institute of management, I refer the reader to Christian Devillers´ essay and analysis: „Louis Kahn´s Indian Institute of Management, 1962-1974´´, in: Casabella 54, September 1990, pp. 36-63.

19. There at least are two reasons for choosing **not** to persue the **Gestalt** theory here: the first is its purely descriptive character, the second is that the phenomena described tend to be be done so largely in terms of the two-dimensional. (Although Rowe and Slutzky´s **Transparency: Literal and Phenomenal** demonstrates to what degree **Gestalt** principles may be applied to architecture.) For a thorough description of the **Gestal**t principles mentioned above, see: Wolfgang Metzler: Gesetze des Sehens, W. Kramer Verlag, Frankfurt, 1936.

20. Dom Hans van der Laan: Architectonic Space, E.J. Brill, Leiden, 1983.

21. Dom Hans van der Laan, lecture to architecture students,1985. Quoted in: Richard Padovan: Hans van der Laan Modern Primitive, Architectura & Natura, Amsterdam, 1994, p. 30.

22. Dom Hans van der Laan: op. cit..

23. Dom Hans van der Laan, letter to Jos Naalden on the Naalden House (1978-82), 7 September 1985, in: Richard Padovan, op. cit., p.124.

24. Louis I. Kahn, „Architecture is the Thoughtful Making of Spaces“ (1957), in: Joan Ockman, (ed.), Architecture Culture: 1943 - 1968, Columbia/Rizzoli, New York, 1993, p. 271.

25. Letter Kahn to Office, December 6 1950, in: **Eugene Johnson and Michael J. Lewis,** Drawn From the Source: The Travel Sketches of Louis I. Kahn, MIT Press, Cambridge, Mass. and London, 1996, p. 72.

26. Robert Venturi, Complexity and Contradiction in Architecture, The Museum of Modern Art Papers on Architecture, New York,1966, p.107.

27. Robert Venturi, „Ideas of Reconciliation in Architectural Composition": proposal sent to John Entenza of the Graham Foundation, 15 February, 1962, p.10. Architectural Archives of the University of Pennsylvania.

28. Dom Hans van der Laan: op. cit. pp. 23-25.

29. Louis I. Kahn, June 1964 (on Dhaka), quoted in: H. Ronner and M. Jhaveri, op. cit., p. 239.

30. Louis I. Kahn: in interview (Video „Silence and Light" in Kahn Collection.)

31. Interview: author with Harriet Pattison, 21 October 2004.

32. It is important to note that in contrast to certain current (in the end anti-urban) tendencies conceive of buildings as „artficial landscapes," Kahn was never interested confusing or blending that which is landscape and that which is building, but saw the necessity of maintaining their differences as a precondition for true reciprocity.The tendency to attempt to make buildings disappear as „landscapes" may be seen as a misunderstanding and the flip side of the object-fetishist coin.

33. Dom Hans van der Laan, „Inside and Outside", in: Architectonic Space, Leiden, E.J. Brill, 1983 pp. 23-25)

34. Louis I. Kahn, in: Light is the Theme: Louis I. Kahn and the Kimbell Art Museum, Neil Johnson (ed.), Kimbell Art Foundation, Fort Worth, 1975, p. 28.

35. Michael Bendedikt, Deconstructing the Kimbell, SITES/Lumen Books, New York, 1991. Benedikt´s subtle and erudite analysis of the Kimbell, which includes a much more thorough description of the elements at play between building and site than is possible here, belongs to the best in Kahn literature.

36. Louis I. Kahn, „Monumentality" (1944), in: Alessandra Latour, (ed.), Louis I. Kahn, Writings, Lectures, Interviews, Rizzoli, New York, 1991, p. 25.

37. No architect has argued as passionately and articulately for the principle of reciprocity in (architectural) thinking as Kahn´s younger contemporary, Aldo van Eyck. His humanist definition of „Right-size" overlaps with and extends the descriptions of the previous pages, thus making a fitting and expansive conclusion for this chapter: *„...I am again concerned with twinphenomena: with unity and diversity, part and whole, small and large, many and few, simplicity and complexity, change and constancy, order and chaos, individual and collective, with why they are ignobly halved and the halves hollowed out, why too they are withheld from opening the windows of the mind! As abstract antonyms the halves are rendered meaningless. As soon, however, as they are permitted to materialize in to house or city their emptiness materializes into cruelty, for in such places everything is always too large and too small, too few and too many, too far and too near, too much and too little the same, too much and too little different. There is no question of right-size (by right-size I mean the right effect of size) and hence no question of human scale. What has right-size is at the same time both large and small few and many, near and far, simple and complex, open and closed; will furthermore always be both part and whole and embrace both unity and diversity. No, as conflicting polarities or false alternatives these abstract antonyms all carry the same luggage: loss of identity and its attribute - monotony. Monotony not only in the sense of uniform because as I have already said: If a thing is too much and too little the same, it will also be*

too much and too little different. Right-size will flower as soon as the mild gears of reciproci-
ty start working - in the climate of relativity; in the landscape of twinphenomena." Aldo van
Eyck, „Steps Towards a Configurative Disipline", in: Forum, Nr. 3, Aug. 1962. pp. 81-94.

Chapter 11. Problems of Space III:
From Space to Place:
From Establishing the General to Revealing the Specific

„The site confirms the possible and encourages agreement on the beginning in the making of man´s place. A mere foothold is confident of the settlement, the first institution of man. The works of man reveal his nature."
Louis I. Kahn, 1969

„Our places no longer have a Genius, they no longer know what they want to be."
Louis I. Kahn, in Valena, Beziehungen, p. 64

„In the place of the abstract shells of early modernism, Kahn placed concrete „things", which stand, rise, open and close in relation to the „places" of the planet."
Christian Norberg-Schulz, Architecture: Presence, Language, Space, p. 337

Chapter Ten´s discussion of spatial reciprocity dovetails tightly into the investigations which are to follow in this chapter. Whereas the previous chapter concentrated on the **universal** architectural problem of relating inside and outside / man-made and natural space, the present chapter begins to explore how architecture moves beyond this general schemata to engage the space of its **specific** context, its particular landscapes and locales. It begins to explore, in brief, how Kahn´s mature architecture became increasingly not only one of **space**, but of **place**. In discussing this theme as the third and final of the „problems of space" in this study, we are given a means to more strongly anchor the previous two in the phenomenal and natural world; to point toward ways in which critical invention may be rooted in the elemental physical and cultural contexts from which it always emerges.

Context in
Presentation,
Reception

There has been a long-standing tendency to neglect the role of place or context in Kahn´s architecture: a subject which has only recently begun to emerge as integral to a comprehensive understanding of his thought and work. Before proceding to explore this theme, it is first worthwhile to question the reasons for its relative absence in the literature on Kahn, although upon reflection, a resolved relationship between building and its specific environment must logically form an integral part of Kahn´s ideal of an architecture of Being-in-the-world; although for those who have had the opportunity to experience his mature buildings **in situ,** a compelling sense of „here-ness" is often one of the most lingering impressions which one carries from the experience; and although over 40 years of criticism have had the opportunity to uncover a relatively wide spectrum of themes in Kahn´s work and thought. Certainly most receptions of Kahn´s work have tended to see it primarily in terms **other** than in its connectedness with site or place. Until now, at least, the majority of interpretations have been divided between those which stress the technical, formal and material aspects of the work, and those which explore Kahn´s philosphical or social goals. In comparison to these intepretations, those dealing specifically with the interactions between Kahn´s architecture and its contexts have been exceptional.[1]

The reasons for this muteness in regard to context are various, and are, to a certain degree, understandable. The first of these, I would propose, is inherent in the work itself and especially in its presentation. Photographs and plans in monographs and periodicals are the means through which architecture - Kahn´s included - is most often „experienced" by a wider public. (A public which includes those who write on buildings.) Kahn´s plans, with their strongly disciplined formal geometries **do** initially seem aloof to any conventional idea of accomodating or drawing inspiration from the „natural" or contextual: their strong orders apparently generated by exclusively internal, rather than by site or context-based logic. (Yet we have already discussed how these geometries work in generating figure-ground reciprocity.) The long-standing tendency to publish those floor plans without their corresponding site plans has done nothing to help clarify matters. The Domincan Motherhouse plan is a convenient case in point: although the site-free floor plan has been regularly published and discussed in terms of its geometry and space, the final reasons for both its geometry and the space it indicates may only be fullly understood when seen within within the physical context of the site, as has been amply demonstrated in the preceding chapters.

If anything, photographs tend to compound the problem. Most seem to verify that those „abstract" plans translate frictionlessly into „abstract" volumes. Stark and bold, their engagement with the landscape - if at all present - seems to be primarily through the means of simple contrast. The subtle porosity and spatial linkage which is often accomplished by those very „abstract" geometries, the changes of scale, the haptic and kinesthetic realites of the buildings stubbornly denying their capture by photography. The general exclusion of the structure, texture and feel of the greater context is the rule in most photographic documentations of the buildings. (A problem, of couse, not only limited to the showing of Kahn´s work.) „Landscape" or context, if present, is often only most generically so: as shadow-giving natural light, as a green foil to geometry.

<div style="display:flex"><div style="width:25%">Kahn: Form First</div><div style="width:75%">

There are further reasons for the minor role played by context in previous discussions of Kahn´s work. Kahn himself stressed the establishment of an institution´s „Form" as the primary act in making architecture: a search for an essence transcending the variables of circumstance, including those of material, technology, budget... or place. (*„The realization of what is an auditorium is absolutely beyond whether it is in the Sudan, or in Rio de Janero..."*[2]) Yet as we have seen: it is precisely the disciplined and masterly addressal of these variables of circumstance in the „design" phase which establishes the final presence of the „Form" in the real world. In the development of the Dominican Motherhouse we have followed how, after an originally site-free consideration of the instution´s „Form", that site was then in successive steps engaged to intertwine with and underscore the the meaning of the first valid „Form" decision: contributing to its metamorphosis, adding layers of depth to its meaning, making the general specific. An intertwining between layers of reality which shows the reciprocal capacities of human use to engage and transform place, and place to intensify program and use.
</div></div>

engaged in the work. Kahn´s development on all levels of his work was slow and evolutiona-ry, and his growth was only possible within the context of constant dialog. The contributions of certain individuals to Kahn´s mature thought have been well-documented. In terms of his emerging ideas regarding geometry, structure and order, we know that the architect Anne Tyng was a crucial influence in Kahn´s work throughout the 1950s. In the field of engineering, Kahn´s most structurally ambitious designs were strongly dependent on his regular discus-sions with his teaching partner Robert Le Ricolais and especially on his collaborations with the engineer August Kommendant. The mastery of detail in buildings such as the Kimbell Art Museum and the Yale University Art Gallery may be traced in large part back to his reliance on technically versed associates such as Marshall Meyers. The chances to meet with thinkers such as Alison and Peter Smithson or Aldo van Eyck must have surely helped cement his convictions on the social role of architecture in a contemporary world, etc..

Less well documented than these other intellectual give-and-takes is that beginning with his teaching career at the University of Pennsylvania in 1958, Kahn found himself in an atmos-phere of close contact and exchange with some of America´s foremost landscape architects: collaborations which would help produce a lingering change in his attitude toward the relati-onship between architecture and landscape. Among Penn´s faculty during the span of Kahn´s teaching career were the landscape architects Daniel Urban Kiley, Ian MacHarg, Karl Linn, Charles Patton and Lawrence Halprin, each an accomplished figure in teaching and practice, each of whom would collaborate with Kahn in both private discussion and on professional projects. Further collaborations such as those with Luis Barragán for the plaza of the Salk In-stitute (1964) or with the Sculptor Isamu Noguchi for the Levy Memorial Playground (1961-66) continued to shape Kahn´s thinking in this regard, while his new projects on the Indian subcontinent would give him deeply inspiring first hand experience of the fantastic Mogul gardens and of an intense partnership between monumental architecture and landscape.

Not incidentally, Kahn´s growing interest in the interrelationship between architecture and landscape parallelled his relationship with the young landscape architect Harriet Pattison. Pat-tison, Kahn´s „soulmate" and mother of his son Nathaniel, met Kahn in 1959 and remained his romantic partner and professional collaborator and until his death in 1974. She - either by working with Kahn formally on such projects as the Kimbell Art Museum, the Exeter Library, the Franklin D. Roosevelt Memorial or the project for the American Bicenntennial in Philadelphia, or by serving as a sounding board on many other projects - would become a steady „voice of landscape" in Kahn´s work. (Pattison: „I think we inspired each other. I think I brought a sense of nature and of the site into Lou´s work."[6]) Judging from transcriptions of his lectures in the early 1960s, Kahn may have seen this creative symbiosis as one similar to that which had existed between the architect Edwin Lutyens and the landscape architect Gertrude Jekyll.[7]

While various stations of Kahn´s late-career „landscape turn" may be described, further questions of influence - who influenced whom, when and how much? - must remain the sub-ject of speculation. Rather than indulge in sorting out these influences, the text will continue to concentrate on the work. Similar to the method of the previous two chapters, different aspects of this „problem of space" will be discussed by following their development in Kahn´s mature buildings and projects.

Establishing an Architecure of Place: 1959-74

U.S. Consulate,
Angola:
Revealing,
Intensfying

In the project for the American Consulate in Luanda, Angola (1959-62) Kahn was confronted for the first time with a landscape and climate considerably different than those of his native Philadelphia. Although throughout the 1950s architects from the United States and Europe had become increasingly active around the globe, those many followers of the „International Style", which had been spawned in their own temperate middle latitudes, had been largely reluctant or unable to convincingly respond to the needs of different regional traditions and climates. As Harriet Pattison later remarked in reference to the Luanda project and to the uniformly exported „international" solutions of the time: „...And the climate at Luanda: you just couldn´t neglect it - though most architects at the time would have - in a place like that."[8]

More than the topography or vegetation, the climate and atmosphere of equatorial Africa left vivid impressions on Kahn, impressions calling for response: *„The glare is killing, everybody looks black against the sunlight.... I came back with multiple impressions of how clever was the man who solved the problems of sun, rain, and wind."*[9] Kahn quickly established the goal that the projected buildings - a chancellery and an ambassador´s residence - aside from expressing the dignity and repose suggested by the program, should in a direct way **reveal** and **intensify** the experience of the place and its climate. His solution: a multi-layered house with sun-and-glare-breaking walls placed before the inhabited spaces within. **(Figs. 11.1, 11.2)** *„I thought of the beauty of ruins, the absence of frames, of things that nothing lives behind, and so I thought of wrapping ruins around buildings."*[10] More than the merely picturesque „beauty of ruins", Kahn sought in those walls an expressive architectural means for pre-venting heat gain and glare without adding sophisticated „devices" to the windows, such as the modernist grillwork (of Edward Durrell Stone, for example) which he had criticised for its ineffective prettiness. The unabashed directness, even primitiveness, of Kahn´s shadow-giving wall solution was intentionally so: *„The purpose was to state it in a rather primitive, unknowing, unsophisticated way."*[11]

This layering of the buildings continued on the horizontal plane: Kahn, having seen an indige-nous double roof solution for dealing with the heat generated by the sun on roofs, translated it into his own terms: *„And it came to mind to have a sunroof purely for the sun and another roof for the rain".*[12] Kahn´s sunroof, a tree-like shade canopy of tightly spaced precast con-crete leaves, spanned a good six feet (1.8 meters) over the entire rainroof, forming a sluice for cooling breezes and an ample shadow-generating gap for an expressive, ever-changing light-dark patterning of the buildings over the course of the day. It´s important to note that of apparently equal importance to the actual effectiveness of his solution, was for Kahn its ele-mentary and understandable expression of that particular locale: *„...I feel that in bringing the rain roof and the sun roof away from each other I was telling the man on the street his way of life. I was explaining the atmospheric conditions of wind, the conditions of light, the condi-tions of sun and glare to him. If I used a device - a clever kind of design device - it would only seem like a design to him - something pretty. I didn´t want anything pretty, I wanted to have a clear statement of a way of life."*[13]

Faced with the extreme conditions of Angola, Kahn for the first time allowed local climate and atmosphere to give substantial cues for what a building „wanted to be". (Pattison: *„After that project Lou seemed to become more aware of the role that climate might play in the making of a building."*[14]) By drawing upon and abstracting from indigenous tradition, by re-sponding to local conditions with the invention of „wrapped ruins", Kahn made a substantial step toward an original, responsive and expressive „modern regionalism" much in the way that architects such as Aalto, Wright, Le Corbusier and Barragán had in their own ways been working to transform the abstractions of the modernist idiom thorough the particulars of place.[15]

The Salk Institute: Gathering

If the unbuilt project in Luanda found its expression of place almost purely in the re-presenta-tion of that locale´s climate and light-atmosphere, the contemporary Salk Institute (1959-65) sought and found a deeper and more multifarious interpretation of that term. Much has been written and said about the Salk and its site, making it the single greatest exception to the general rule of silence regarding place in Kahn´s work. Photos of the central space belong to the most iconic in twentieth century architecture. Like some kind of modern-day Stonehenge or Jaipur-like instrument for measuring the heavens, the central plaza seems to have been explicitly built to gather and focus nature and cosmos within its space. Framed segments of sky and ocean meet at the horizon just above the sharp cut of the plaza´s western edge, while ocean and a central liquid rivulet fuse landscape and plaza together in an unforgettable gesture. It is as if Kahn believed that it was necessary to place those scientists who tinker daily with the building blocks of Life within a hand´s grasp of the sublime. **(Fig. 11.3)**

One „gathering" gesture of the spatial configuration - closed off by the laboratory slabs on its outward flanks, open and porous where its individual studies meet on the central plaza - underscores how Kahn saw the Salk as an **institution**: a collective of individuals working in

common accord. (Note how important it is for the **parti** that the individual (private) studies are given presence directly on the institute´s most central (public) „space of appearence".) A second „gathering" gesture of the the configuration is its intense collecting and focusing of the **landscape**. Although the central space apparently „faces" West toward the ocean, the axis has in fact been purposefully left open at both ends, with filtering orange and eucalyptus groves providing only veil-like closure to the East. This makes the central space more an East-West threshhold than a traditional concave „baroque" viewing space. The most lingering physical sense of „here-ness" from the Salk resides undoubtedly in the amplication of its edge condition. There are innumerous other buildings in similar situations in this „last frontier" of California, yet few can compare with the Salk in the way that the East of the continent behind and the West of the horizon ahead are made to merge in a single space. Both „gathering" gestures, the institutional and the landscape/cultural, the metaphorical frontier of biological research and the physical border of of the continent´s edge, intertwine and intensify each other.

As at Luanda, climate and atmosphere were critical cues for the making of the Salk: especially the characteristic Californian light. *„You cannot forget that the light of a certain character has to do with that which distinguishes the architecture of one region from another."*[16] The bleached-bones hues of the pozzolano-concrete, the tufty travertine and weathered teak are perfectly sympathetic to the native colors of Southern California´s parched grass vegetation and its exposed sandstone undercrofts. The sharp-edged figures of the totem-like studies seem expressly made to cast shadows cast across the travertine plaza, the deep cut-in galleries by the laboratories, to generate a darkened backdrop for those studies.

Focusing the Regional: Exeter and KImbell

Kahn came perhaps closest to a conventional definition of regionalist or contextualist architecture with the Phillip´s Exeter Library in New Hampshire. **(Fig. 11.4)** In modest deference to its neo-colonial neighbors on the school campus, Kahn chose brick as the primary material: *„Brick was the most friendly material in this environment. I didn´t want the library to be shockingly different in any way. I never lost my love of the old buildings."*[17] With its taut and reticent volume, its strong vertical articulation, its regular window rhythm and Shaker-like woodwook it is an unmistakably „New England" building. More so in that it approximates this regionial vernacular´s original puritan virtues of brick-on-brick sincerity and appropriateness in making, than in any direct or historicist quotations. It was of utmost importance for Kahn that brick be used not merely as a veneer, but as in the best of its neighbors, as a means to construct depth and human-scaled spatial structure. The building draws much of its strength from a subtle tectonics developed out of this analogy, binding it with its context more through a sense of empathy and presence than of direct representation or allusion.

Roughly parallel to the Exeter Library, Kahn designed the Kimbell Art Museum for an entirely different kind of American landscape: the dry Texas plains of Fort Worth. Horizontal, raking and generously shade-generating in the stark Texas sun, the long-vaulted Kimbell sympathizes with the extended lines of these dry flatlands. **(Fig. 11.5)** Like the Salk Institute, the materials - here concrete, travertine and lead roofing - with their subdued colors and pithy textures were chosen for their bleached and archaic presence in the strong sun. Details are kept flush to emphasize the simple shapes of the volumes in sunlight, revealing subtle tectonic relief and depth only at closer range. It has been suggested by Lawrence Speck that the long multiple vaults are subtle references to the bow-topped Texas livestock sheds which are so common around the Fort Worth area, while in the museum´s great porches may be seen an interpretation of the vernacular domestic Texas porch.[18] Whether Kahn consciously referred to these ubiquitous forms is the subject of speculation, as he never spoke of the building in these terms. (Although later in Texas, shortly befor Kahn´s death, the unfinished project for the DeMenil Collection in small-scale suburban Houston hints at an even more explicit reference to local domestic architecture.) What **is** certain is that the Kimbell demonstrates a strong sense of its locale - a deep insight into its atmosphere, its colors, its topography, its vernacular - without a hint of any kind of the Southwestern vernacular pastiche which has become so common in this part of America. (This **ur**-sense of place would later lead the artist Donald Judd to ponder if the Kimbell was not perhaps the first building to be erected in Fort Worth, built by an earlier - more civilized - culture than the one now living there.[19])

In addition to its feel for the general lay of the land, the architecture and its landscaping (Kahn in collaboration with Harriet Pattison/office of Charles Patton) employ a number of subtle operations in order to integrate the museum into its specific situation on the mildly sloping edge of a suburban park. A small bosque of yaupon hollies forms a shady threshold to the museum while „grafting" it on to an existing **allee**. Open porches „threaded" onto approach paths, the concave „erroded" planning grid at the entry, fountains, curbs and two sunken courts: all are treated as different opportunities to establish relationships between building and park.[20]

Gathering,
Revealing,
Focusing

What these four buildings have shown is that while Kahn´s architecture is not „about" contextualism in the style-emulating and motif-seeking, postmodernist sense of the word, it **is** indeed very much about **gathering**, **revealing**, and **focusing** the conditions of its context. This revealing may take place at the micro scale of the particular site: the diagonal geometries of Erdman Hall and the Fisher House may be discussed in purely formal terms, or in phenomenal: anyone who has visited these buildings knows the undeniably physical experience of these diagonal foils on their sloping sites, how their prow-like shapes exaggerate and intensify the sense of the immediate topography. (Richard Serra´s landscape wedges come to mind.) This revealing may also - as in Angola - have to do with the atmosphere: may be experienced in the way that sun, wind, shadow and shade „landscape" the buildings in hot, sunny climates suchs as the Salk Institute, the Indian Institute of Management or the National Assembly at Dhaka; or in the way that the special pewter-like matte stainless steel and glass facade of the Yale Center for British Art in New Haven, Connecticut was conceived to reflect that locale´s weaker, more tranquil light: „*On a grey day, it will look like a moth; on a sunny day, a butterfly.*"[21] Or this revealing may refer to a larger and more general, deeper and more psychic cultural sense: the „frontier" condition of the Salk Institute in California (*„The way of life in California is very different from say Seattle or Hong Kong - or in a closed place like Vermont."*[22]); or the native culture strangely echoed in the National Assembly at Dhaka, which has been seen to carry traces of Moghul monuments, of vernacular water-and-mound architecture, of Bengali figure-ground relationships and Buddhist mandalas... William Curtis has even seen in the building´s ornamental marble veins not only the an expression of the reinforced concrete´s construction process, but, following a Semperian line of reasoning, a **Stoffwechsel** tranformation of Bangladeshi bamboo-and-reed delta hut construction into more durable materials.[23]

The Two Monasteries: The „Form" of Landscape-Space
The previous discussions of Kahn´s „Form" in this text have explored that word in terms of its typological, practical, Platonic and Jungian connotations: all in regard to the interpretation of an institution. Might not this concept be applied to Kahn´s view of place as well? If the „Form" of an institution is about the „making available" of a deeper structure suggested by its use, might we not apply this thought to the landscape context? I conclude this chapter´s discussion with two attempts - both of them speculative, as Kahn never quite spoke of his architecture in these terms - to describe the the Dominican Motherhouse and Saint Andrew´s Priory in terms of the landscape-archetypes which they may be seen to evoke.

Arguments that architecture´s power lies in a mimetic act of reproducing nature are manifold in the history of its theory: the column-as-tree, the firmament-as-roof, the sacred mountain, the plateau, the grotto, etc.. If architecture is the modification of the earth´s surface and resources in order to make a space for living, so the argument, then nature is architecture´s strongest and most primary source of spatial and symbolic reference. An architecture which would tap into the sources of nature´s archetypical spaces, would find a deep source of understanding and an original source of expression.

Archetypes and
Counterforms:
Clearing and Oasis

Continuing this line of thought, two of the most elementary spatial archetypes in the natural landscape are the counterforms of the **clearing** and the **oasis**. As true archetypes, both spaces are laden with both natural and cultural meaning. So, the clearing: „*In the dense, dark forest it was the glade or clearing that formed a natural inner world. Its meaning derives from its state of openness: the physical absence of the forest where that which was hidden*

is brought into view."[24] And the oasis: *„The oasis is a microcosm, a complete world in itself. At its center is the source, the condition necessary for life on which the entire oasis depends."*[25] As others before them, in their history of the enclosed garden in Western architecture, Rob Aben and Saskia de Wit have suggested that the oriental gardens of Egypt, Persia and Mesopotamia were modelled on the natural archetype of the oasis, just as the medieval **hortus conclusus** was a result of the forested European landscape. Both oasis and clearing are counter-forms to and offer respite from their respective landscape contexts; both establish central points in boundless space. As such, both archetypes have served as metaphors of the garden for the soul. The clearing has alternately meant salvation (the passage fron darkness into light), insight (such as in Heidegger´s *Lichtung*), as well as the mythical space where human interaction and thus architecture began. (Chapter One of Vitruvius´ **De Architectura Libri Decem** places the locus of architecture´s beginning in a forest clearing.) On the other hand, the oasis has always served as the symbol for refuge and plenty: of paradise in the midst of paucity. Christian literature - and architecture - are unthinkable without these two archetypes.

Whether conscious or unconscious evocations, Kahn´s monasteries do strongly conjure both of these counter-archetypes: as if in his mythical search for „volume zero" in the history of monasteries he had excavated to find their pre-built landscape sources.

The Dominican Motherhouse: „Clearing"	We have seen in Chapter 5 how, beginning with David Polk´s early suggestion of searching for some kind of meaningful interaction with the forest, the Dominican Motherhouse gradually took its forest-edge condition and tranformed it through building and cutting into something approaching an „artificial clearing". In the final scheme, the ring of horizontally-oriented cells forms an inter-edge in which the vertically-oriented communal spaces are assembled. As in a natural clearing, both capured courtyards and communal buildings receive their light and only visual respite from above. **(Fig. 11.6)** An imagined axis linking heaven and earth extends from the center of the ensemble, establishing an anchored place in the otherwise undifferentiated landscape. The foregoing chapters have shown how the final design for the Dominican Motherhouse derives its expressive power from various sources: from the tension of its geometry, from its visualization of an institutional „Form", from its topological function as a „people configuration", and from its setting up of reciprocities between inside and ouside space, between architectural and grown mass. Is not an additional, intertwined source of expression based on the monastery´s ability to evoke the archetypical landscape-place of the clearing? In the foregoing text we have viewed the design of Dominican Motherhouse as **work-on-type** (or on „Form"), as **work-on-configuration** (or on an „architecture of connections"), and as **work-on-continuum** (or on „reciprocity"): an additional and equally valid way of viewing it is as **work-on-place**.

Saint Andrews Priory: „Oasis"	As described in Chapter 7, Kahn was deeply inspired by his first visit to the desert landscape of Saint Andrew´s Priory in Valyermo California. Shortly thereafter in his „Law and Rule" lectures he stated that any act of building that site must in some way celebrate the precious water which made dwelling at all possible in that hot and arid place: that all design decisions must refer back to the original possibility of attaining foothold. We have traced how, beginning with the poetic link of the „wonderful" water source at its center, Kahn sought a solution in which in which type, „water architecture" and topography intertwine.

It´s not difficult, then, to see the final scheme for Saint Andrew´s as a re-presentation of the oasis archetype - and of its more civilized forms, the captured grove and the paradise garden.[16] As in the Persian and Christian paradise gardens, a vertical axis of the source/well at the center (here, represented by the symbolic water tower) is complemented by a protective horizontal wall (here, the wall is formed by the blocks of cells). The word „paradise" being derived from the Persian „pairidaeza", literally, „surrounded by walls."[26] As in its antecedents, in the monastery´s garden irrigation channels flow from their central source, subdividing the grove/garden into segments. While architects of lesser skill might have made of these ingredients something „merely" pleasant or beautiful, the strength of Kahn´s design is in its capacity for abstraction: the sense not of a monastery **with** paradise garden, rather of a monastery **as** paradise garden.

In addition to the „natural" voice of this spatial archetype, both Islamic and Christian traditions have laden the type over centuries with layers of symbolic meaning, have seen in its form as much a cosmogram as a meditation or pleasure garden.[16] The „generic" or natural spatial diagram which underlies both the **hortus conclusus** and the paradise garden may lead us to see in both monasteries´ spatial layouts something more fundamental than the representation of particular garden images. At Valyermo, the watertower, the vertical axis of the center, may be regarded as an **axis mundi**, which is complemented by a horizontal cross dividing the monastery into four quadrants. **(Fig. 11.7)** This is a simple landscape-gathering diagram which has in different cultures been used to represent the fundamental establishment of man´s settlement in nature: by means of the geometry perceived by his body in space, the bundling of his cardinal directions or as a foil to the movement of the sun across his horizon. **(Fig. 11.8)** Like a Roman settlement´s **cardo** and **decumanus**, a cross establishes an absolute reference in the inhospitable landscape and divides the monastery into four quadrants which correspond roughly to its areas of use: to the Northwest, the „outside" of the entry court and guest quarters; to the Southwest, the communal and sacred spaces; to the Southeastern morning sun, the monks´quarters; to the Northwest, the grove. The rotation of one half of the monastery around this axis to accomodate the topography serves to create tension without destroying this diagram. **(Fig. 11.9)**

Thus, in Saint Andrew´s Priory two fundamental spatial „voices" superimpose and speak in concert: the social-spatial meaning which may be derived from the plan´s configuation in regard to its human use, and the „natural"/symbolic meaning which may be derived from the plan configuration and its interaction with its natural/cosmic space.

Deeper Structures

The Domincan Motherhouse, the „clearing in the forest", invites a similar reading. If, as developed in Chapter 10, we are to regard built mass and forest mass as reciprocal, the (when seen only in floorplan, peripheral) entry tower may be seen as an **axis mundi**, centering the clearing/monastery and setting the conditions for its division. **(Fig. 11.10)** (Northwest: arrival, Northeast: younger sisters/"secular" activities, Southeast: older sisters/sacred activities, Southwest: garden.) Of course it is not clear if Kahn was consciously thinking in these terms, yet when seen in this way, the two monasteries are more fundamentally similar than first appearances suggest. What **is** clear is that in both the Dominican Motherhouse and the Saint Andrew´s Priory programs and sites interact to repricolly transform and enrichen each other.

This chapter´s brief exploration of the emergence of **topos** or place in Kahn´s maturing work may be used to literally „ground" the previously discussed spatial phenomena in the **conditio sine qua non** of architecture: the earth. If additionally, by taking this timely, yet seldom-taken inroad I have given cause to reflect upon the vitality and potential of this theme in Kahn´s work, then all the better.

Chapter 11: Footnotes

1. In the literature on Kahn there does exist a small body of texts which specifically discuss his architecture in regard to context. Christian Norberg-Schultz, in his **Genius Loci** (1979), assigns - in Heideggerian prose - Kahn a central role in the reestablishment of „place" in modern architecture. Michael Benedikt´s **Deconstructing the Kimbell** (1991) contains an impressively astute and provocative analysis of the relationship of Kahn´s masterpiece to its specific site, an analysis later taken up and expanded by Anita Berrizbeitia and Linda Pollack in their book **Inside Outside: Between Architecture and Landscape** (1999). Sarah Williams Goldhagen´s **Louis Kahn´s Situated Modernism** (2001), in demonstrating the socially trans-formative goals behind Kahn´s architecture, discusses the corresponding role of landscape and site in its chapter on National Assembly at Dhaka: a work which both William J.R. Curtis („Cosmos and State: the National Assembly in Dhaka") and Kazi Ashrath („Sher-e-Bangla-Nagar: The National Assembly at Dhaka") have briefly but evocatively described in terms of its relationship to its Landscape. (See bibliography for full references.)

2. Louis I. Kahn: „New Frontiers in Architecture" lecture at CIAM Conference in Otterlo, 1959, in: Alessandra Latour (ed.), Louis I. Kahn, Writings, Lectures, Interviews, Rizzoli, New York, 1991, pp. 81-99.

3. Michael Graves, to name one postmodernist critic, was sceptical of Kahn´s siting of his buildings. Interview with Graves in Nakamura, Toshio (ed.), Louis I. Kahn: Conception and Meaning, Architecture + Urbanism, Special Issue, November 1983, pp. 217-220.

4. Vincent Scully, „Works of Louis I. Kahn and His Method", in: Louis I. Kahn, Architecture + Urbanism, Special Issue, 1975, pp. 286-299.

5. Of the studies named, Frampton´s is the most comprehensive and wide-reaching in terms of laying out and then situating Kahn´s work in a deeper cultural (and physical) context. As one term in his „typos, topos, tectonic" triad, the tectonic is automatically regarded as one of the basic traits of an „ontological", rather than merely „representational" architecture. Among the studies listed, it is Gast´s highly speculative drawing-board constructions which most strongly abstract Kahn´s work and distance it from its true place in the phenomenal world.

6. Interview, author with Harriet Pattison, 21 October, 2004

7. ibid.

8. ibid.

9. Louis I. Kahn, „Louis I. Kahn: A Discussion", in: Perspecta 7, 1961, reprinted in: Alessandra Latour (ed.), Louis I. Kahn, Writings, Lectures, Interviews, Rizzoli, New York, 1991, p.123.

10. ibid. p. 125.

11. ibid. p.126.

12. ibid. p. 124.

13. ibid. p.126.

14. Interview, author with Harriet Pattison, 21 October, 2004

15. Disappointing is the fact that today, almost 50 years later, so few attempts with similar quality, originality and appropriate technology have been made in the realm of climatically-responsive, regionally sensitive architecture.

16. Louis I. Kahn, „Louis I. Kahn: A Discussion", in: Perspecta 7, 1961, reprinted in: Alessandra Latour (ed.), Louis I. Kahn, Writings, Lectures, Interviews, Rizzoli, New York, 1991, p.124.

17. Louis I. Kahn, in William Jordy „The Span of Kahn" Architectural Review 155, no. 928, June 1974, p. 330.

18. Lawrence Speck, „Regionalism and Invention" (1987), in: Vincent Canizaro, (ed.), Architectural Regionalism: Collected Writings on Place, Identity, Modernity, and Tradition; Princeton Architectural Press, New York, 2007, pp. 75-76. This in no way makes invalid other interpretations of the vaults, such as Aldo Rossi´s, who saw the Kimbell as undeniably Roman in origin.

19. Donald Judd, Architektur, Edition Cantz, Ostfildern, 1992.

20. Michael Benedikt, Deconstructing the Kimbell, Lumen Books, New York, 1991.

21. Louis I. Kahn, in: David Prown, The Architecture of the Yale Center for British Art, 2. ed., Yale University, New Haven,1982, p. 43.

22. Louis I. Kahn, untitled lecture at Princeton University, Februrary 1960, Princeton Architectural Archive.

23. William J. R. Curtis, „Cosmos and State: The National Assembly in Dhaka", in: Monographias de Arquitectura y Vivienda, Madrid, Feb. 2001, pp. 101-103.

24. Rob Aben and Saskia de Wit, The Enclosed Garden: History and Development of the Hortus Conclusus, 010 Publishers, Rotterdam, 1999, p. 22-33.

25. ibid.

26. ibid.

Section IV
Epilogue

Chapter 12. Epilogue

„Personal life, expression, understanding and history advance obliquely and not straight toward ends or concepts. What one deliberately seeks he does not find; and he who on the contrary has in his meditative life known how to tap its spontaneous source never lacks for ideas and values."
Maurice Merleau-Ponty, Indirect Language and the Voices of Silence

„...For Pascal´s message is that Man is great in that he searches for absolute values but small in that, without ever ceasing to search, he knows that he can never approach those values. The only form to express this content is one which does not prove the contrary: which doesn´t show either a man who has abandoned the search or one who has approached the goal. The fragment is such a form."
L. Goldman, in: The Structuralist Controversy, 1972

Parts Toward a Whole

The necessity of a conclusion at this point in the study in certain ways contradicts the very nature of the stubbornly inconcludible Dominican Motherhouse. As does the temptation to draw something approaching a „theory" from Kahn´s design method run counter to his own scepticism toward closed or normative theories of design. Kahn himself stated that *„a good question is better than the most brilliant answer"*[1]: in this spirit, which seems appropriate to the subject of this study, the conclusion will take the form of a brief summary of what has been seen and a reflection on how that seen might be used to further formulate „good questions".

The structure chosen for the foregoing text has been not unlike that of its subject: semi-independent parts (here, the chapters) inflecting toward a „difficult" whole: all the while wary of „false" or premature closure. In the sense of a Kleistian „gradual formulation of thoughts while speaking", the narrative of Section II has itself been used as a form of inquiry: the final themes of Section III first crystallizing through the process of describing the path layed out by the drawings. This structure has demanded certain ommissions which more scholarly texts would include. The question of internal coherence has, for example, been considered more important than have questions of influence or relationships within the greater realm of architectural history. And so, I have largely avoided that line of questioning, although relationships and comparisons with possible historical models and contemporary offspring of the Dominican Motherhouse would certainly be instructive. (Concerning the former: the medieval monastery of Santa Catherina in Sinai or certain Baroque models are close at hand, as are more recent compositional methods such as those of the Ecole des Beaux-Arts or Frank Lloyd Wright´s procedure at Florida Southern College or Taliesin West.... Le Corbusier´s own Dominican monastery, La Tourette, and his „compositional" public projects come to mind, etc.. Regarding the latter, the oft-mentioned influence of the Motherhouse on the late-twentieth century works of James Stirling, Rafael Moneo, **et al**., although of interest, has also been left unexplored.) It goes without saying that Kahn´s development as an architect did not take place in isolation: the givings-and-takings between Kahn and his contemporaries who were working parallel on similar themes - Aldo van Eyck, Robert Venturi, Alison and Peter Smithson, O.M. Ungers, etc. - have, although also worthy of exploration, have been left largely undiscussed in the text. My admitted „drawing-board bias" has been towards a certain view of „designerly" thinking: with apologies to the architectural historian for the resulting shortcomings and omissions. It has been one intention of this study, though, that by demonstrating new lenses for looking at the Dominican Motherhouse and other of Kahn´s works, their use in future comparisons might help to make these even more fruitful and rich in their meanings.

1. The Dominican Motherhouse: Looking, Showing

Describing, Situating

The first goal of this study has been to extensively illuminate the project for Dominican Motherhouse as it was conceived by Kahn and his associates. If this project has previously lead an iconic, yet enigmatic existence in the publications of Kahn´s **ouevre** - more often appearing as a graphic „plan-symbol" than as a truly comprehensible „realm of spaces" - it has been the intent of this exposition to fill this gap in the knowledge of Kahn´s work. As described in the introduction, this showing of „how it is what it is" is seen to have its own inherent worth (alone for the rare chance to linger with such drawings), as well as to possess critical

value in its contribution to a „descriptive, rather than prescriptive vocabulary for forms"
(Sontag). Beyond this level of description, by showing previously unpublished drawings from
the Kahn Collection and by using these drawings as the basis for reconstructions and analytic
diagrams, it has been the intent to show not only the internal coherence of Kahn´s search for
a single project, but to demonstrate this searches´ place in Kahn´s **ouevre**. In contradiction
to the relatively widespread opinion that the Dominican Motherhouse is an odd or isolated
episode in Kahn´s work, it has been demonstrated here that this project represents a logical
and compelling manifestation of a continued re-search on a few fundamental architectural
themes. By exploring three of those themes in the third section, one goal has been to make
explicit certain common structural threads which unite the Domincan Motherhouse with
other, formally dissimilar works such as Erdman Hall, the Salk Institute, the Kimbell Art Muse-
um or the Indian Institute of Management.

2. A Culture of Making

Kahn´s Reflexive
Denkraum

The drawings which we have viewed were guided by Kahn´s hard-won and cogent analysis
of making: a broad analysis which leads to hypotheses on how works may be conceived,
how they may be developed, how they may be perceived and how they may find their place
in common experience. Although largely removed from the world of academia today, this is
an analysis which becomes especially provocative when seen in light of both modernist and
popular contemporary paradigms of designing. Against modernist systems of design, which
tended towards operational closure, tended to neglect or submerge the roles of intuition
and cultural experience in the process of making, which tended to assume automatic links
between analysis and synthesis where there were none, Kahn described the act of designing
as a self-reflective balance between knowing and not-knowing, between an „arrogance of
assumption" (the capacity of the individual to intuit and express cultural„Form") and modes-
ty (the Socratic „I know that I do not know" which is made explicit in Kahn´s „asking what a
thing „wants to be."). Kahn´s reflexive **Denkraum**, in this sense decidedly „un-modern", may
be seen as a means to go beyond certain unresolved conflicts of modernist thought.

On the other hand, against the current intellectual climate of extreme relativity in which vir-
tually anything may serve as the generator of a design (Michael Sorkin calls this the „empty
authority of procedure"), Kahn´s thought is provocative in suggesting how „open" works may
emerge from the necessity of commonality. With Kahn there is a sense of an „open theory
of making" in which authority and relativity may coexist. While his method was grounded in
a search for common cultural meaning, Kahn realized that in a modern world the way to this
agreement must be found anew with each project. In his work there is simultaneously a sen-
se of „authority" which lies in the the sincerity of the search, the masterly demonstration of
internal coherence, as well as the lurking sense that „it could have been otherwise". Kahn´s
is a method which recognized that architecture is artifice grounded in reality, and that each
work is by necessity an approximation, a suggestion, an incomplete „offering to architecture".

Even more than this „what" of design, the text has focused on the „how" of the develop-
ment of architectural depth and of internal coherence in designing a work. Beginning with
an „educated guess" or hypothesis as to an institutional „Form", moving over the testing of
that Form against the circumstances of reality, we have observed the slow development of
an intertwined and linked chain of decisions moving downward through the various scales of
the project. In this sense the act of drawing may also be seen as an act of „drawing connec-
tions" between different layers of reality.

3. Spatial Paradigms

Space: Relational
and Charged

The three „problems of space" explored in this study - viewed under the headings „an
architecture of connection", „reciprocity" and „place"- when taken together begin to provide
a more comprehensive means with which to view Kahn´s architecture. What they all share is
a way of seeing Kahn´s space as „charged", and relational. If in the past Kahn´s architecture
has most often been observed from the „outside" in - as exquisitely constructed objects, as
Platonic bodies or built symbols - this is likely due to a deep-seated cultural tendency to see

the object over the in-between, to see space as neutral and absolute rather than as relative and relational. And while Kahn´s architecture is not alone in being seen in this manner, this view does in so many ways explicitly contradict his own hard-won, mature way of thinking space and his own goals for his work: this we know from his many texts.

One may take an „atomist" view of the Domincan Motherhouse, for example, and see it as a collision of Platonic solids in neutral space. Or one may take a complementary, „Aristotelian" view, and see it as a series of „insides" seeking resolved relationships among themselves and embeddedness within their specific place. The first view tends to see a „hard" conglo-meration of colliding or assembled objects, the second, a „soft" sponge-like structure of self-linking spaces which extends beyond the plan to include the forest and hills. One may see the plan for its formal geometry, or may sense one´s own movement - as a perceiving body and social being - progressing through the multifarious and shifting spaces described by that geometry.... It goes without saying that these ways of seeing apply to all of Kahn´s mature work. While the former ways of seeing Kahn´s work have certainly been the most common, the latter are indeed the more timely due to their long-term neglect in our culture. As such I suggest that they are richer in their potential reveal the contemporary relevance of Kahn´s work, more fruitful and „progressive" in their capacity to inspire future generative thought. In the end, though, I would propose that neither of these two views is the „correct" way of seeing Kahn´s work, rather, that a comprehensive understanding of the Domincan Motherhouse - and all of Kahn´s mature work - would include both of these complements. Kahn´s **coincidentia oppositorum** in thinking demands the same of the viewer who wishes to more thoroughly understand his work. It is this complementary and intertwined nature of the work which at once gives its richness and depth, and makes it so wonderfully difficult to describe.

Evoking Questions and Responses

Any extended study of the Dominican Motherhouse will reveal that work for what it is: a small „world within a word": comphensively conceived, thematically rich, multivalent and potentially equal to Kahn´s most compelling works. One part of the pleasure of studying this work in all of its drawn detail is in the way those drawings have the propensity to awaken curiosity within their viewer: perhaps even more so than if the project had been built. Emer-ging from the narrative of the drawings, two lines of inquiry have opened in **this** text. One of these has dealt with Kahn´s „culture of making": both at the smaller scale of a reflective culture of designing-as-finding-out (the „how" of designing), and at the larger scale of this designing´s role as a cultural inquiry (the „what" of that designing). A second line of inquiry has dealt with emerging paradigms of architectural space: with exploring Kahn´s „charged" and relational space, leading to three possible descriptions. Both lines of inquiry merit deeper study than the scope of this study has allowed, suggesting further exploration and shifted perspectives. Such future explorations might take the form of writing, drawing... or building. Perhaps Kahn had this generative propensity of the unbuilt in mind when he suggested, *„That which has not been built is not really lost. Once its value is established, its demand for presence is undeniable. It is merely waiting for the right circumstances."*

Chapter 12: Footnotes

1. Louis I. Kahn, „New Frontiers in Architecture" lecture at CIAM Conference in Otterlo, 1959, in: Alessandra Latour (ed.), Louis I. Kahn, Writings, Lectures, Interviews, Rizzoli, New York, 1991, p. 93.

Section V
Appendices

Appendix A. Kahn, His Students and the Monastery:
The Master´s Studio: A Give and Take Between Teaching and Practice

Kahn as Teacher

Kahn´s teaching career began with his appointment as a visiting critic at Yale University´s School of Fine Arts in 1947, with his later advancement to Chief Critic in Architectural Design and finally to Professor of Architecture in 1955. After years of expanding influence at Yale, in the late 1950s Kahn began to feel himself increasingly isolated under the leadership of the new dean Paul Rudolf.[1] Holmes Perkins, dean of the University of Pennsylvania´s School of Architecture since 1951, used the opportunity to entice his old friend back to his **alma mater** as part of his renewal of its faculty. Kahn took charge of the Masters Studio in 1958 and assumed of the Paul Phillipe Cret Professorship in 1965, which he held until his death in 1974. Kahn was able to develop an remarkably productive symbiosis between his professional practice and his teaching at Penn. Not only were there the resultant spin-offs such as the direct commission for the Richard´s Medical Laboratories and the personal connections which lead to other commissions; the time spent at the university was both a welcome respite from the demands of his office and a means of independence from that office´s continually precarious financial situation. Kahn - himself an eternal student - found himself in an the midst of an intellectual mileau which would profoundly influence his mature thinkíng. Perkins had assembled a distinguished faculty which included the landscape architects Ian McHarg, Lawrence Halprin and Daniel Urban Kiley, the Engineer Robert Le Ricolais, architects and planners such as Robert Venturi, and the artists Neil Welliver and Robert Engman.[2]

Method

Kahn´s Master´s Studio drew students from around the world. Taught from the mid-60s onward in a unique trio with the accomplished structural engineer, Robert Le Ricolais, and his former schoolmate and friend, the architect Norman Rice, the 4-5 hour sessions met twice a week in the fantastic hulk of the Fine Arts Library Building designed by Frank Furness. The studio - with a maximum of twenty-five students - was held in what can best be described as seminar form. In contrast to the classic design studio format, there were no individual table crits and the emphasis of the students´ work tended to lie in the development of multiple schematic concepts rather than in the crafting of a single, elaborately polished project. Before beginning their designs, the students were lead by Kahn on an - occasionally weeks long - discussion to explore the „nature" of the project at hand. As in his own practice, the first steps were dedicated to establishing the „What" of the problem rather than to the specifics of its „How". These early discussions would define a common ground for the discourse-through-design which would follow. As the projects developed they were brought into the bi-weekly sessions and pinned up or spread out on the big table around which the group would collect: Kahn would then pick those projects for discussion which seemed to provide the most interesting or provocative contributions to the ongoing discourse. The finished projects were drawn up in sharply deliniated orthographic drawings: renderings and perspectives were discouraged, as the emphasis was to be on the formulation of an idea, not on elaborate presentations. The final juries, beginning at 2 p.m. and rarely finishing before midnight, were events with a faculty-wide resonance. Kahn´s presence and reputation as a teacher at Penn was legendary: profoundly influencing hundreds of students and forming the basis of what would become known as the „Philadelphia School". [3]

Teaching and Practice

From the very beginning, the borders between Kahn´s practice and his teaching were fuzzy. Only a half-hour walk from the university campus, his workshop-like office at 1501 Walnut Street - with its steady flow of Penn students and graduates and 24-hour atmosphere of discourse - tended at times to take on the character of an extended master´s class, while his course at Penn was often used as a vehicle to discuss and explore current projects from his practice. Among the projects which Kahn assigned his students at Penn were the Salk Institute (academic year 1959-60), the U.S. Consulate in Luanda (1960-61), the National Assembly at Dhaka (1962-63), the Fort Wayne Fine Arts Center (1963-64), Philadelphia´s Independence Mall (1963-64) and the Philadelphia Institute of Arts (1965-66).[4] In exchange for Kahn´s gift of teaching, for years the Master´s Studio provided him with a valuable idea workshop. For ten hours a week, free from the disturbances and pressures of his office, he enjoyed a private forum for discourse in which he could, with the help of his students and colleagues, slowly crystallize his own thoughts on the nature and the particulars of the projects which lay waiting for him on his own drawing table. Norman Rice later recalled, „...*Le Corbusier, who was a painter, once told me he fought out his architectural battles in his paintings. I believe that*

157

the discussions in the studio, with their give and take, helped Lou fight out and resolve many of his own architectural battles."[5]

<table>
<tr><td>The Monasteries
as Projects</td><td>During the academic year of 1962-63 and again in 1965-66, Kahn assigned his students the design problem of a monastery. Based first on what was then his own „wish commission" for the St. Andrews Priory and later on the Dominican Motherhouse, Kahn used the real sites and programs as the framework for those assignments. (Interestingly, he seems to have used the program of St. Andrew's Priory in both cases.) That he would assign the project of a monastery twice may be seen not only as a sign of how much he valued those projects himself, but of how high he regarded their didactic potential, later noting „*...it was one of the most exciting experiences I had in teaching.*" Figs A.1 - A.5 show some of the student work from those studios.[6]</td></tr>
</table>

Although judging from the scant evidence available it's difficult to see any direct parallels between Kahn's own projects and those of his students, the following excerpts from two of Kahn's lectures may give a hint at how the discussion rounds in his Master's Studio may have helped him to „fight out and resolve his own architectural battle." Reading through those texts after having studied the project at length, it's difficult to ascertain where Kahn's own thoughts end and those of his „students" begin. Without being able to link the students' quotes with their projects, it's easy to imagine that either Kahn is putting his own words into their mouths or that „the students" are describing Kahn's own Motherhouse project. For so much of what we've seen in Kahn's project is present in the students' words: the cell as the beginning of monastery, the desired equality of the spaces, the idea of „reprogramming", the non-restaurant quality (!) of the refectory, the fireplaces..... even the struggle between a too-idealistic architect and the wishes of his client.....

The Institutions of Man
Lecture at Princeton University, March 13, 1968

„...In a recent problem I gave at the university, of a monastery, I assumed the role of the hermit.

There was yet no name **monastery**.

For two weeks the students tried to extricate themselves from the knowledge they had of monasteries as they are known. One young Indian girl ventured, **I believe the cell is the nucleus of the monastery. The chapel earns its right to exist because of the cell. The refectory has a right to exist because of the cell. The retreat is the same, the place of work is the same**.

This made the class thoughtful about the subject. Another Indian student who had never been in a monastery said, I agree completely with Nina, but I have to add: Once the cell gives the right for the chapel to exist, the chapel becomes equal with the cell. The school becomes equal to the chapel. The refectory becomes equal to the cell and the chapel. Nothing is more important than the other.

The refectory was not a restaurant; it wasn't just a place of eating, it had special significance. The Indian students weren't the best designers in the class, but they were certainly feeling-filled people.

The feeling of their beautifully thoughtful statements inspired one of the students, who is by far the best designer, to make a design in which he placed the refectory half a mile away from the center of the monastery and put the monastery near the retreat, saying that it was such a great honor for the retreat to be next to the monastery that one of the important arms of the monastery should be given to the retreat. He also had a very large fireplace, larger than what is practical, symbolic of fire - never to lose the beginning, the wonder of fire. We were all very excited.

The program became a ragged thing waiting for something to appear.

Constantly the question **What is a monastery? What inspired the first monastery?**

You needn´t know of the circumstantial fact because that is not a guide at all. Any thing in history which happens circumstantially is of little worth.

We invited a monk from Pittsburgh to come and review our designs. We showed him our little cells, weighing them carefully so that they did not become pretentious. He said, **It´s all right for some monks. But I´m a painter and I have a large studio in my monastery, and when I come to my cell, I feel claustrophobic.** And he said, **The design is beautiful - I love the way the trees are rendered - but I wouldn´t want to walk half a mile to the refectory. I would rather have my meals served in bed.**

There were other merry criticisms, and I thought he was amusing, but we felt something against him.

The fact that he was a monk of course meant that we respected him greatly for his beliefs. He left us with a weight of responsibility which we didn´t expect.

We thought that he would be terribly overwhelmed, but it wasn´t so.

We worked on, and it was one of the most exciting experiences I had in teaching, to see the unraveling of thoughts that were not bound by any tradition other than a spirit, which is really what tradition is.

Not the acts of tradition, but the spirit of it.

We invited him for the jury. we sure were bold to do this. And when he appeared, he was the staunchest defender of the most exploratory schemes. It was a great lesson for me. I´m eternally grateful for the experience...”[7]

The Institutions of Man II

I know of no greater service an architect can make
as a professional man than to sense that
every building must serve an institution of man,
whether the institution of government,
of home, of learning,
or of health, or recreation.

One of the great lacks of architecture today
is that these institutions are not being defined,
that they are being taken as given by the programmer,
and made into a building.

I want to give some examples
of what I mean by reprogramming.

In my classwork at the university,
I gave the problem of a monastery to my class,
and I assumed the role of a hermit
who sensed that there should be a society of hermits.
Where do I begin?
How do I sense this society of hermits?
I had no program,

and for two solid weeks, we discussed nature.
(Nature is such a realization part of being a hermit.)

An Indian woman gave the first remark of significance.
She said, „I believe that this place should be so that
everything stems from the cell.
From the cell would come the right for the chapel to exist.
From the cell would come the right for the retreat
and for the workshops to exist."
Another Indian student
(their minds work in most transcendent ways)
said, „I very much agree,
but would like to add
that the refectory must be equal to the chapel,
and the chapel must be equal to the cell,
and the retreat must be equal to the refectory.
None is greater than the other."

Now the most gifted student in the class was an Englishman,
he submitted a wonderful design
in which he added another element,
a fireplace, which was on the exterior.
Somehow, he felt he could not deny the meaning of fire,
and the warmth and promise of fire.
He also placed the retreat a half-mile away from the monastery,
saying that it was an honor for the monastery to have a retreat,
and that an important arm of the monastery
should be given to the retreat.

We called a monk from Pittsburgh
to tell us how wonderful our thinking was.
He was a merry monk,
a painter who lived in a great big studio,
and he came out of his cell only reluctantly.
He was really ribbing our plans,
especially about the refectory being
a half-mile away from the center.
He said, „I´d **much** rather have my meals served in bed!"
We were dejected when he left, but then we thought,
„Well, he´s only a monk - he doesn´t know any better."

We developed the problem,
and there were some wonderful solutions.
I tell you, it was most rewarding to have the realization
that the solutons did not come from a dead program,
one put to us as so many square feet.
The usual consideration of the nature
of the refectory, and so on, were disregarded.
When we held the jury, Father Roland came,
and he was a staunch supporter
of the most way-out shemes for the monastery,
but the program, as usually given,
was dead.
The original program had no sense of new,
no will to live,
and these students were highly inspired.
Each student gave a different solution,
but all had the feelings of new life, of new element.

I can´t describe it all to you,
but what started with just a reconsideration
emerged with the power of new beginning,
in which new discoveries
could be made in present-day context.[8]

Footnotes: Appendix A

1. William S. Huff: „Kahn and Yale", in: Alessandra Latour, Louis I. Kahn. l´uomo, il maestro, Edizioni Kappi, Rom, 1986, p. 331-365.

2. See: G. Holmes Perkins: „Louis Kahn: Teacher", in: Alessandra Latour, op. cit., pp. 367-380.

3. I am grateful to Kahn´s former students, David DeLong and Jim Kise for sharing their experiences with me. (Interviews April 2006.)

4. Fabrizio Tramontano, L´attività didattica di Louis I. Kahn, Dissertation, Università di Palermo, 1990 (in Kahn Collection).

5. Norman Rice, in: Richard Saul Wurman, What Will Be Has Always Been - The Words of Louis I. Kahn, Rizzoli, New York, 1986, p. 294.

6. Source: Fabrizio Tramontano, op. cit.

7. Louis I. Kahn, „The Institutions of Man", lecture at Princeton University, March 13, 1968, in: Richard Saul Wurman, What Will Be Has Always Been - The Words of Louis I. Kahn, Rizzoli, New York, 1986, pp. 21-22

8. Louis I. Kahn, „The Institutions of Man II", lecture at Rice University, Spring 1968 (also published as „White Light, Black Shadow"), in: Conversations with Students, Architecture at Rice 26, 2. ed., Dung Ngo, editor, Architecture at Rice Publications, Houston, 1998 (First ed. 1969), pp. 19-22.

MM   When did you first meet Louis Kahn?

DP   It was during my studies. I had transfered to Penn from Dartmouth, where I´d been basically biding time, trying to find out what I really wanted to do: eventually, I decided to study architecture. At Penn - I think it was my second year - I had Lou as a guest critic for a project jury. I later had him for a design studio. This was in the mid 50´s, so he wasn´t really a well known architect at the time: there was the gallery at Yale of course, and the Trenton Bath House, but his real breakthrough was still ahead of him. At that time, the discourse at Penn was beginning to be dominated by „modern design", after having been a Beaux-Arts school for so long. The dean, Holmes Perkins, was in the process of renewing the program and the faculty, so things were in a state of flux and it was an exciting place to be. And then in the midst of that came Kahn: it was something like a wake up call to me... and to many others as well. He was not at all interested in much of the the jargon of the day nor in architectural „inventions" nor in making forms **per se**. He was first and foremost interested in trying to figure out **what** and **how** things really were, so that, having gotten closer to that **what** and **how**, you could then deal with things in a meaningful fashion. He started out by trying to find out the **nature** of things, what it is that gives things life. This was completely new for us: Nobody had spoken to us about architecture in this way before and it was more than refreshing: it put us on to a whole different way of looking at the profession. He really disliked much of the catch phrases and jargon of the day, terms like „form follows function", the infatuation with trying to define words like „process"... „Making architecture isn´t a process: making beer is a process", he would say.

MM   How long did you work together with Kahn?

DP   After graduating from Penn in 1956, I did a two year service in the army. So I was in the office during the period between ´58 and ´68.

MM   And after Kahn´s office?

DP   I opened my own small office, which I´ve run ever since. In addition, I taught at various universities for 30 years until 1996.

MM   What was you role in Kahn´s office?

DP   Generally, I tended to be one to start things off: more often involved in the design phase of the projects than in the construction phase, although I was regularly involved there, too.

MM   What were some of the projects which you worked on in the office?

DP   The Church at Rochester, The Tribune Review building for some time, The Kimbell Art Museum early in its development.... The Bryn Mawr dormatory, the two monasteries, the towers at Kansas City and New York.... a while on Salk.....

MM   So you were able to contribute to the planning of some real masterworks! What was it like in to work in the office?

DP   Oh, it was wonderful... and awful! (Laughs) On the one hand, Lou was a complex and simply wonderful person: generous, in many ways incredibly in touch with the world. On the other hand, there were the irregular hours... and sometimes the irregular paychecks: once, I think, they were 11 weeks behind (Laughs).... It could be trying, especially if you had a wife and a family. In the end, that´s what eventually lead to the decision to leave the office: if you stay, you know that you´ll be completely eaten up by it, that it will leave nothing else untouched. Lou could be completely charming, but there were also times where he would fly into an absolute fury. I remember one time: a group of us were sitting together and he completely chewed us out - although I can´t remember the reason for his anger now - leaving us all to swear at him under our breaths as he walked out of the room.... But in the end, you always had to love the man. You always had the feeling that you were contributing to something very meaningful: we were helpers, collaborators, catalysts and Lou was always very open to our input. We were all very much aware that the things that would come out of the office would be amazing things.

MM	After having had the chance to spend a good deal of time in several of Kahn´s buildings over the past weeks, I was always impressed by what a sense of repose they radiate. Everything has been considered, nothing has been neglected or rushed into being. When you consider how the building industry works - how it worked even when those buildings were built - how busy Kahn and the office were when these buildings were being planned and built, this is an incredible feat!
DP	Yes: Lou **made** the time for the projects, even if it meant risking losing a few of them. He set the rhythm for the work, and a design would take however long it needed: that might mean weeks, it might also mean months or even years.... And a „design" wasn´t finished until it was built, until every aspect, every detail had been considered....
MM	That´s true: if you look at some of the project dates, you begin to wonder, though, how he found his some of his clients: people who were willing to spend five or six years planning a house.....
DP	Sure: clients like Jonas Salk, Mrs. Kimbell, the Fishers: without them, nothing would have been possible. But the long planning phases of the projects didn´t mean that we were dragging our feet. It was a constant searching in which the idea of making a profit was quite secondary. Of course, the office was never allowed to get too big. Sometimes certain projects would take priority over others for a time, putting them on the back burner.... There would also be regular charrettes, where people would be pulled onto certain projects to bring them forward or to meet certain deadlines: this was when the planning would be most intense, where everything would be given a big push and we´d be there in the office at all hours of the day and night....
MM	One theme which I´ve been beginning to explore in Kahn´s architecture is its relationship to its context, especially to landscape: a theme which I feel has been neglected in the existing texts on his work.
DP	Well, I think you´re right: that´s a rich topic, and one not yet fully explored. With Kahn the relationship with the environment is not as obvious or easy to describe as it is with that „flowing indoor-outdoor space" which is typically associated with so much modern architecture. Kahn´s rooms are always „real" interiors, and yet they can simultaneously build up very subtle dialogs with their environments. At the Salk Institute, for example, you can sense a sort of active interweaving: the big Pacific landscape, the plaza, the intermediate spaces between the cells and the loggias.... All those different layers of scale are linked together: it´s very intense and you can´t escape it. At the Kimbell Art Museum, there´s a much more silent involvement between the building and its environment, but it´s nonetheless there: the way that the landscape, the park, curves back on itself there is a wonderful thing... and the whole treshhold situation, with the little grove, the gravel surface.... Do you know Michael Benedikt´s little book on the Kimbell? He does a fantastic job in describing it.... Then there are other projects where Lou had difficulty: the church at Rochester seems to me to be unresolved in terms of its relationship to the site. Or maybe you can say that it wasn´t really a theme for that project: his interest was elsewhere: primarily in the internal workings of the plan. The interior-exterior theme is there in that building, of course, but it´s more generally stated: not really inspired by the particulars of **that** site. Or Erdman Hall at Bryn Mawr is another interesting case: the three great central spaces were conceived of as being simultaneously deep in the middle of the building and having a sense of connectedness with the rest of the campus. And they **were** that way, too, as long as the perimeter rooms hadn´t been filled in: during construction there was the fantastic light coming in from the skylight towers and the the outdoor space filtering through the perimeter rooms: a wonderful feeling! Of course, the rooms were then filled in, and the result is that the central spaces are much more introverted than originally intended.
MM	In this respect - landscape and architecture, interior and exterior - I´ve been studying two of the projects on which you were involved as project architect: The Dominican Motherhouse at Media and St. Andrew´s Priory in Valyermo. In my opinion, both projects have almost archetypical relationships to their landscapes. Looking through the sketches at the Kahn archive, though, it´s difficult to tell if this way of working with the context was really the starting point for those projects. What I´m interested in knowing is just when and how the landscape tended to emerge as a force in the designs.
DP	Lou was generally looking for the discovery of „that which has Life", with the question of „where do spaces come from?" I think in general, and also with those two projects, this had much to do with grasping the internal working of a program, of an institution. I think that the

collection of rooms tended to come together in his mind before the site would be included. Sometimes in the early phase of a project, he would have no clue as to the directions, where North was, where the sun was, etc.. Things would tend begin with diagrams, with the plan, and then later include the landscape. Of course he was mindful of the landscape: sometimes it would enter earlier, sometimes later in a project. Sometimes one of us might prompt him, sometimes the impetus came from him. The whole procedure was of course never quite the same, never a linear thing.....

MM   And with the Motherhouse?
DP   There were some early sketches from Lou in which the basic relationship between the cells and the common rooms had been explored, and I felt that they didn´t take the actual site - a sloped clearing in the woods - enough into consideration. I´d been out at the site a couple of times and had had more time to look around than Lou. I suggested to him that he investigate using the cells as a sort of thickend wall between the public rooms and edge of the forest. This would place the cells in an intimate relationship with the woods and at the same time make a space for the public rooms. He took up my suggestion and we began to work with it in the following schemes. All of the following variations then attempted in some meaningful way to engage the forest with the building.

MM   What do you think of the plan of the Motherhouse? Some consider it to be sort of an odd episode, but I´ve always been fascinated by it, although the published drawings leave very much open to speculation.
DP   Oh, I think that it´s an incredibly rich thing. On the one hand it was exciting to work on because it moved into a sort of new territory, away from the earlier repetitve plans, opening the door to a new type of plan, to new possibilities for spatial richness: if you look at the plan, there´s an enormous amount going on there, a whole world of possibilities which hadn´t yet been explored in the earlier plans. On the other hand, it´s still a part of Kahn´s continuous research: building on themes which he had previously developed. So I don´t think that it´s correct to view the plan - as some may have - as an episode. Lou was very methodic and purposeful in that sense: always building upon that which came before. If you look at the way his work developed, there´s very little jumping around and taking of detours.

MM   I think that that´s one mark of the really great architects: that abilty to stay with a theme, to develop it over a long period of time. If you look at people like Wright or Corb or Mies, it´s amazing to see how much architecture they were able to generate out of a few very basic themes.
DP   Exactly!

MM   It´s fascinating to go through the project drawings at the archive and to follow the development of the Motherhouse. In certain ways it´s probably one of the most literal illustrations of Kahn´s ideas that „architecture begins with the making of a room" or that „a house is a society of rooms". Inherent in that way of working with the plan is the fact that each part can be explored in and of itself - you can vary the type, the square footage, whatever - just as long as the connections work in the end.... So, if you´re able to supend judgement long enough and let the parts work for themselves, you may end up with a plan which will surprise you.
DP   Yes, exactly: much more so than in searching for an all-inclusive structure. Of course, this way of working is largely dependent on the type of program you´re dealing with: you need a certain variety of room sizes and types in the program for it be meaningful, otherwise it just becomes a formal game: trying to generate variety where there´s really no reason for it.

MM   Sifting through the drawings at the Archive, each part of the plan becomes its own little sub-plot: the chapel, the refectory, the tower... dozens and dozens of variations! By the time the project is completed, there is a whole family of plans, some of which have been planned from top to bottom several times, some of which have then been reduced in size in an effort to cut costs....
DP   (Laughs) Yes, in that way, it´s not really the design of a single building, but of several buildings. And of course: the budget was always a big concern with that project: the program demanded a lot - and we wanted a lot - so we were always working on the limit. After a certain point, as the design was rather well along its way - I had decided to leave the office around then, 1968 or so - Anant Raje took over the development of the last steps, so if you´d like to know more about that phase, you´d have to contact him.

MM	And Saint Andrew´s in Valyermo? How did that project develop?
DP	The Valyermo project came into the office at almost exactly the same time as Media. Unfortunately, it was not able to be developed as far as the Motherhouse. It became apparent rather soon that the monks just didn´t have the money for a project of that size. We worked quickly on that project, with only enough time for about 3 versions or so. In spite of that, the plan and the relationship of the buildings to the topography were quite well developed: we made a rather large plaster model of the monastery and the site around it and it seemed to be right. The individual cells were developed in greater detail, as I recall and it all had a lot of potential. I remember I had drawn a rather tight elevation of the whole complex which Lou traced over in charcoal, making a much looser, more evocative drawing to show the monks. The models were an important way of testing the relationship of the building to the site for us: its scale, how it dealt with the topography... so they tended to be very large, taking in a lot of context. If you look at the sections and site plans from Lou and from the office, they´re similarly large, examining the projects in a much bigger picture. The model for Valyermo was big, but the Model for the Hurva Synagogue was enormous: they had practically built the entire town of Jerusalem in the office... it took up an entire room!
MM	Did the similar programs and the fact that both monasteries were being simultaneously developed lead to a conscious „theme and variation" architecture?
DP	You might say that. Although they´re different in character, the way of bringing the individual spaces together is similar in both projects. And then some of the discoveries from the Media project were developed further in Valyermo and vice versa. There was the realization of the tower as a sort of meeting place at the threshold between inner and outer worlds; then the free play of the individual elements.... The relationship between the refectory and the chapel is similar in both projects....
MM	In some respects, you can almost feel a conscious inversion is going on with certain themes: in Media, the tower/entry is like a gate at the edge; in Valyermo, it´s discovered in the middle of the monastery. Media is like a thick-walled „light in the forest" surrounded by woods; Valyermo, like a big „hortus conclusus" or oasis in the middle of the desert, with a captured grove in its center....
DP	Yes, exactly! That´s a good description....
MM	Kahn had visited and sketched from different European monasteries during his earlier trips: can you recall any specific historical models - either monasteries or the Villa Hadriana or whatever - which Kahn referred to while he was working on those projects with you?
DP	No, I don´t think that he worked that way, by developing projects from concrete models. I think that his knowledge of history operated at a more general, less specific level in his work. I remember once, when we were working on the New York City tower project, Lou came into the office with a book on the ancient Indian rock-cut temples: those which have been hewn directly out of the cliffs. „How do you make architecture out of that?" He wanted to know. He was really interested in poché architecture and how to achieve something analogous with modern means. But to copy or directly quote were things to which he was opposed.
MM	Both of the monastery projects are departures from earlier uses of geometry in Kahn´s work. There have been some attempts to describe Kahn´s architecture in terms of Platonic geometry. One rather popular book on Kahn in Germany is „The Order of Ideas" by Klaus-Peter Gast - I´m not sure if you know it - his thesis that all of the works have their basis in harmonic geometric constructions: somewhat analogous to Wittkower´s description of Palladio. He spends a lot of effort trying to show how all of Kahn´s buildings are meticulously constructed of figures such as square, golden section, one to root two.... He goes even further and states that this is the way the designs were developed: step-by-step. I´ve always been very sceptical - it seems like such an art historian´s way of looking at architecture - and after spending over a week in the archives without seeing a single drawing which would confirm Gast´s thesis, I´m even more so now.
DP	Well, I don´t know that book, but I can tell you that we didn´t work that way. Of course, geometry was always present in the office: Kahn´s work is inherently strongly geometric. But there were so many other things which were of a much higher priority: the bringing together of the spaces, their construction.... This all took place within some kind of geome-

tric scheme, of course. But the geometry was always serving as a foil to something: the plan was never treated as some kind of purely geometrical or mathematical excercise.

MM   David: thank you for taking your time for me. It´s been wonderful to have had the chance to talk with you, not only for the information, but for helping to make the subject more real to me.

DP   It´s been a pleasure. let me know if I can be of any help with your project.

MM   Let´s begin by talking about you: your education and professional experience as a landscape architect before you began to work with Kahn.

HP   I grew up in Chicago and began my studies there. Then, at Penn I received my Masters Degree, studying under Peter Sharp. After an apprenticeship with Dan Kiley, I started to work in the office of Charles Patton.

MM   How did you first come to know Louis Kahn?

HP   I first met Lou through Bob Venturi at the end of the ´fifties..

MM   I´ve heard that Kahn was a rather gregarious man who developed his ideas through constant discourse with others. The value of his collaborations with someone like August Kommendant with regard to stucture or with Anne Tyng in connection with certain structural and geometrical themes have been well documented. What about people from the discipline of landscape architecture? It´s my opinion that Kahn´s feeling for landscape and context became ever more developed, ever subtler in his later work: can you name some important contacts or sounding boards there?

HP   Well, first of all: I think you´re correct in your opinion. As far as collaboration was concerned: Lou worked with Charles Patton on several projects. While Charles was always helpful to him, I don´t think that he really contributed to an essential change in Lou´s view of architecture. Through Penn Lou knew and spoke with Dan Kiley as well: they´d also worked together on som of his earlier projects.... Lawrence Halprin worked with him for some time on Salk Institute, and though the got along quite well personally, professionally it not a relationship which Lou found to be very fruitful.... it was of course, Luis Barragán´s contribution which really helped to make that project what it is today: you know, of course, the decision to leave the central space free of the trees which had first been planned there, open to the sky and the ocean. He had enormous respect for Barragán.

I think that I helped Lou over time to gain a more profound feeling for what the relationship between landscape and architecture might be... for nature in general. We worked together for years both formally on projects or informally, where I would serve as his critic. He was, of course, a city man and his early built work was largely urban or suburban. In those early projects, landscape architects are used in the most conventional of ways, coming in when the project has already been sited and designed to „shrub it up". It seems to me that site planning and the fit of the project to the site began to take on a greater role in his work starting in the late 50´s with the Luanda project. It´s after this time that he first had the challenge of working in a bigger, natural context. And the climate at Luanda: you just couldn´t neglect it - though most architects at the time would have - in a place like that. After that project Lou seemed to become more aware of the role of the climate might play in the making of a building.

MM   Were there any other influences?

HP   The exposure to India and Bangladesh, their gardens, site planning and monumental architecture, were of great importance to him: after he´d travelled there he used to speak of those places a lot. One difficult, but perhaps fruitful collaboration was that with Isamu Noguchi for the Levy Memorial Playground in New York. I think that Noguchi tended to think of the project in terms of a series of sculptural objects in a landscape and Lou tried to conceive of ways of bringing it all together in a cohesive, but openly structured space. I was there to follow the course of the project and to watch the two of them at work: they were both quite strong-willed men and it was always a big struggle to see whose idea would take the lead.... after a while I began to think of them as two gladiators going into the ring when it came time to discuss the project! Lou always searched for a strong, overall, space-making structure, which was foreign to Noguchi, who wanted to keep things looser. In the end, the project was unfortunately never built. If Noguchi did have an influence on Lou then it might have been in encouraging him toward a more free play with architectural objects, maybe eventually resulting in projects like Fort Wayne or the Dominican monastery....? It´s difficult to say, though, what remained of that collaboration. Noguchi made beautiful plaster models in which the objects and the landscape were wonderfully merged. Lou was quite taken by those models and when you look at his large site models after the work with Noguchi, you can see that something may have rubbed off there: and maybe not only at the scale of his models: berms, the modelling of the earth begin to appear in some of the later designs....

MM	Regarding the development of the projects: how did they tend to start off?
HP	Lou tended to begin with a visualisation of the spaces in plan. The search for what he called „Form."
MM	And the context, the landscape?
HP	That tended to come later, in the best cases, transforming the original plan scheme. It´s not that he neglected the site, but that finding the general relationship of the spaces tended to take the first priority. There are some projects where the concentration on the plan scheme - the relationship of the internal spaces to one another - is dominant and the relationship to the site remains rather ambivalent and undeveloped. If you take the Unitarian Church, for example, it appears to have just sort of landed there... the way it relates to the ravine and the street aren´t really a theme there.
MM	That´s interesting: David Polk told me pretty much the same thing in my interview with him recently.
HP	I think that Lou felt most at home with site that didn´t impinge on him too much, a site like that at Bangladesh - the broad open plain - was perfect for him: he could then construct the landscape.
MM	Hmm.... I think that it´s just about the opposite with me: I´m always thankful for hints from the context as to how to begin a project...
HP	Sometimes - perhaps spurred on by our discussions about gardens - he would feel the need for a garden, and he would write „garden" on the plan: it was a sort of shorthand.... just how and what the garden would be would come later. Take the library at Berkeley, for instance: he had wanted a garden there, but as it turned out, there was no room for one. The result - the terraced library with its tiers of trees - is sort of a compact shorthand for „garden"... Of course, it´s pure Boullee, too: the Cenotaph for Newton is there. He was always loved Boullee.....
MM	What were some the projects you worked on together with Kahn?
HP	Oh, there were so many! The Kimbell Art Museum, the Exeter Library, Salk Institute at the end, Palazzo dei Congressi, the monument projects.....
MM	Which projects stand out in your mind when you think of your collaboration with Kahn?
HP	Maybe we could start with the Kimbell Art Museum: I worked on that project solidly for two years and was involved in some of the major decisions resulting in its final form.
MM	What were some of the decisions which you were involved in?
HP	Well, it was not an interesting site to begin with: suburban, rather bland and lacking in cha- racter.... I helped to establish the basic relationship of the building to the slightly sloping site: to dig it in. In early scheme the building was sitting on a plinth: I was for doing away with the plinth and working the building into the site, establishing its different levels more subtly. Otherwise, I designed the features which help to link the building to the park: the trees, the paving, the water... I also promoted the open loggia, which after a while was impossible to take away from the design. With the water, it was very important to me that it be moving and reflective at the same time, so that there was both the gentle noise and the stillness, the reflections.
MM	In his book „Deconstructing the Kimbell" Michael Benedikt has a good description of the way the little grove of trees „grafts" the museum onto the existing allee and make a transitional zone between park and entry...
HP	We started with a trellis there - the wish to let the structure make the transition - but we later decided, for the better, on the trees.
MM	If you look out for it, a little grove appears again and again as a transitional device: Kimbell, Salk, an early version of the Dominican Motherhouse, St. Andrews Priory, the F.D.R. Memorial....
HP	It is a wonderful thing, a grove, isn´t it?
MM	There´s something almost archetypical about the way it´s used in those projects: a little piece of tamed nature, a philosopher´s grove, etc....
HP	It´s open to interpretation without being any one thing. It can be both spatial and symbolic.

MM	And the outer courts?
HP	They´re also intended to mediate between the slope and the museum. The delivery court is disappointing to me. The huge turning radii of the trucks made it much bigger and more barren than we really wanted. I had originally conceived of what later became the Noguchi court as both an exhibition and a performance space. There were to be spectator balconies there to allow for open air performances in the Summer, adding another dimension of use to the museum. It was disappointing that that couldn´t be realised. We´d also considered letting the water from the fountains have their source at that level: perhaps in some kind of grotto.
MM	The memorial projects are interesting regarding the landscape in that the functional requirements have been reduced to a minimum and there´s a very fundamental relationship between the built and the unbuilt. How did Kahn describe the Franklin D. Roosevelt Memorial project in New York: just „a room and a garden"..? The most basic relationship imaginable.... Did you work on any of those projects together with Kahn?
HP	Yes, the Roosevelt Memorial was really a total collaboration between us as architect and landscape architect because the two disciplines were inseperable in that project. It´s more about experience than about structure: we thought of it as a procession, but one in which the visitors might choose their own route through the memorial: that was important. There are alternative routes, and a the slopes of the berms and the little grass park are inverted in respect to each other so that everything is constantly shifting, constantly changing the visitors relationship to the defined space and to the surroundings as they go through the memorial. It´s all very calculated in that respect. The room at end was very elemental and was to be constucted of huge cut stones - the biggest a crane could lift! After having gone through the transition of the park, with Manhattan slipping out of sight, the visitors would just enter into this elementary, strong open room and have only the view of the sky and of the horizon ahead of them; the walls of the room would have blocked out the Manhattan skyline and everything else. The statue of Roosevelt was necessary and maybe somewhat of a concession: Lou was otherwise for keeping the room as empty as possible: at the open edge we used a sort of ha-ha so that we could do without a railing.
MM	I´ve always been a big fan of that project: it does so much with so little: it´s almost like „gardening the sky"... What´s also interesting about it is that the room defined by architectural elements is open, while the room defined by landscape elements is more closed: an inversion of the usual situation.
HP	Yes, that´s a good point, although the trees were to act as a filter: defining the space, yet giving views to the surrounding landscape. We imaged that people would be able to use the park as they liked, to play or picnic there. that was an important part of the concept.
MM	I can imagine that F.D.R. would have appreciated that.... I remember reading that Kahn said something like, „Monumentality has nothing to do with the size." Maybe that´s something that I´ve always liked about this project: that it manages to be both monumental and intimate at the same time.
HP	Another successful memorial project was that for the Six Million Jewish Martyrs. The earlier version with nine equally spaced pillars was really the strongest of all the designs for that project. At first glance, it´s all very simple, but it was quite subtly calculated as to how the visitors would experience it: the proportions, the scale, the spacing between the pillars, the height of the steps and the platform... and then the way the whole would capure and transform the light, day and night. The fact that it was to be equally solid and void, completely open to the elements... it would be constantly changing according to the time of day, the weather or from what angle it was viewed.... And then the glass itself - the glass bricks - we spent a lot of work getting everything to be right: it´s a pity that it was never built, because it would have been a fascinating work. Some have said that Lou didn´t know how to use glass as a material, that he always tried to make it disappear: but this is one project which proves it to be completely otherwise.
MM	A magic kalidoscope....
HP	It´s interesting to talk about the memorials with you: Lou always said that „architecture begins with the making of a room" and yet he was so fascinated by monuments, by the pyramids, which had no interior space at all. Are the pyramids architecture, then?
MM	Hmm... (Laughs) tough question! Adolf Loos would say yes.... maybe even the only „true" architecture....

170

	But that´s an interesting point with Kahn... of course he must have been completely enthralled by the „volume zero-ness" of it all, with the timelessness ....
MM	Although I´ve never planned a monument or memorial, I´ve always been intrigued with that aspect. On a similar plane: I once designed a bridge together with my partner and we found it quite wonderful to work on a project in the middle of nature which had no real program other than getting cars from one side to the other: the dialog between the object and the landscape and the natural forces became the central theme for us. (Sketches and explains bridge.)
HP	What a lovely design! Is a bridge architecture?
MM	Well, we liked to think that ours was.....
MM	I´ve just finished travelling two weeks with a group of my students around the Midwestern and Eastern States. After just having seen a series of houses and public buildings by Wright and then by Kahn, my colleagues and I began speculating over the idea of mimesis in architecture and were tempted to say that both Wright and Kahn were dealing with architecture as a mimetic art, an art representation: the attempt to create the equivalent of some type of perfect natural room with the means architecture. With Wright, the mimesis is often close at hand (the forest grove of Johnson Wax, the rock ledges at Fallingwater...), with Kahn, it becomes more abstract. He often spoke of finding „volume zero" and I sometimes wonder if that might not be some architypical natural space... just as Vitruvius begins his Ten Books with the mythical beginning of architecture as a gathering of humans in a forest clearing around a fire which has been caused by lightning..... If that´s too arcane: another way of looking at it would be the way that interior spaces tend to behave like exteriors, and vice-versa...
HP	That´s an interesting thought. Do you have any particular examples in mind?
MM	We visited Yale British Art Center last week, and I couldn´t help feeling that the first court was like a slightly civilized exterior court - the walls behave like facades, just like the walls outside on the street - and that the second court becomes a more domesticated version of the first court: simultaneously a giant living room and a courtyard. So you move from the exterior to the first court to the second court, all the while, the same limited palette of frame and materials is used, and depending on how it´s varied, the space becomes more and interior, while always remaining „exterior"... It´s all very subtly done, masterly, really.....
HP	Yes! The corallary would then be the „street as a room"... or, the Philadelphia plan, which the downtown becomes a great interior.....
MM	Exactly. Maybe the word I´m looking for is something like „Reciprocity" or „Simultaneousness"...
MM	Speaking of Kahn and Wright: what did Kahn think of Wright? There´s not much in the literature on that theme....
HP	Yes, he would mention Le Corbusier regularly - he absolutely adored him - but on the subject of Wright he remained rather silent. I come from Chicago and was always very fond of Wright: his feel for nature....
MM	We were able to spend three days at Taliesin: it´s wonderful, like a world apart. I had to think the whole time of of one word which has virtually disappeared from the architect´s vocabulary, and that´s „Beauty". Although as you walk around the building you can intellectually follow his reasons for deciding to make something this way or that way, you had the feeling that Wright was above all trying to do one thing: produce Beauty... almost in the same way that nature would do it.
HP	Oh, yes: Lou would say, „you can´t do that: purposefully try to make something beautiful. It´s a dastardly thing."
MM	Of course: it´s dangerous isn´t it? You flirt with a sort of a softness and kitsch... sometimes it worked with Wright - and how: you just can´t resist a building like the Coonley House - and sometimes he went off the deep end. Wasn´t it William Carlos Williams who said something about the „hard center of beauty"? The beauty in Kahn´s architecture often comes as a sort of by-product of a way of doing something very well: laying up a brick wall, or pouring concrete so that it tells its story, or whatever....
MM	Although there´s always been that Kahn - Corbusier connection, I´ve often thought that Kahn is in certain ways more related to Wright.
HP	That´s interesting: what parallels do you see between them?
MM	Well, both had a much more organic feeling for structure and space, than, say, Corb or Mies. Then, there´s that idea - however differently handled - of the wall forming a third „in-between space" between

	interior and exterior.... And then, I think that they were both „plan architects": you know, „the plan is the generator"... Their plans are - in addition to describing the spaces - such wonderful compostions, diagrams... you could hang them on the wall, just for their sense of design.
HP	Yes, that´s completely right! That´s a quality which seems to have slowly disappeared from architecture....
MM	Unfortunately... it seems to belong together with thinking of buildings as being some kind of being or organism, rather than just an illustration of something...
HP	What do you think of his roofs?
MM	(Laughs) Good question! My spontaneous answer would be that he often wanted them to disappear, to not be there at all, so that the room is open (or the walls are free).... Or maybe better: he wanted to define the overhead plane without letting the room end there, to thicken the horizontal plane as he did the vertical planes: maybe that´s what the Unitarian Church is about. You kind of wonder how (or if) he ever would have made the roof for the Hurva Synagogue watertight.... I´ve been looking at the projects for the Dominican Motherhouse and St. Andrew´s Priory in the archive over the past week: if you look at the plans, it´s sometimes difficult to tell which spaces are covered and which are open: you can imagine it either way, switch figure and ground, and they both work..... Then, going through the minutes of one of the meetings with the Dominican sisters (probably written from the project architect) I read something like, „Father So-and-so said that the chapel should receive light from a skylight above. Lou agreed and added that the skylight should not be directly above, because then you would not be able to escape from its light. Nature doesn´t make spaces like that, he said."
HP	That´s interesting that you say that.
MM	Speaking of the two monastery projects, were you aquainted with them?
HP	Yes, although I wasn´t directly involved in them. I´m not certain about the Motherhouse: the plan always seemed to me to be a bit forced; so demonstrably violent, the way the rooms collide. The St. Andrews project seems to be much more balanced in the way the parts become a whole.
MM	Yes, I´ve always been fond of that plan, too. And as a Californian, I can really feel for that kind of lands-cape and the way the monastery reacts to it; but unfortunately it´s not as developed as the Mother-house.
HP	I´m curious: what interests you particularly with those projects?
MM	Well, I think that they are in a certain way perfect illustrations of Kahn´s „A house is a society of rooms" idea. And while I´m not really sure if they´re Kahn´s best projects, they seem to open the door for new things to come into his architecture. The published information on the projects is rather spare, so of course, there´s a curiousity to see how they really work....
HP	I can understand that. I still wonder about that Motherhouse plan: there seems to be so little hierarchy among the various rooms.
MM	Sure: when you walk through the plan there are certain points where it almost hurts. I mean, I´m not sure if I´d always like to make my way to the chapel by going through the refectorium, or be tempted to take the shortcut through the kitchen..... it´s pretty extreme in that respect. Looking through the project files the other day I found a letter from the prioress with a critique of Kahn´s earlier scheme, which had an elaborate system of arcades and cloisters connecting the various elements of the program. It was not only that that version was too expensive, she noted that Kahn´s interpretation of their religion was more Trappist or Carmelite: an architecture of pure contemplation. She said that Dominicans belonged to an action religion: devoted to the idea of action springing from contemplation. They then came up with the idea of a plan without cloisters and almost without hierarchy and the sisters were very positive about it. Later in the minutes of a meeting there´s a note reinforcing that idea: Kahn saying that the challenge was now to make all connections between the parts equally good. That´s what they were working toward, and you can see an enormous amount of sketches trying to bring those parts together... they really seemed to work hard at it. So I think that´s one way of looking at the plan....
HP	I´m glad you told me that! Now I can maybe start to look at that project in a different way..... Do you think that there´s a relationship between the monastery and the project for Fort Wayne?
MM	You could say: it´s almost the same formal idea, only inverted. The monastery is additive: the perfect rooms assembled together. Fort Wayne is subtractive: like scooping voids out of solid volumns.
HP	Exactly! I´ve always felt so, too.

MM	There´s a symbolic gesture with the towers in both monastery projects
HP	Yes: that was a gesture which he felt strongly about. The tower at Saint Andrew´s was also a watertower. He used watertowers as sort of a totem or symbolic presense in dry climates: there´s a watertower at the Indian Institute of Management; the plan for the new town in Iran was to have grown around a water tower.... Speaking of gateways: that´s an important idea in Lou´s architecture in regard to landscape: the gate, as a gesture, a place of arrival, a transition to the landscape. If you look at his city planning for Philadelphia for example, the idea of approach, a gate, an inner and outer world....sense of inside and outside....
MM	Are there any other projects you´d like to mention, in which the relationship between architecture and its context would be of interest... maybe some projects which haven´t received an enormous amount of attention?
HP	One interesting project - although it wasn´t very far along when Lou died - was the De Menil Art Museum in Houston. It´s covered in Patricia Loud´s book on the museums. What´s interesting there is the site: in the middle of a residential suburb. Lou tried to make a small community or campus with and inside and an outside while at the same time responding to scale of the houses in the neighborhood: weaving the buildings and the open spaces into the existing neighborhood. It´s an interesting project, with much potential, because there seems to be so little good work which has been done at that scale or in that type of context over the years.
MM	I don´t know that project very well, but I´ll have to take a closer look....
HP	Another project which we worked on together was the plan for the Bicentennial in Philadelphia. The idea was to base the land use plan not around a hard structure, or impressive new buildings, but around a landscape plan. A canal forms the main circulation axis, while a series of groves would define a matrix of spaces for non-determined activities. The participants in the Bicentennial were to be able to build up their expositions within the matrix: after the exposition was over, there would have been landscaped areas left for the city to use. The idea of choice is one of the underlying themes of the whole project: really it´s an underlying theme in so much of Lou´s architecture.

The Dominican Motherhouse of Saint Catherine de Ricci
Providence Road, Media, Pennsylvania
in The Kahn Collection, Kroiz Architectural Archives, University of Pennsylvania

Earliest date: 26 March 1965
Latest date of working drawings: 15 December 1968
Contract date: 7 August 1967
Termination of contract: 18 March 1967

Portfolio Call Number	Description	Quantity
LIK 700.01 - 700.39	DMH. design drawings from Louis Kahn, 39 originals dated/undated	39 dwgs.
LIK 700.40 - 700.84	DMH. design drawings from Louis Kahn, 44 originals dated/undated	44 dwgs.
030.I.C.700.001	DMH. design drawings on yellow and white trace, 59 originals dated 16.04.66 - 17.01.69	59 dwgs.
030.I.C.700.002	DMH. design drawings, 74 prints dated 02.05.67 - 15.12.68	74 pts.
030.I.C.700.003	DMH. design drawings, 50 prints undated	50 pts.
030.I.C.700.004	DMH. design and presentation drawings, 32 prints dated 12.03.67 - 23.10.68	32 pts.
030.I.C.700.005	DMH. design and presentation drawings, 20 prints dated 09.10.66 - 28.06.67	20 pts.
030.I.C.700.006	DMH. design drawings, 25 prints dated 16.04.66 - 15.12.68	25 pts.
030.I.C.700.007	DMH. design drawings on yellow trace, 208 originals undated	208 dwgs.
030.I.C.700.008	DMH. design drawings on white trace, vellum, 31 originals undated	31 dwgs.
030.I.C.700.009	DMH. design drawings on yellow trace, 139 originals undated	139 dwgs.
030.I.C.700.010	DMH. design drawings on yellow trace, 142 originals undated	142 dwgs.
030.I.C.700.011	DMH. design drawings, 32 prints undated	32 pts.
030.I.C.700.012	DMH. design drawings, 61 prints undated	61 pts.
	Files	**957 total (663 dwgs.) (294 pts.)**

The Saint Andrews Priory, Hidden Springs Ranch, Valyermo, California
in The Kahn Collection, Kroiz Architectural Archives, University of Pennsylvania

Earliest date:1966
Latest date of working drawings: 15 December 1968
Contract date: 12 May 1966
Termination of contract: 6 February 1967

Portfolio Call Number	Description	Quantity
030.I.715.001	SAP: design and cartographic drawings 11.29.66	13 11 originals, 2 prints

Collaborators on Dominican Motherhouse, 1966-69

Source: Kahn Collection, Boxes 71 (F2), 75 (F6), 77 (F8): Payrolls
(Proj. Arch.: $4-$5/hr, Draftsman: $1.50-$3/hr, Elev. Operator: $3/hr.)
Listed in order of hours worked on project.

1966

David Polk (Project Architect)
David Slovik
Cengiz Yetkin
Vincent Rivera
Gabor Szalontay
W. Neuman
Steve Hill
Kazi Abdul-Razzah
Anant Raje
Galen Schlosser
Frank Kawasaki
David Wisdom
Henry Wilcots
Peter Kaack

1967

David Polk (Project Architect)
Anant Raje
Leslie Vallhonrat
David Slovik
Al Baxter
John M. Lucas
Galen Schlosser
W. Neil Thompson
David Wisdom
Hugh Zimmers
M. Garfield

1968-69

David Polk (Project Architect)
Anant Raje (Project Architect)
Frank Kawasaki
David Wisdom
Vincent Rivera
Martin Verman
Anthony Pellecchia
Heina Patel

Master´s Studio, University of Pennsylvania:
Monastery Project

program: St. Andrew´s Seminary
site: St. Andrews and/or Motherhouse
1962 - 63
1965-66 (incomplete list)

1963   Roy Vollmer
            Bernhard Huet
            Mark Veland
            Martin Rich
            Glen Milne
            Jim Kise
            David DeLong

1965   Denise Scott-Brown
            David Traub

other own projects in masterclass:
Ft. Wayne (63-64), Salk (59-60), Dhaka (62-63), Indep. Mall (63-64), Luanda 60-61, Phil. School
of Fine Arts (65-66)
Source: Fabrizio Tramontano „Kahn as Educator" PhD thesis 1998, University of Palermo
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List of Illustrations

Chapter 1: Illustrations / Sources

Chapter 3: Illustrations / Sources

Chapter 4: Illustrations

Chapter 5: Illustrations / Sources

Appendix A: Illustrations / Sources

Book III: Portfolio of Plans

All plans reconstructed by author using measured and dimensioned original drawings from the Kahn Collection, 2007.

Michael Merrill

Louis I. Kahn and the Dominican Motherhouse
Problems of Space
Book II: Illustrations

Book II: Illustrations Final

Table of Contents

Chapter 1. Introduction: „Uncompleted Things“: Two Monasteries

Fig. 1.1
Dominican
Motherhouse
1965-69

Fig. 1.2
St. Andrews Priory
1965-67
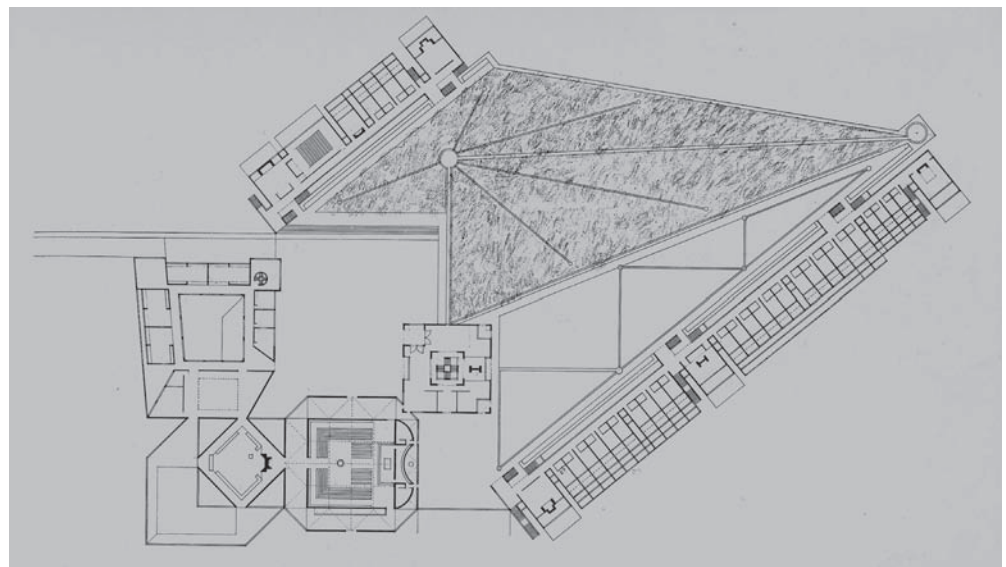
Fig. 1.3
Trenton Jewish
Community
Center
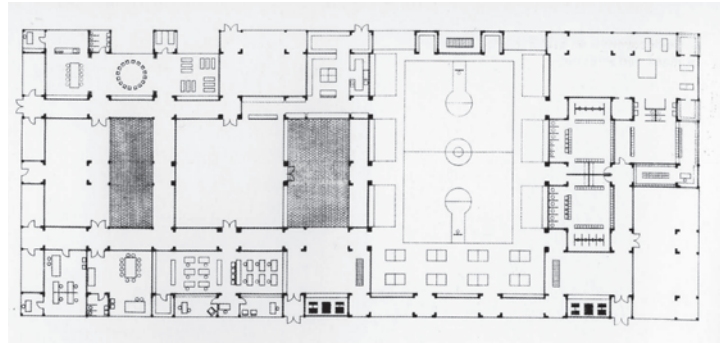
Fig. 1.4
Richards Medical
Research Labs
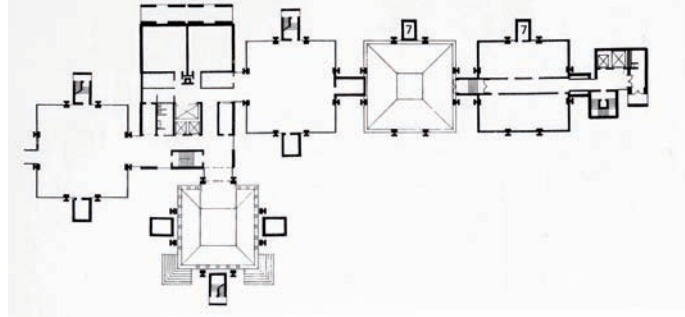
Fig. 1.5
Kimbell Art
Museum
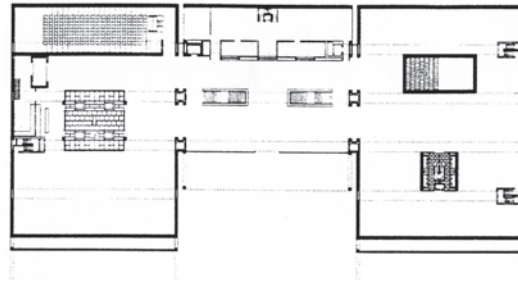
Fig. 1.6
Yale Center for
British Art
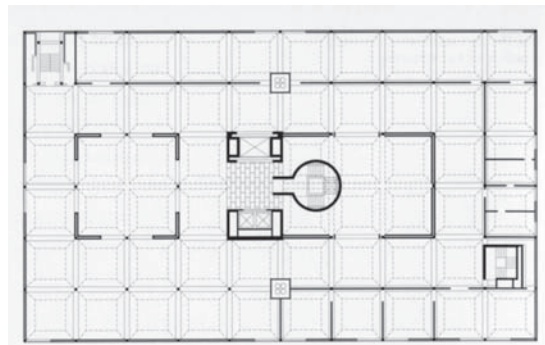
Fig. 1.7
Salk Institute
Meeting House
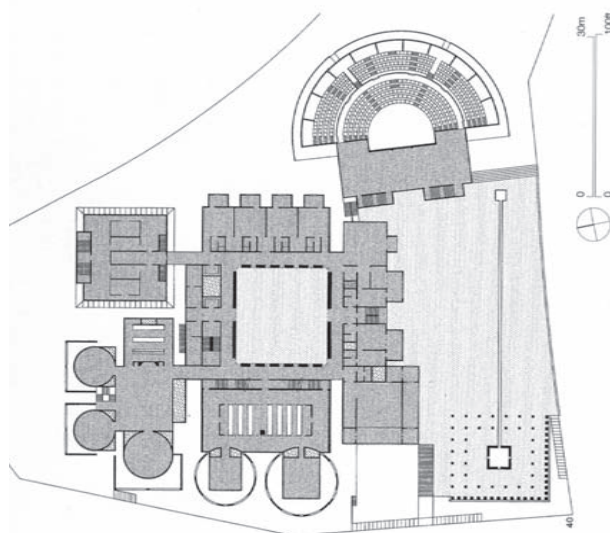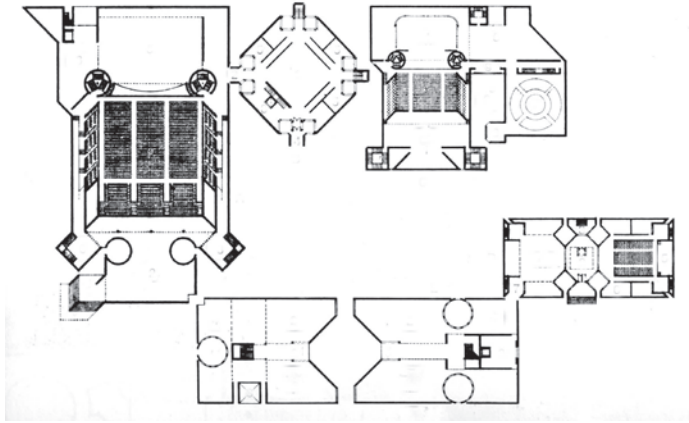
Fig. 1.8
Fort Wayne Center
for Fine Arts
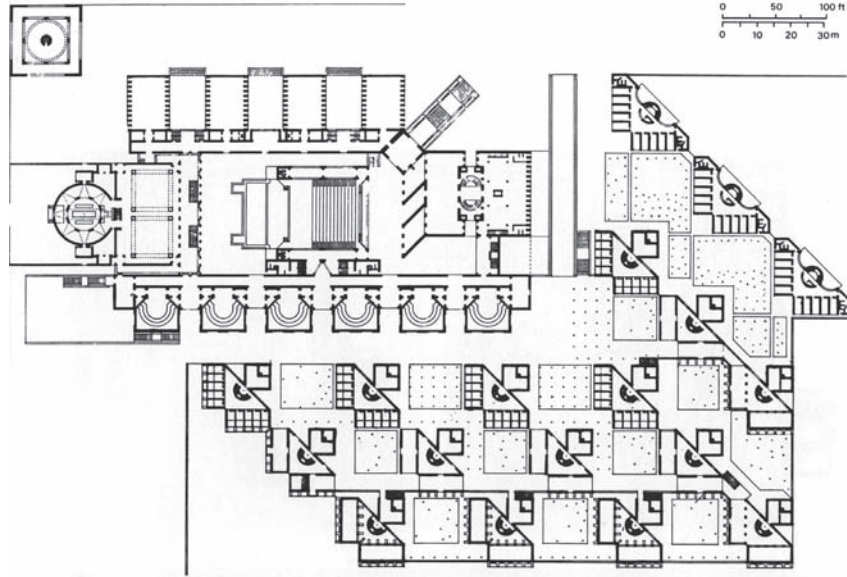
Fig. 1.9
Indian Institute of
Management
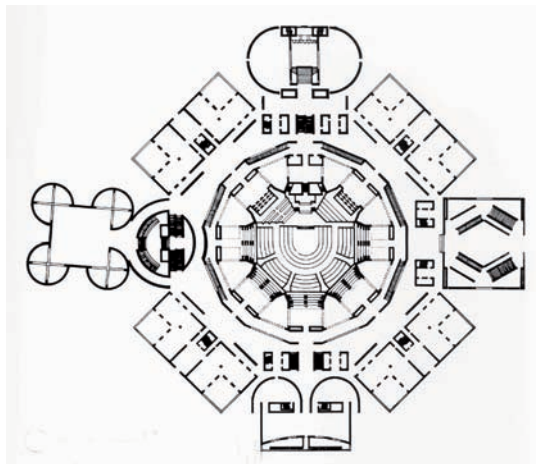
Fig. 1.10
National Assembly
Bangladesh
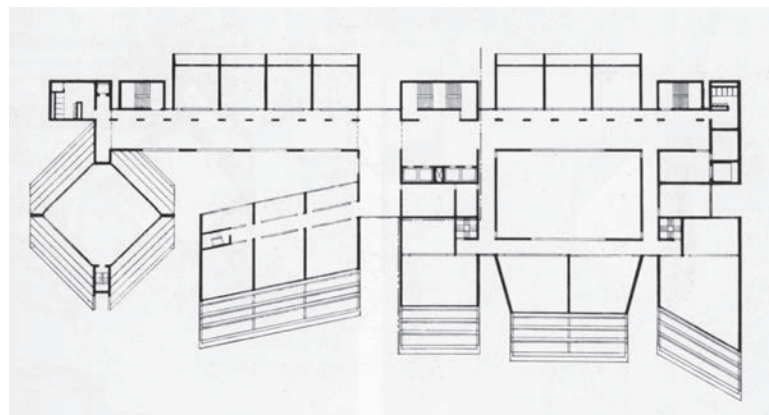
Fig.1.11
Philadelphia College
of Fine Arts

Chapter 3. The Drawing Mind, the Thinking Hand
Louis I. Kahn and the Intertwined Practices of Drawing and Architecture

Fig. 3.1
Sketch LIK:
President´s Estate,
Islamabad, 1963
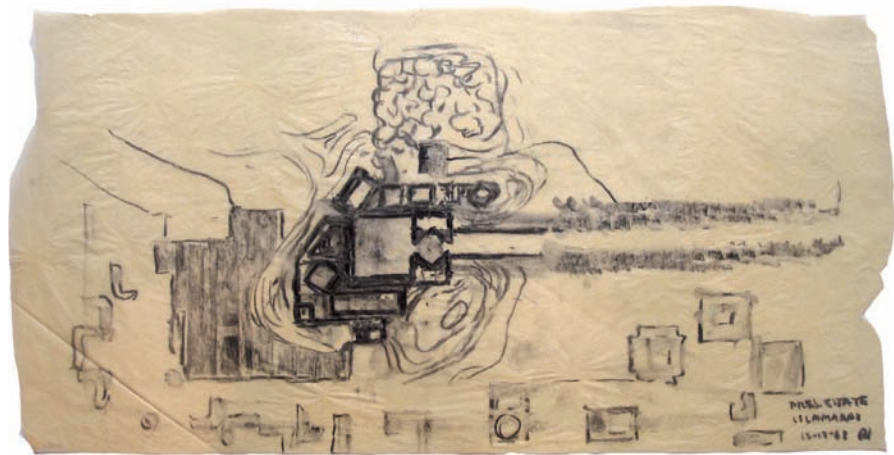
Fig. 3.2
Sketch LIK:
President´s Estate,
Islamabad, 1963

Fig. 3.3
Sketch LIK:
President´s Estate,
Islamabad, 1963
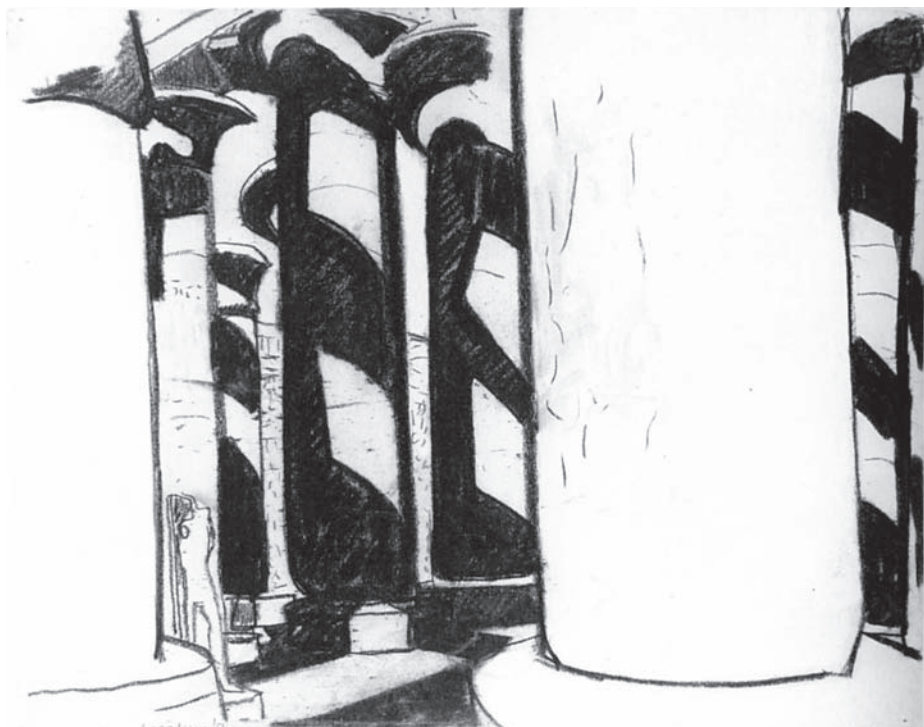
Fig. 3.4
Travel Sketch LIK
Karnak

Fig. 3.5
Travel Sketch LIK
Acropolis, Athens
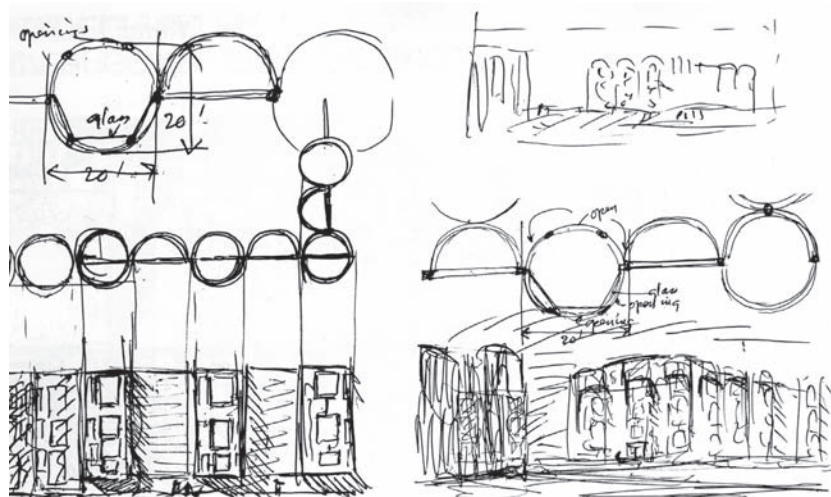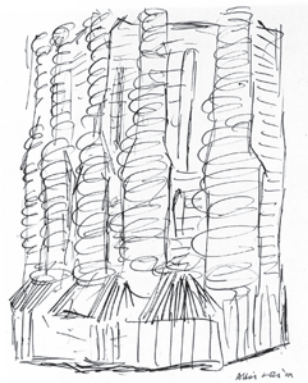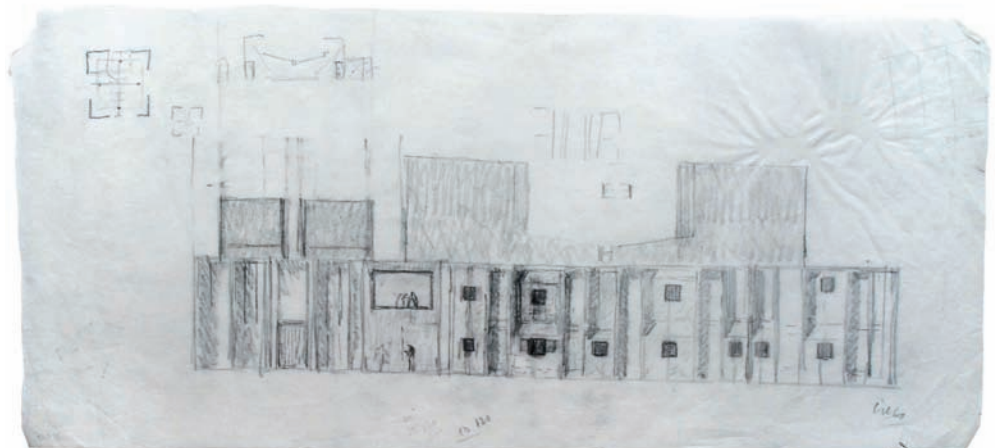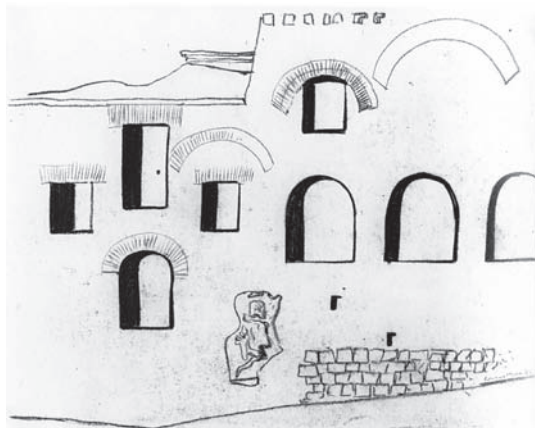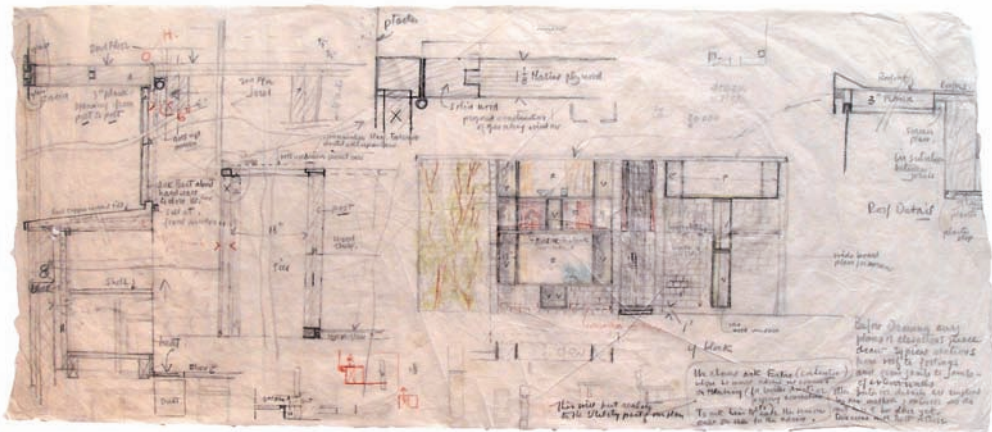
Fig. 3.8
Sketch LIK
Esherick House
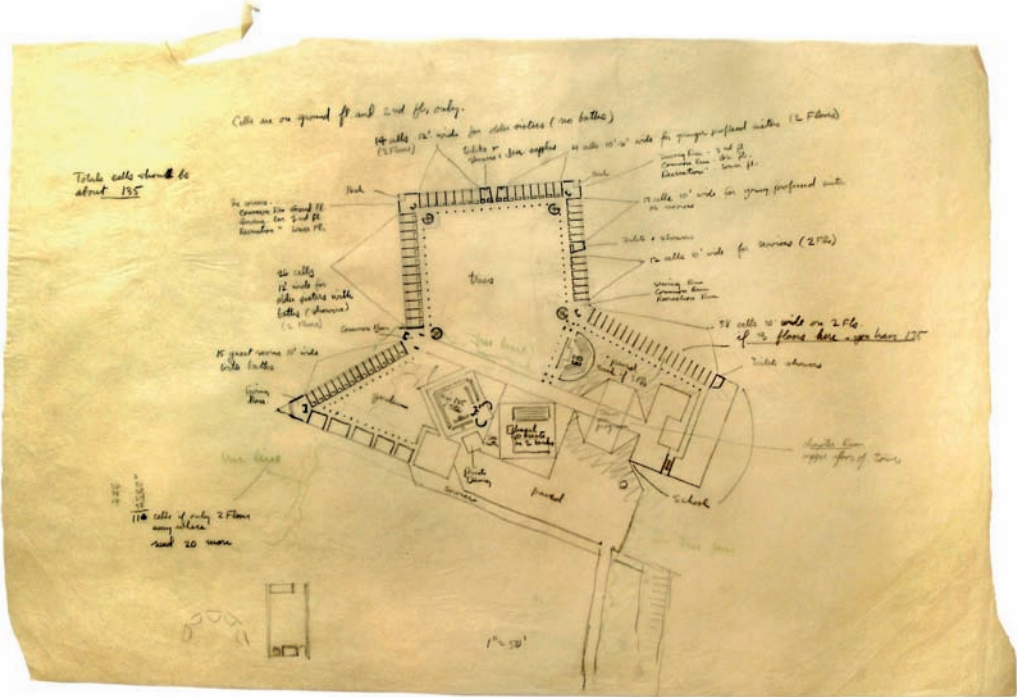
Fig. 3.9
Sketch LIK
Dominican
Motherhouse

11

Fig. 4.1
Lucy Eaton Smith

Fig. 4.2
Lilly Smith

Fig. 4.3
Windy Hill Auction
Announcement
1960

Fig. 4.4
Mother Mary
Emmanuel and Kahn
in Media
ca. Februray 1967

Fig. 4.5
Sister Eilleen
Patricia
ca. February 1967

Fig. 4.7
Kahn and David Polk
ca. 1966

Fig. 4.8
Kahn at Work in His
Walnut Street Office

Fig. 4.9
Kahn at Work
on the Dominican
Motherhouse
Fall 1967

Fig. 4.10
Office Photos of Site
Spring 1965

Fig. 4.11
Office Photos of Site
Spring 1965

Fig. 4.12
Site Plan of
Congregation´s
Property at North
Providence Road

Fig. 4.13
Topography of
„Daffodil Hill"
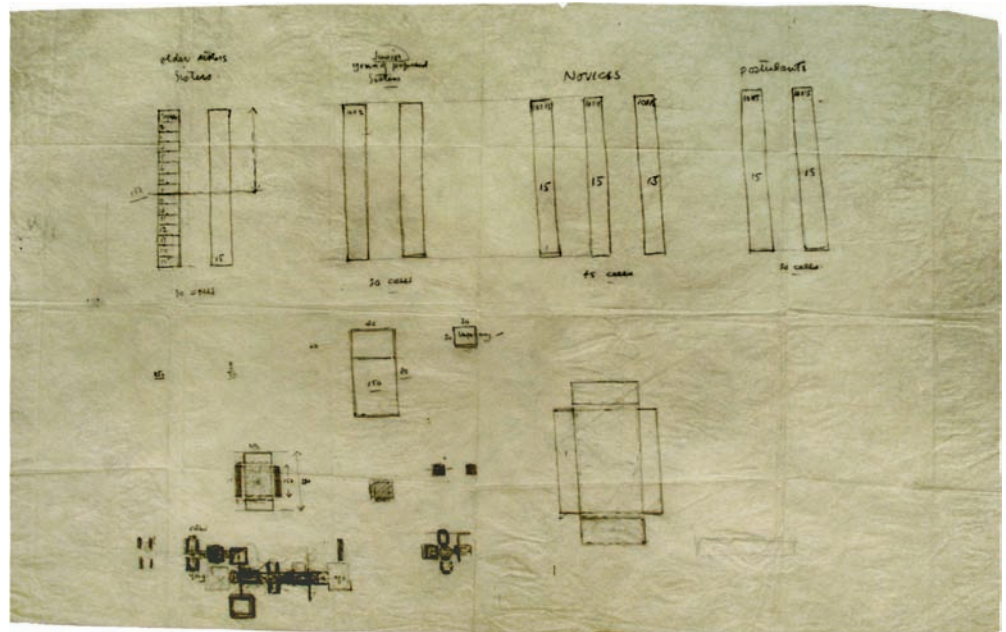
Fig. 5.1
LIK: Program Sketch
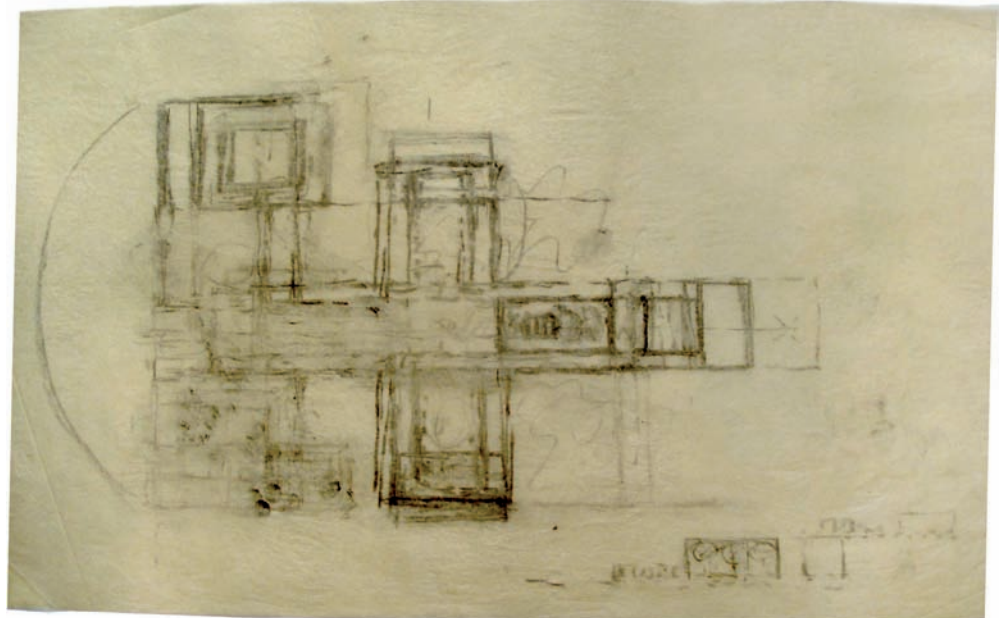
Fig. 5.2
LIK: First Cross
Scheme

Fig. 5.3
Second Cross
Scheme

Fig. 5.4
Chapel Scheme
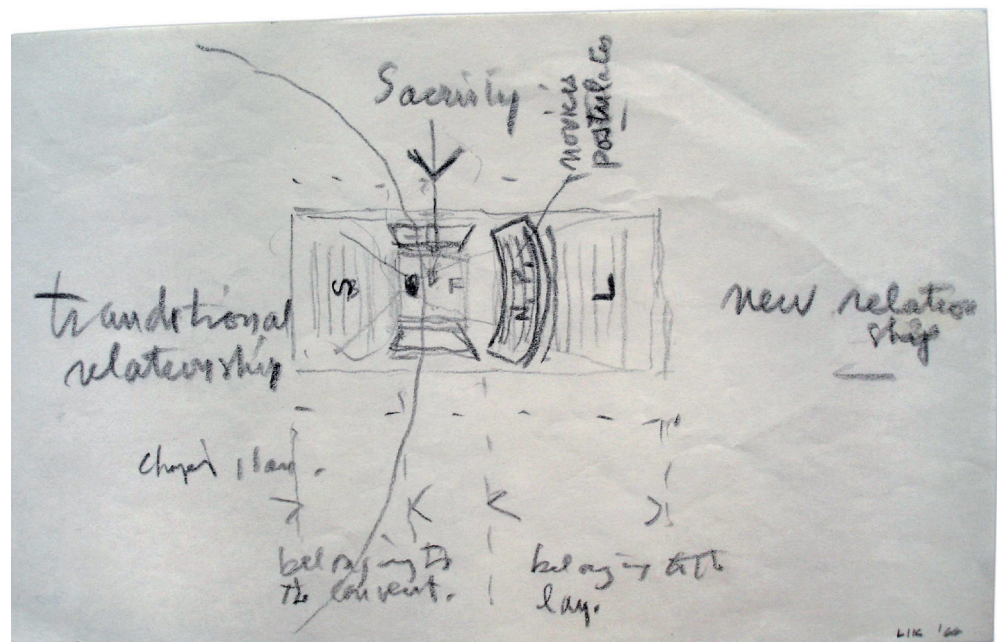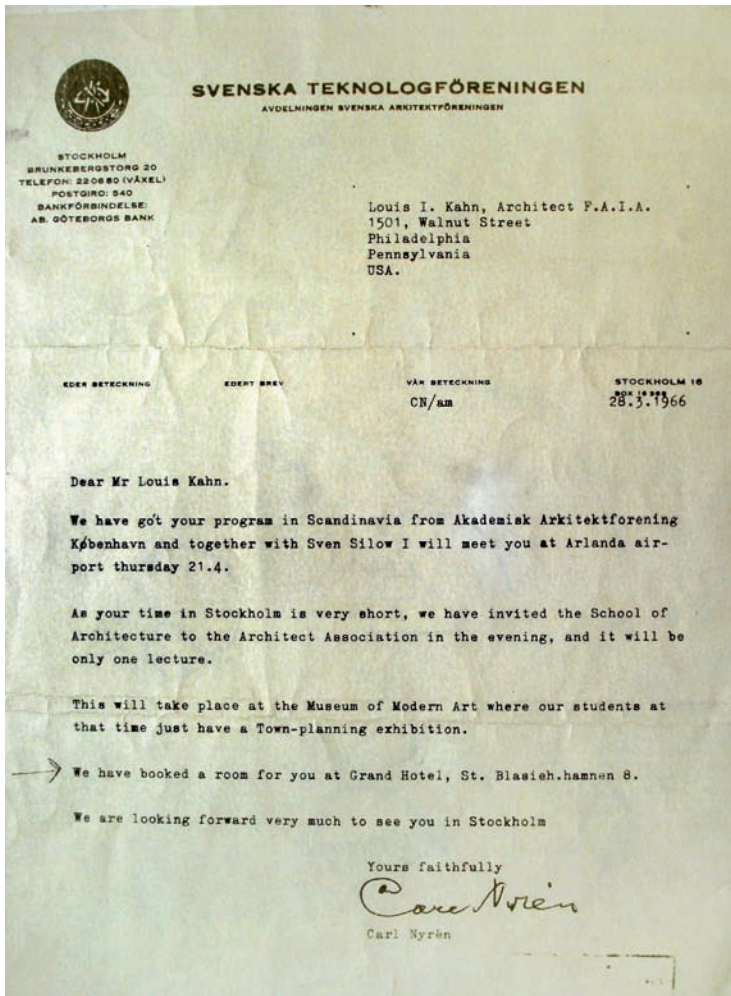
Fig. 5.5
Letter to Kahn
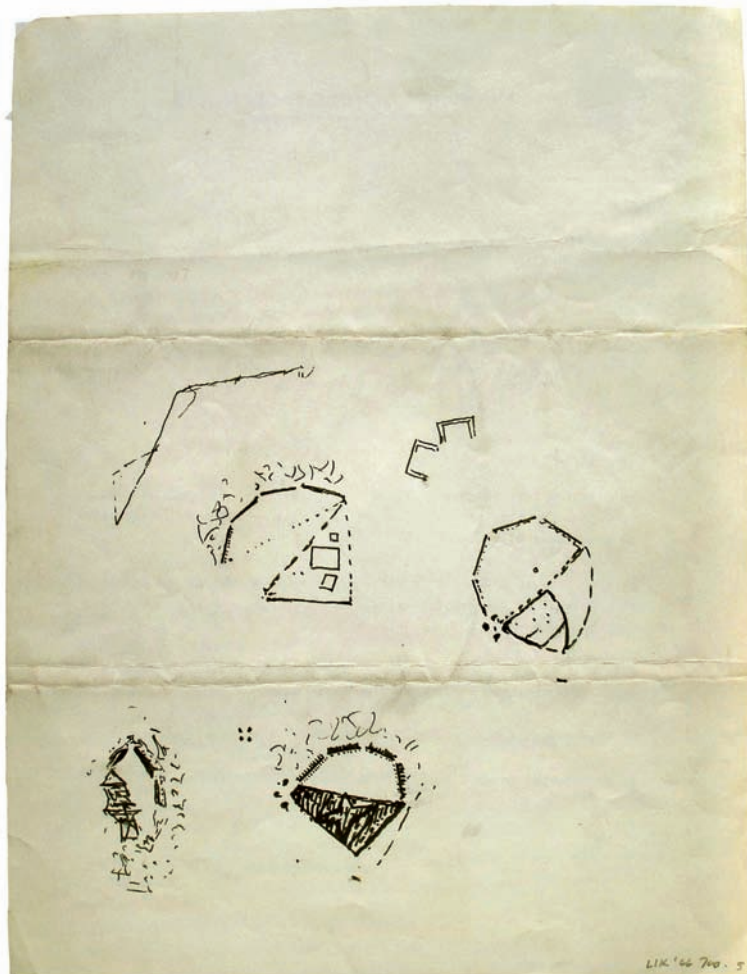
Fig. 5.6
Letter Verso:
Toward „Form"
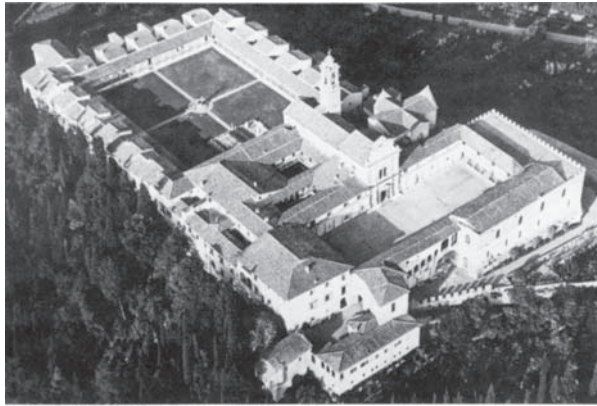
Fig. 5.7
Carthusian
Monastery at
Galluzzo
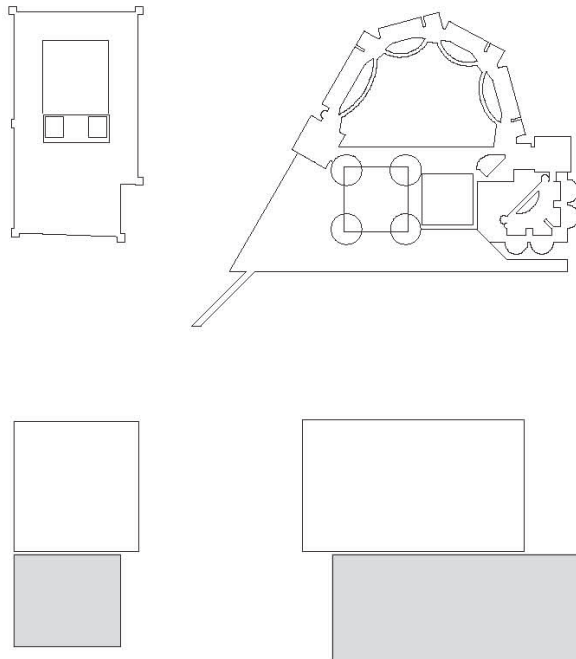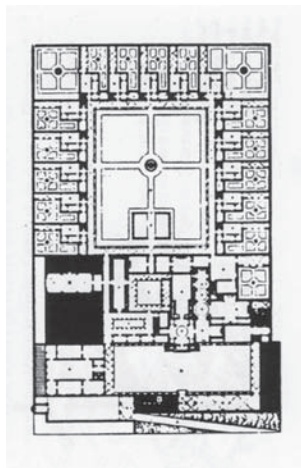
Fig. 5.8
„Form" and Type
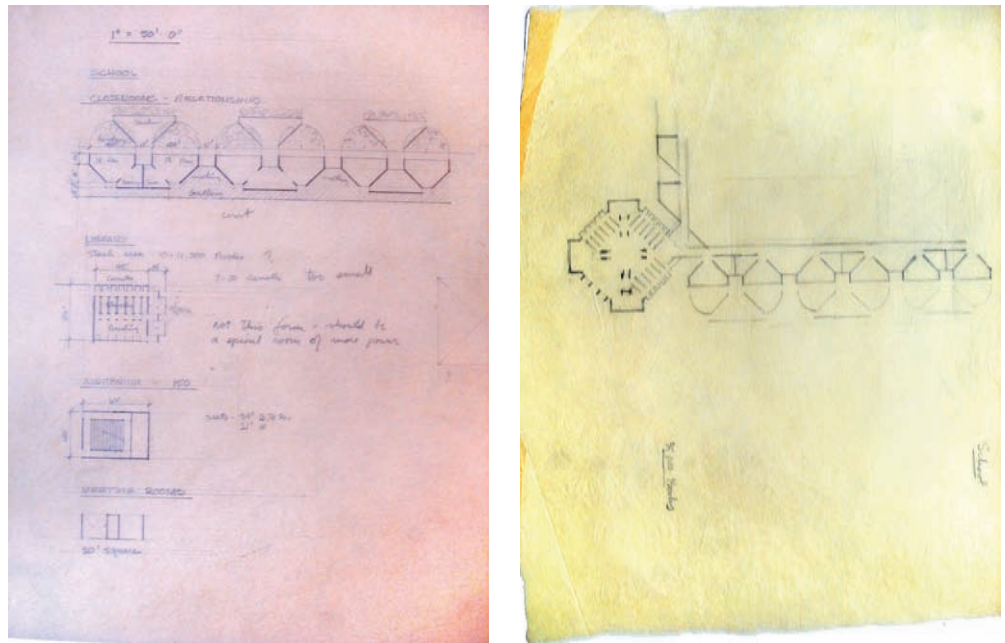
Fig. 5.9
Program Pieces,
(David Polk ?)
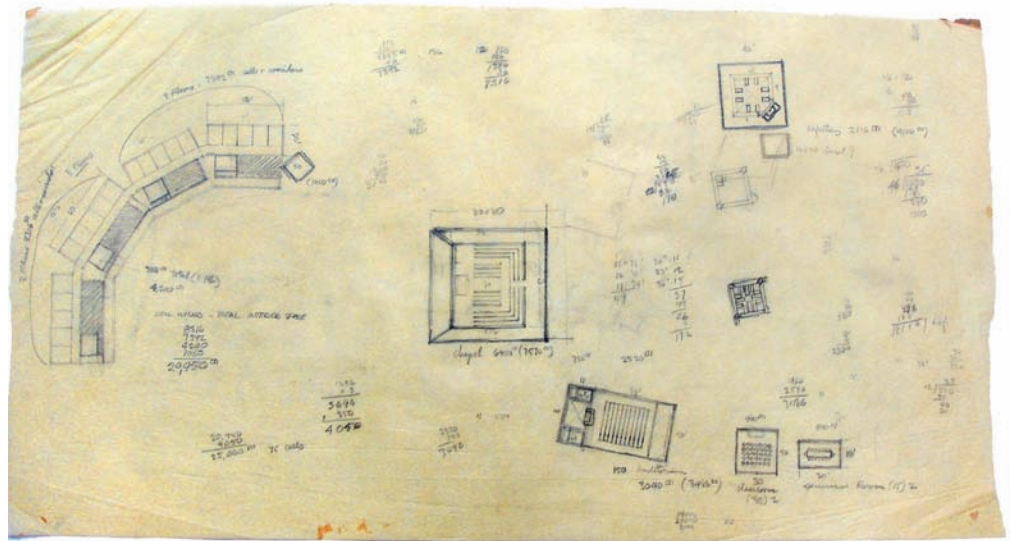
Fig. 5.10
Program Pieces,
(David Polk?)
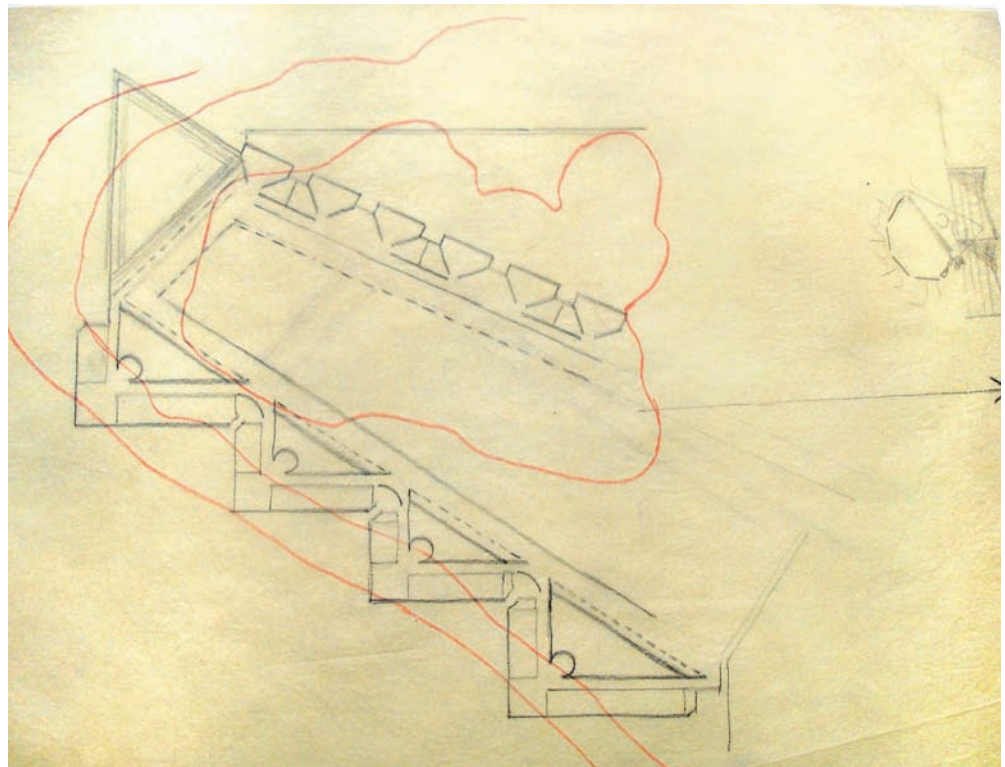
Fig. 5.11
Program Pieces,
(David Polk?)

Fig. 5.12
Scheme 1
Site Plan
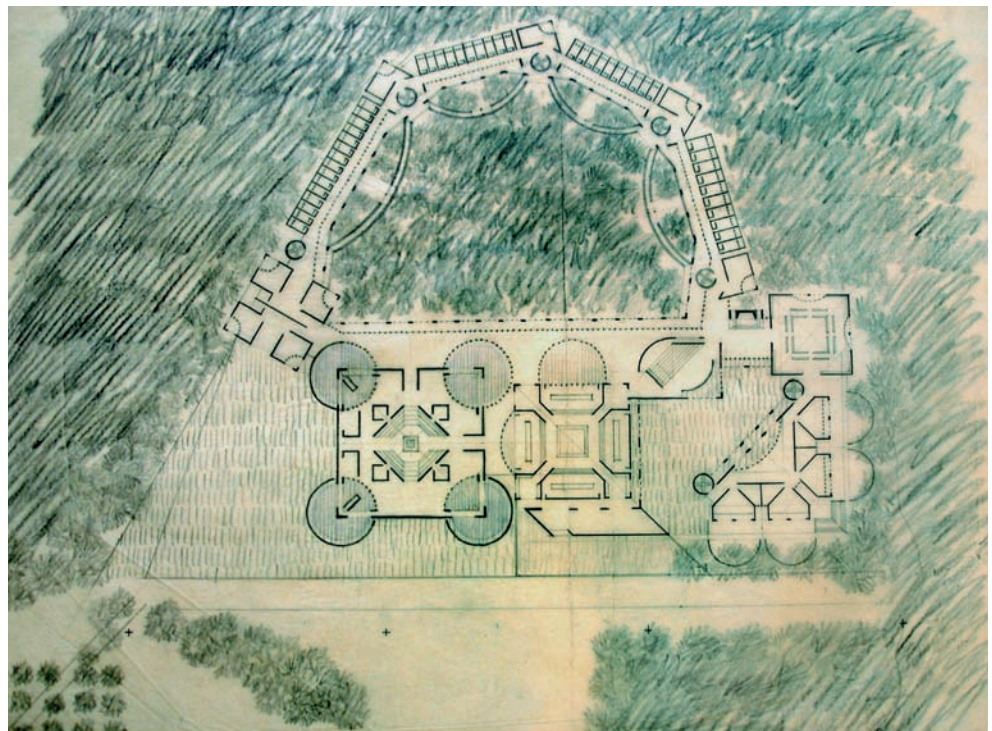
Fig. 5.13
Scheme 1
Floor Plan
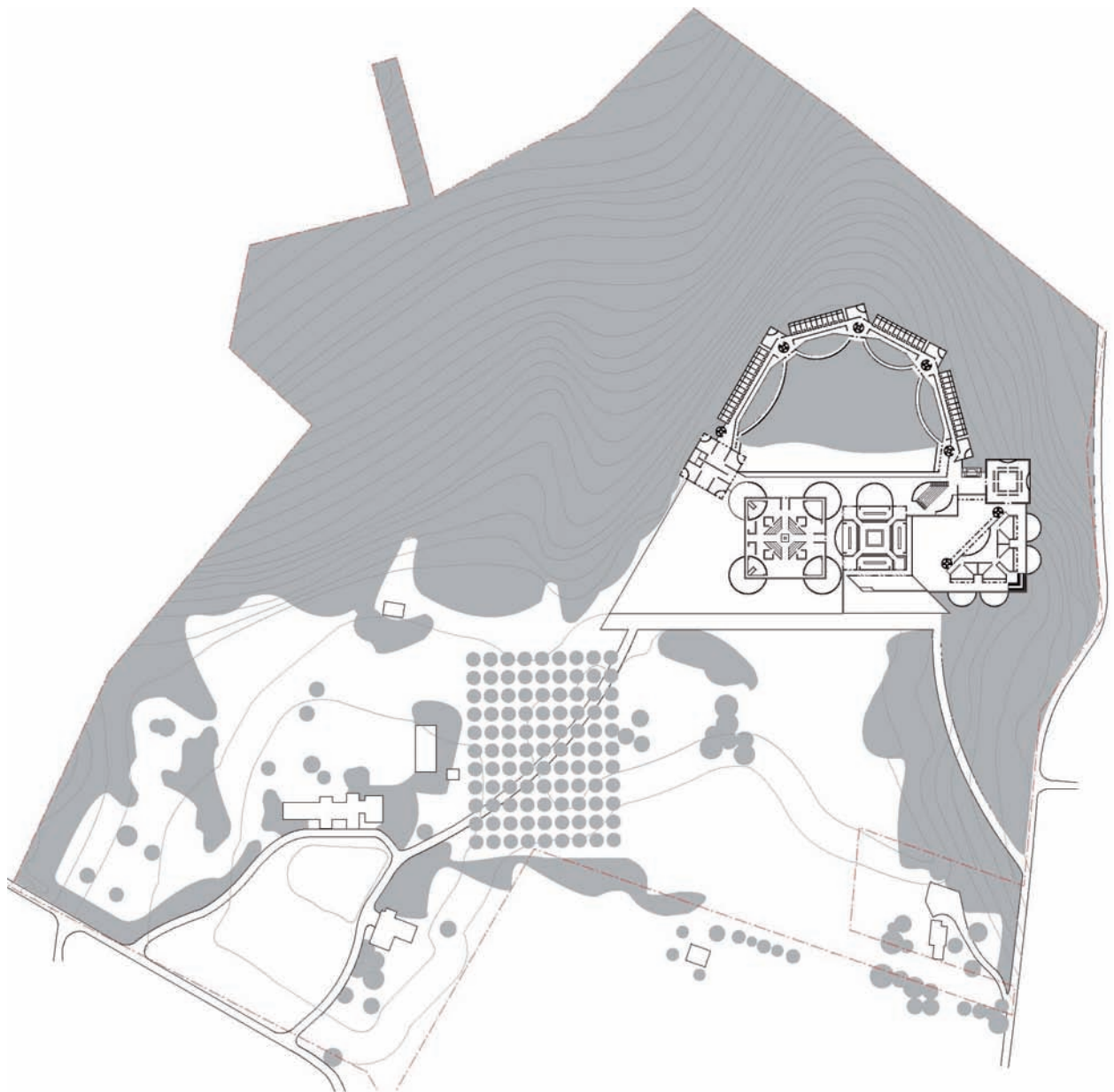
Fig. 5.14
Scheme 1
Site Plan ,
Figure-Ground
Readings
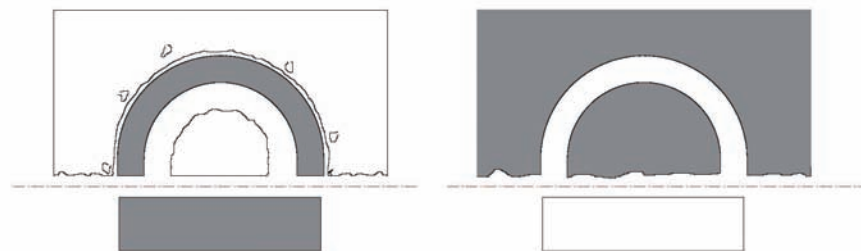
Fig. 5.16
Scheme 1
LIK: North Elevation

Fig. 5.17
Scheme 1
North Elevation 2
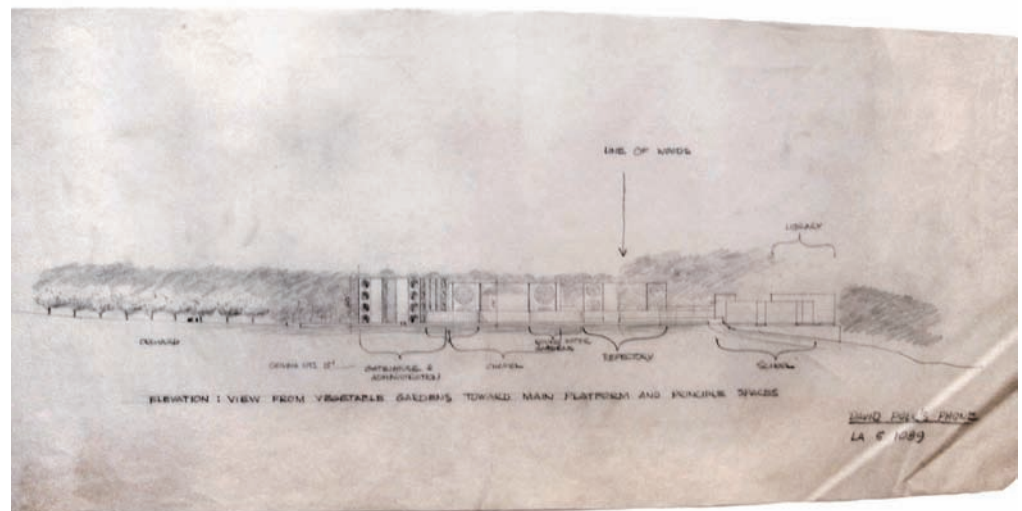
Fig. 5.18
Scheme 1
North Elevation 3

Fig. 5.20
Scheme 1
Sketch LIK
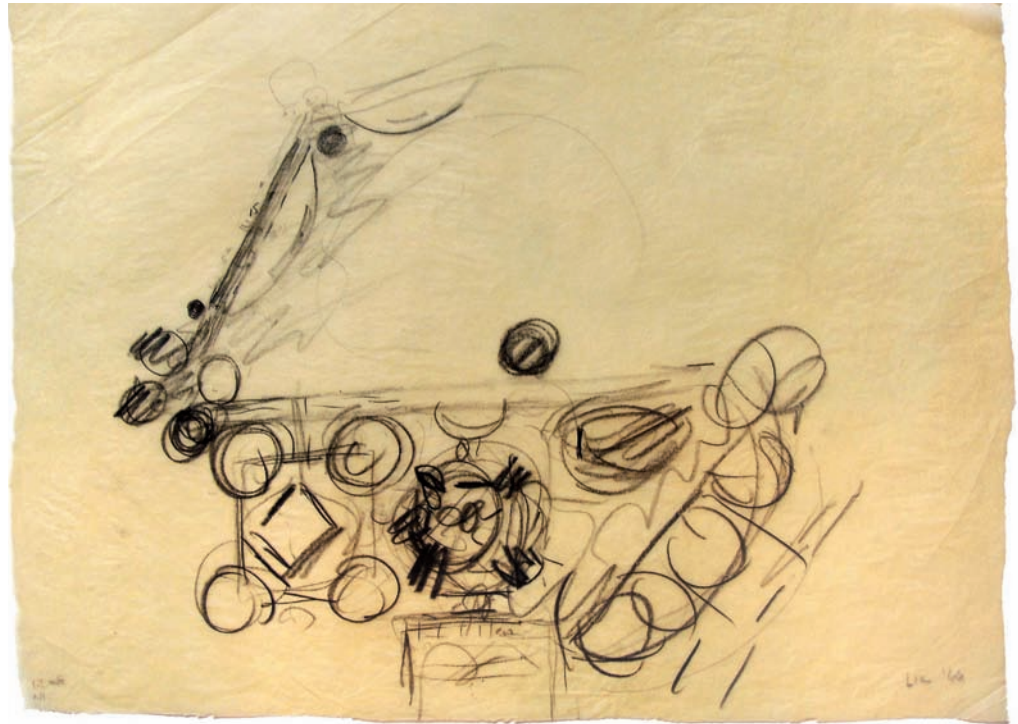
Fig. 5.21
Scheme 1
Variation 1
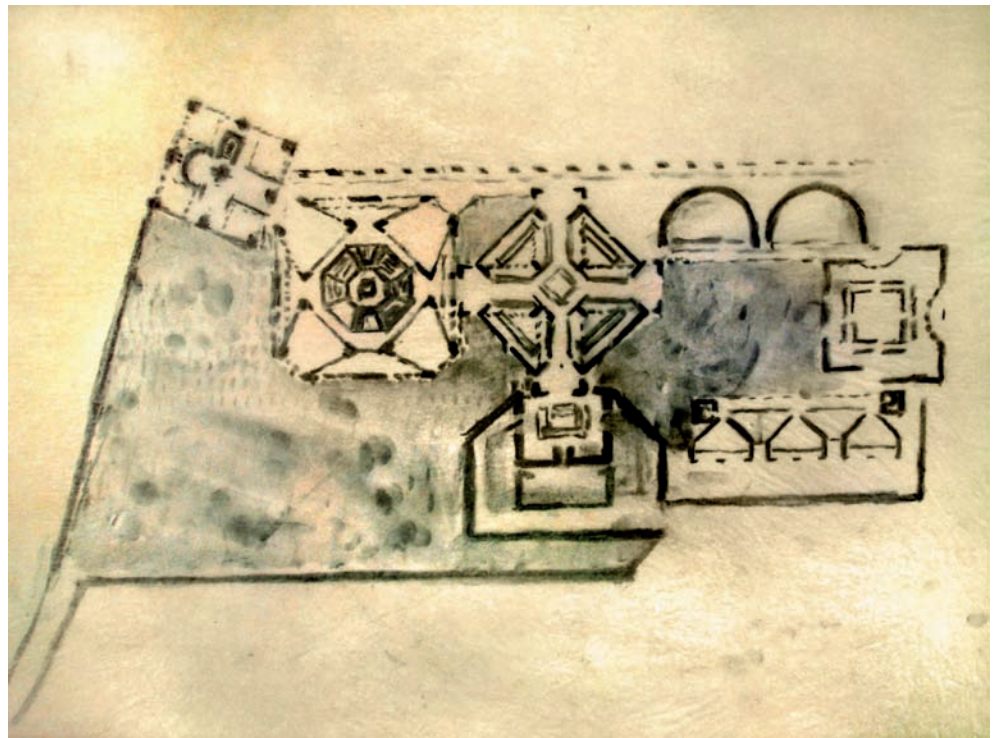
Fig. 5.22
Scheme 1
Variation 3
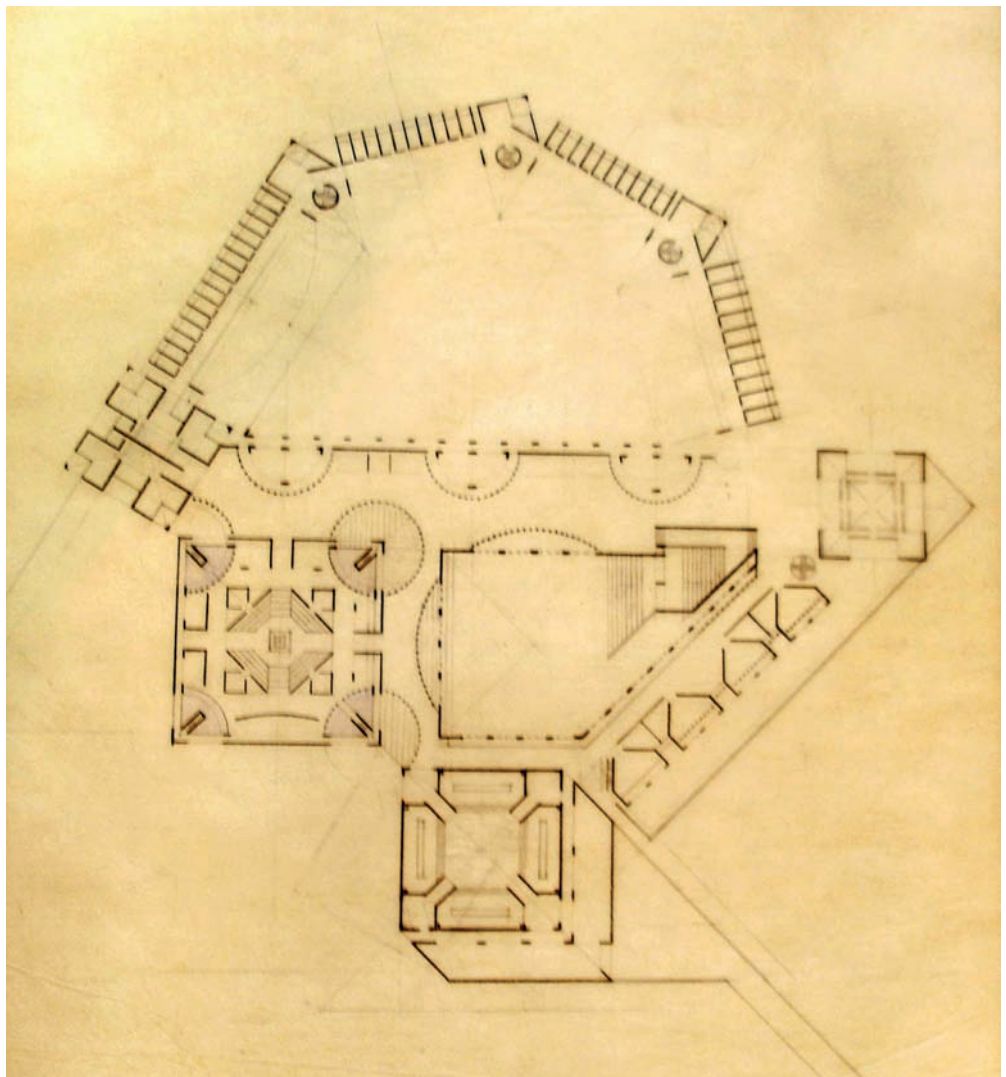
Fig. 5.23
Scheme 1
Variation 4

Fig. 5.24
A „Brick Order":
Hostels at Dhaka

Fig. 5.25
A „Brick Order":
Indian Institute of
Management

Fig. 5.25a
Transition:
Scheme 1 > 2
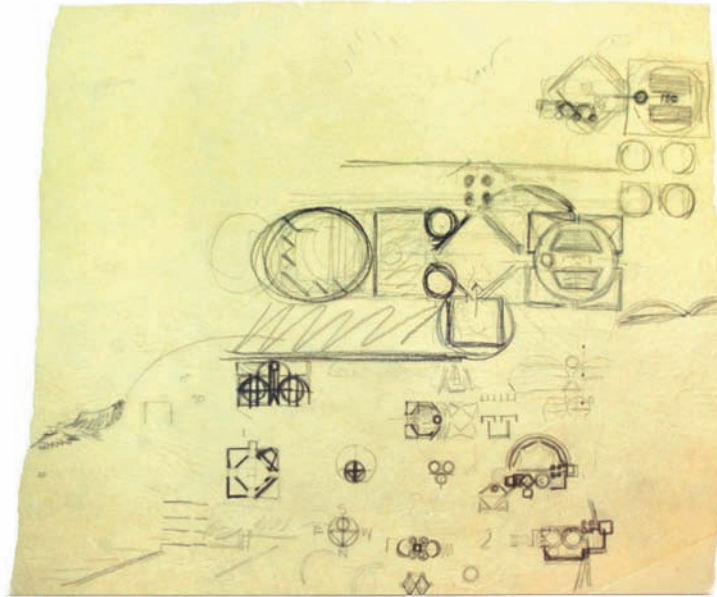
Fig. 5.26
Scheme 2
Floor Plan 1 (LIK)
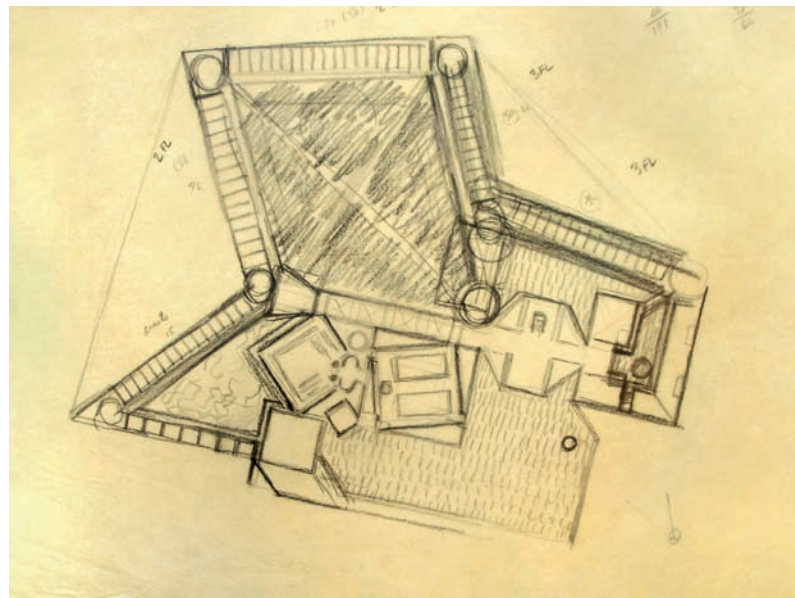
Fig. 5.27
Scheme 2
Floor Plan 2
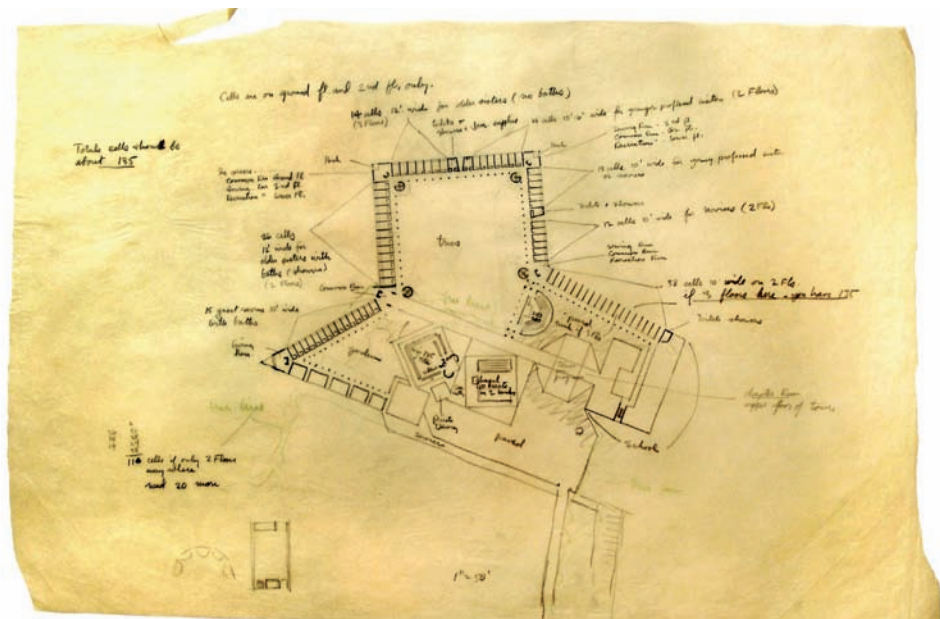
Fig. 5.28
Diagram:
Architecture of
Connection

August – September 1966
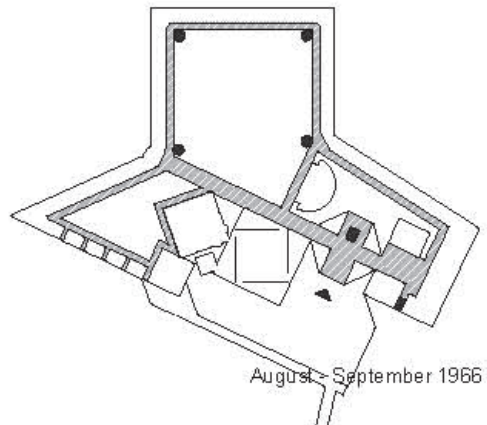
Fig. 5.29
Parti Sketch
 Kahn
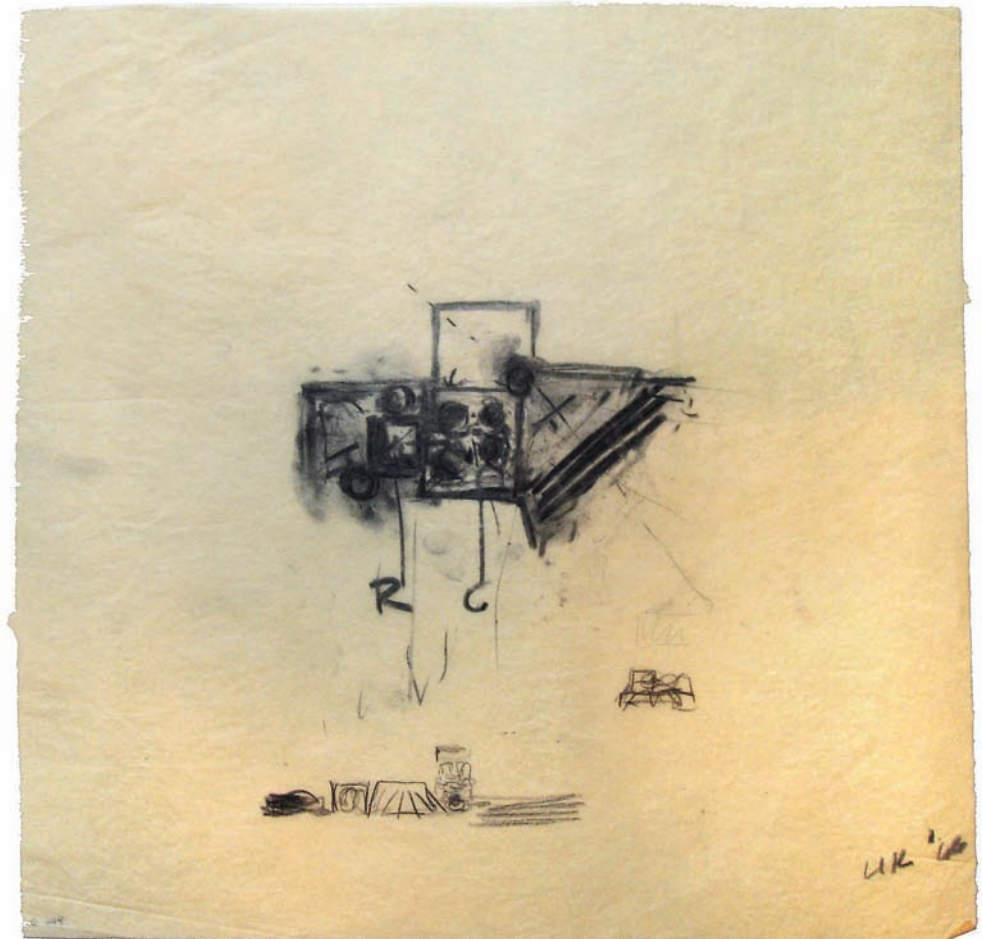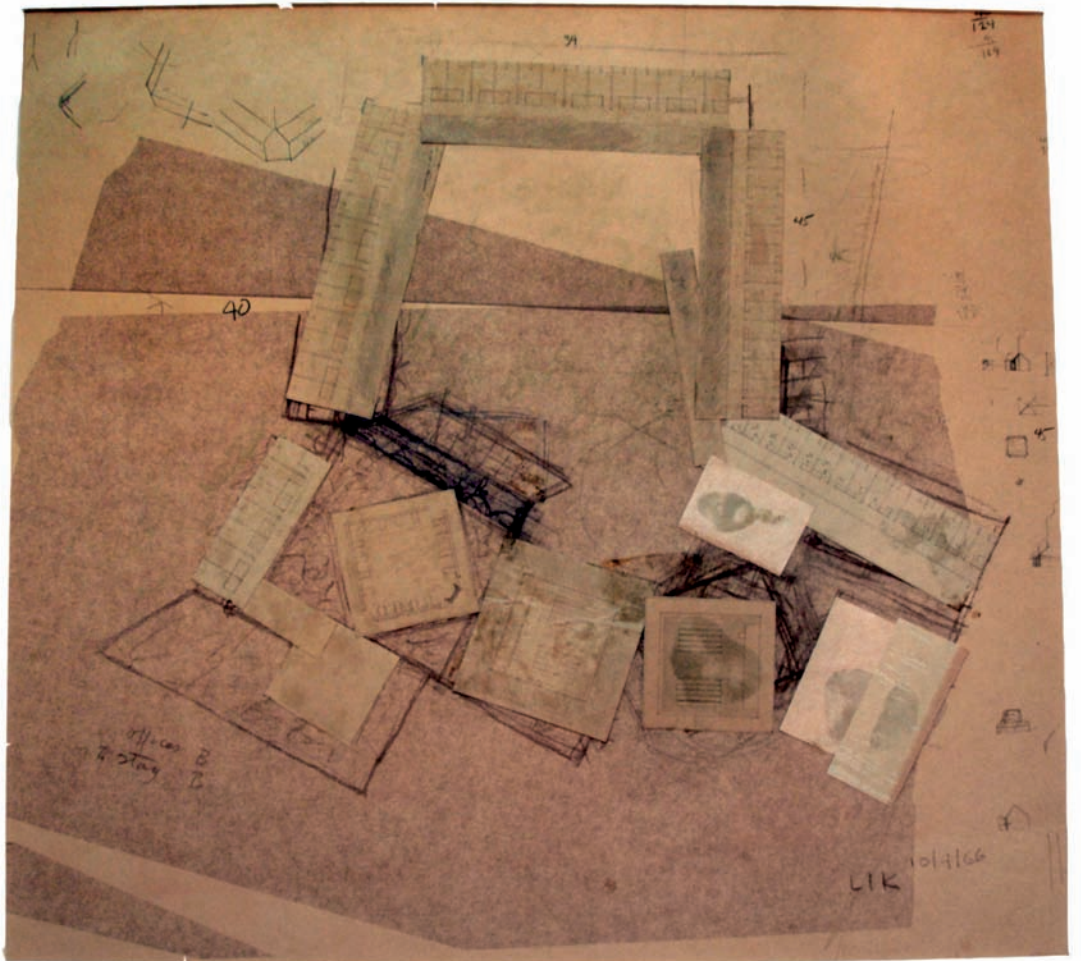
Fig. 5.30
Scheme 3
LIK: Collage Plan

Fig. 5.30a
Scheme 3
LIK: Sketch
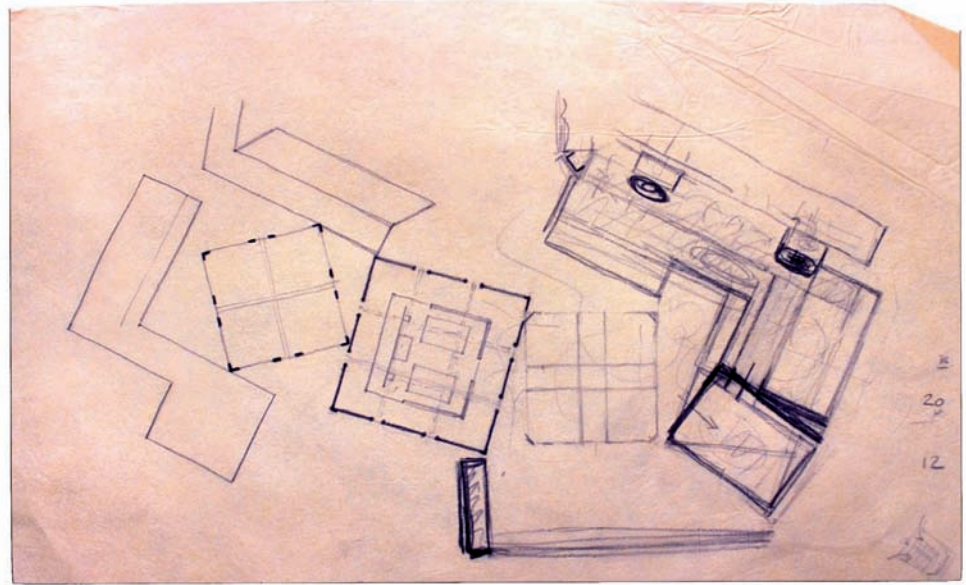
Fig. 5.31
Scheme 3
Plan
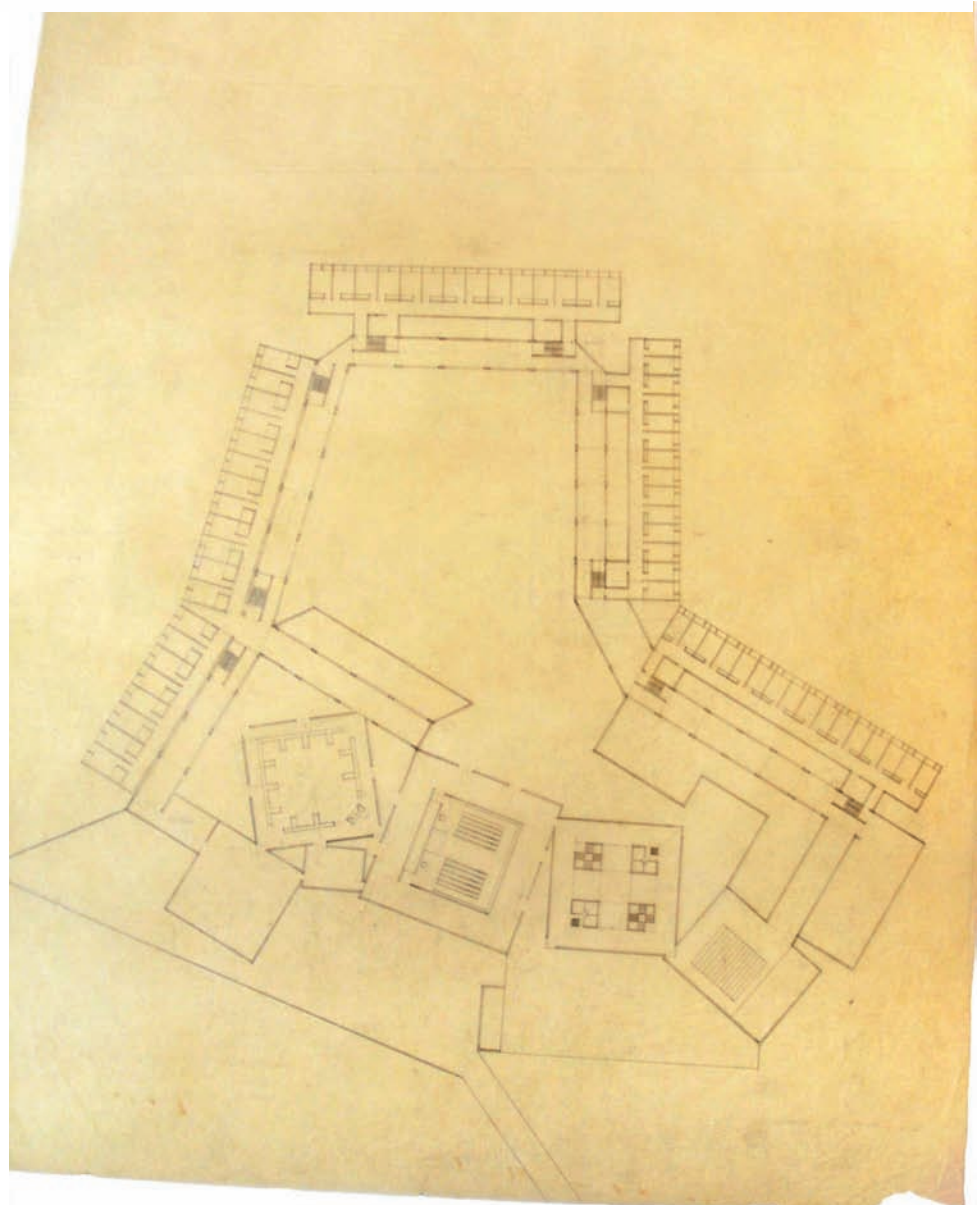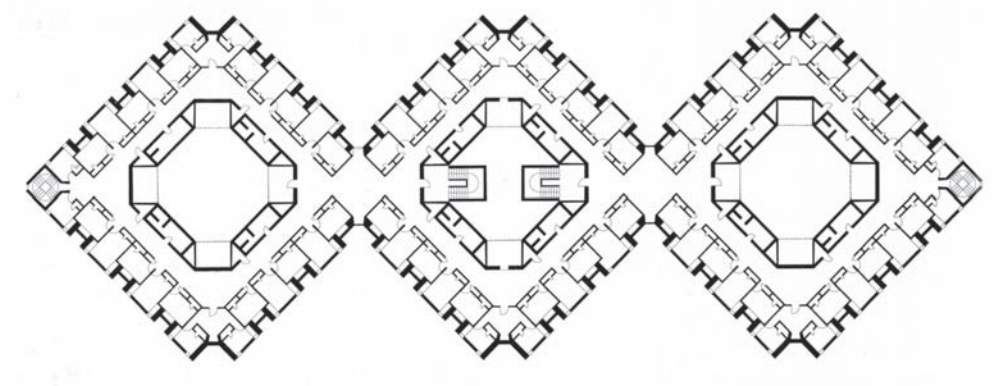
Fig. 5.32
Erdman Hall
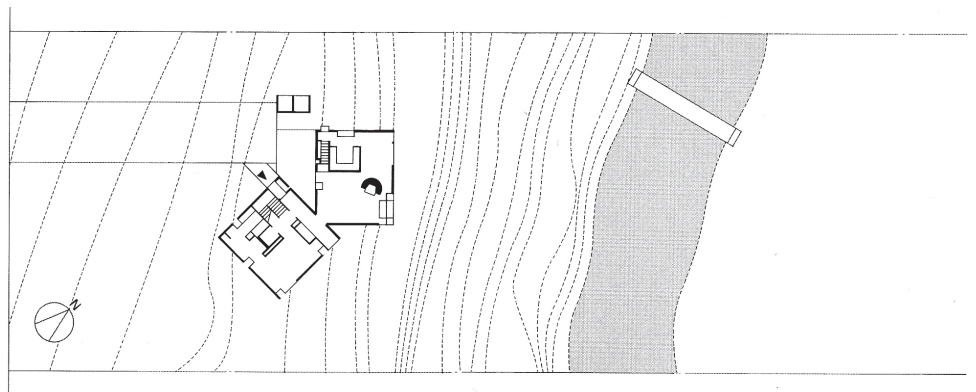
Fig. 5.33
Fisher House
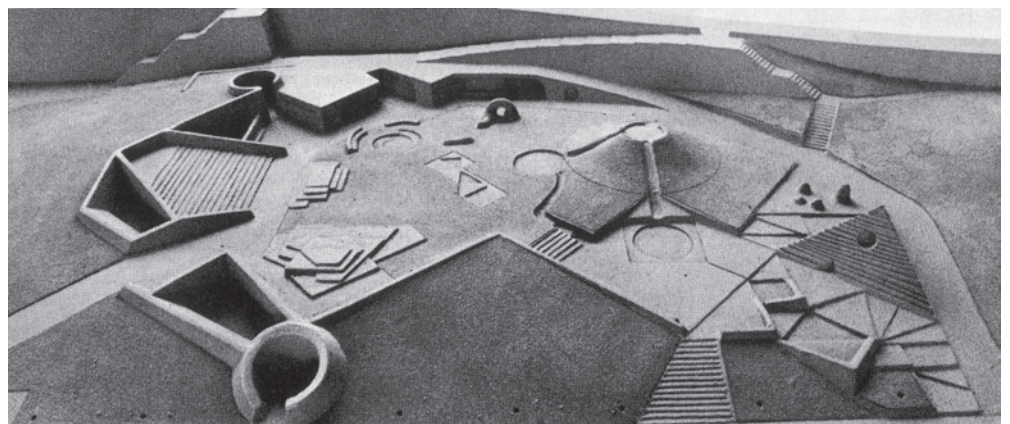
Fig. 5.34
Levy Memorial
Playground
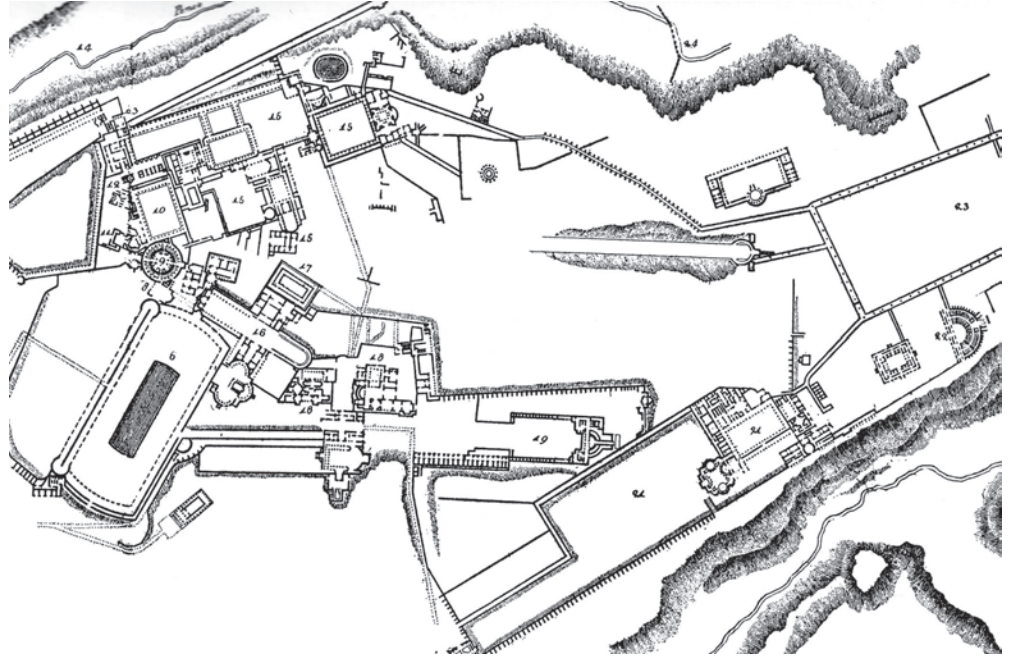
Fig. 5.36
Villa Hadriana
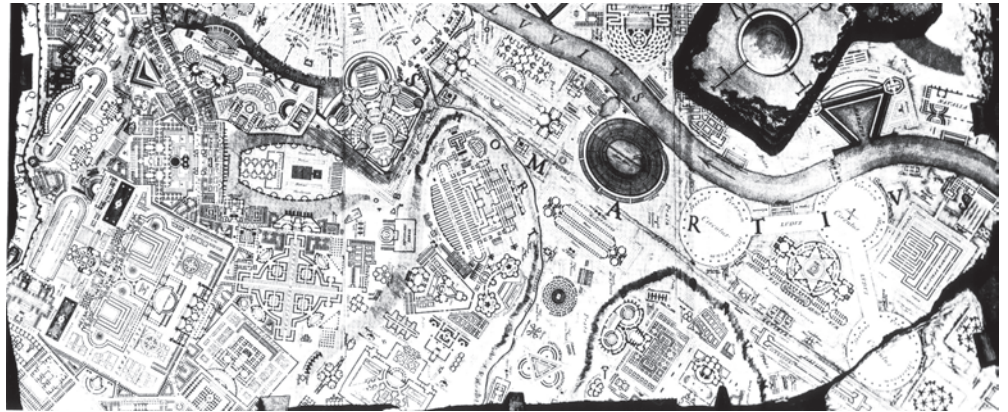
Fig. 5.37
Piranesi:
Campus Maritius

Fig. 5.38
Scheme 3
Elevation Sketch LIK
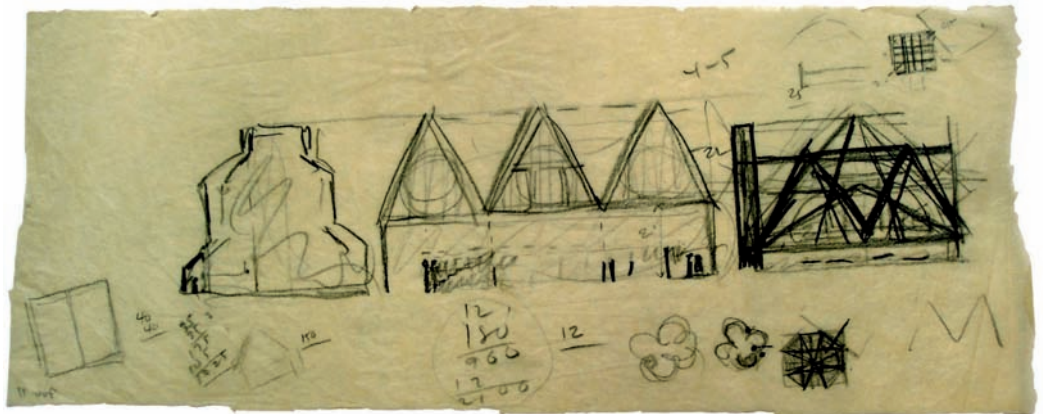
Fig. 5.39
Scheme 3
Elevation Sketch LIK

36
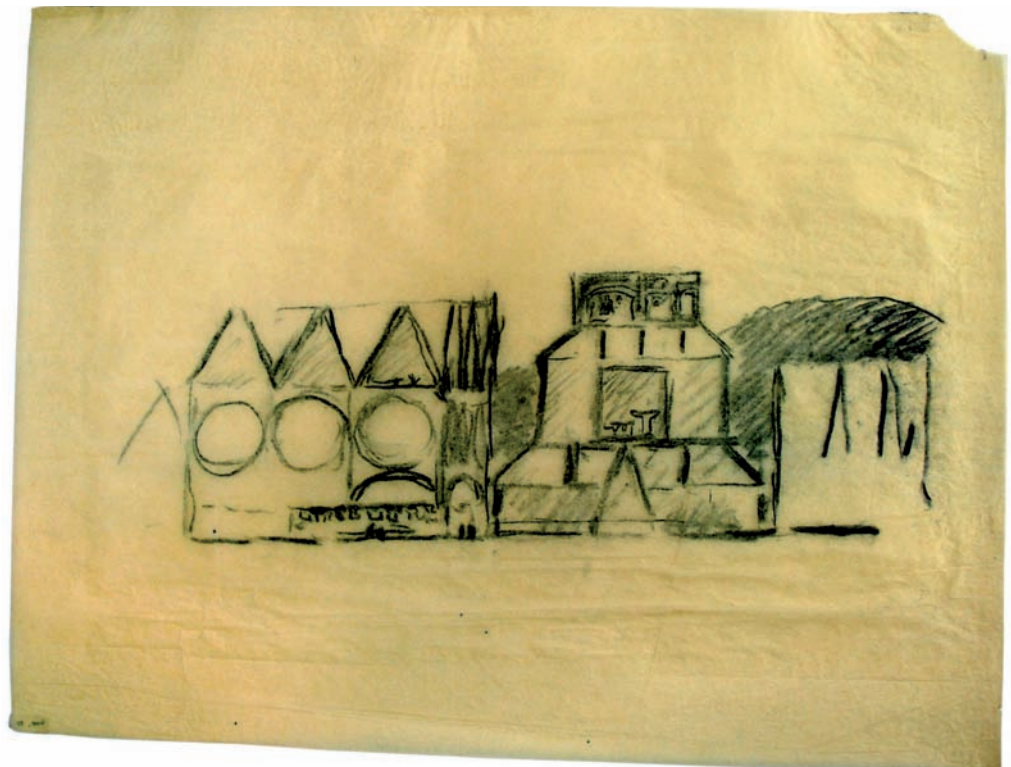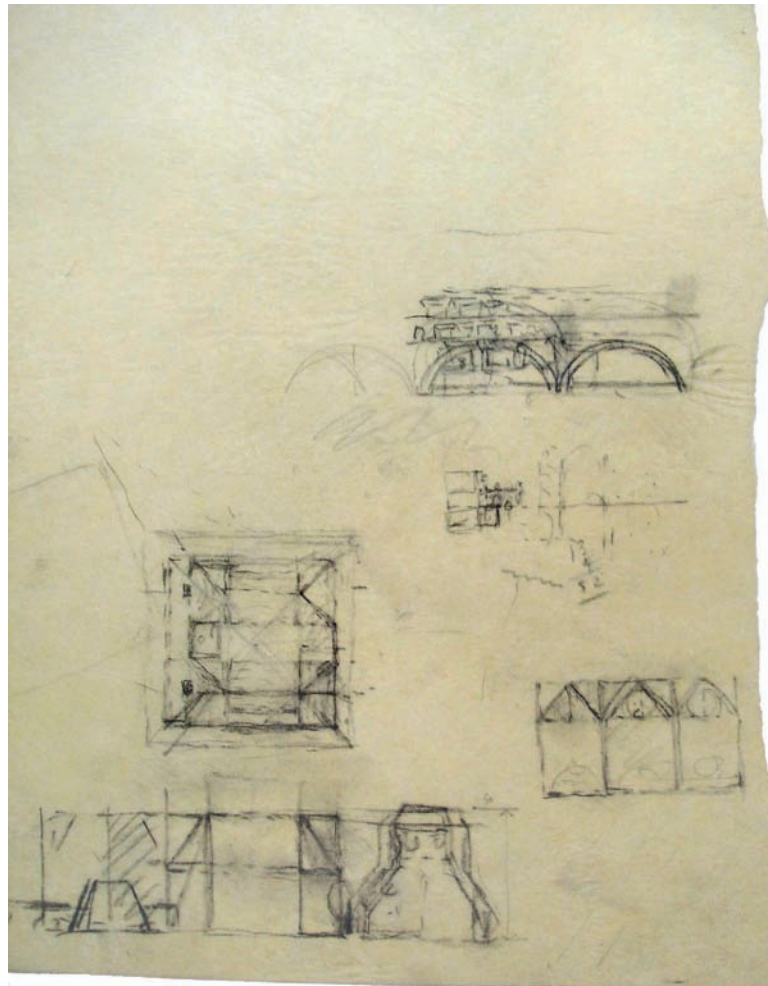
Fig. 5.40
Scheme 3
Elevation Sketch LIK
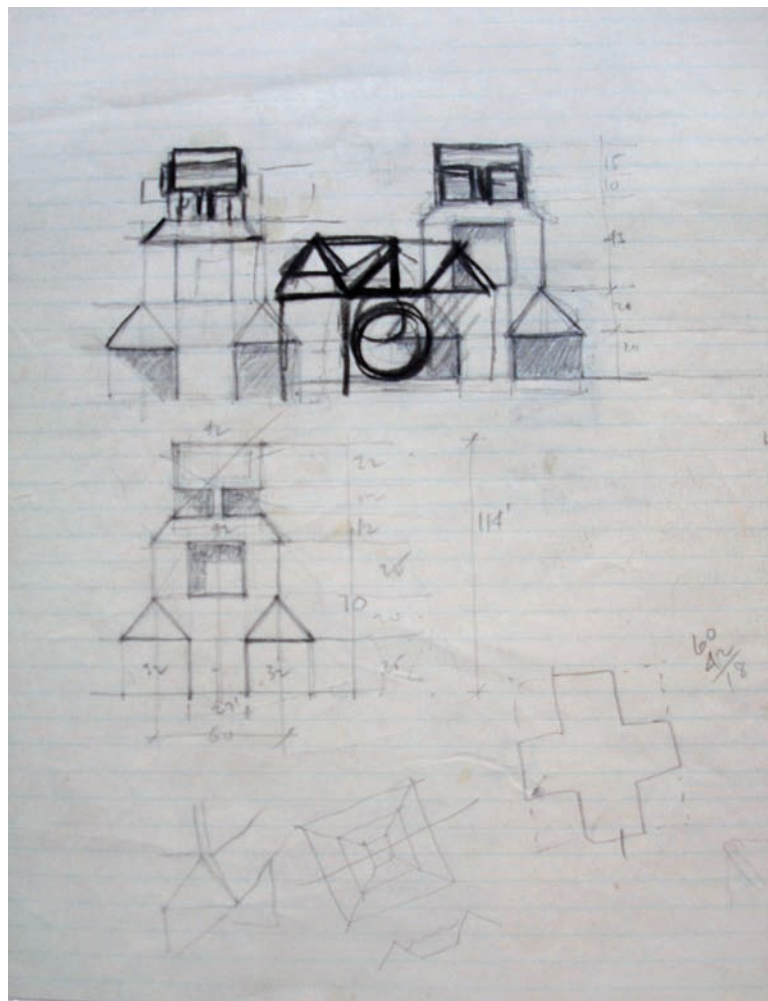
Fig. 5.41
Scheme 3
Elevation Sketch LIK
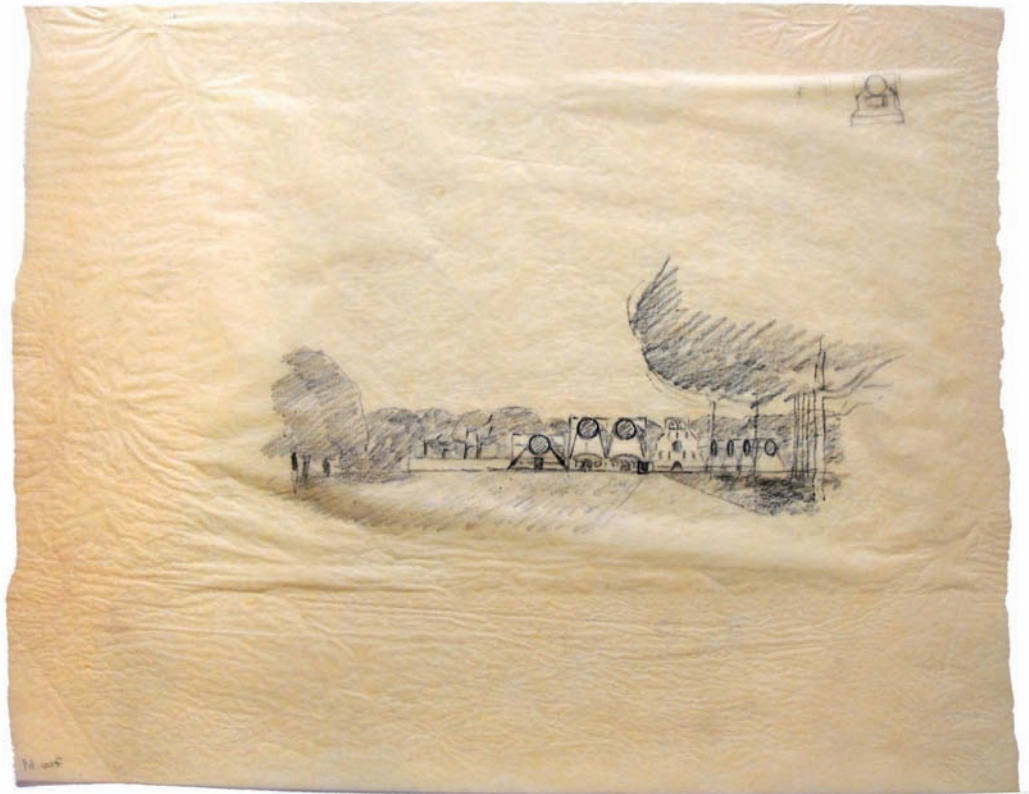
Fig. 5.42
Scheme 3
North Elevation
Studies, LIK
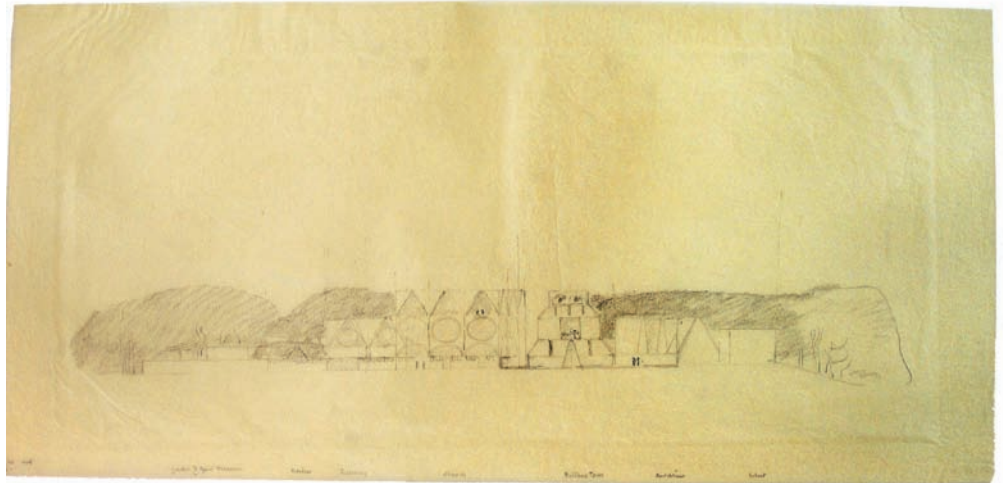
Fig. 5.43
Scheme 3
Section Through
Cloister LIK
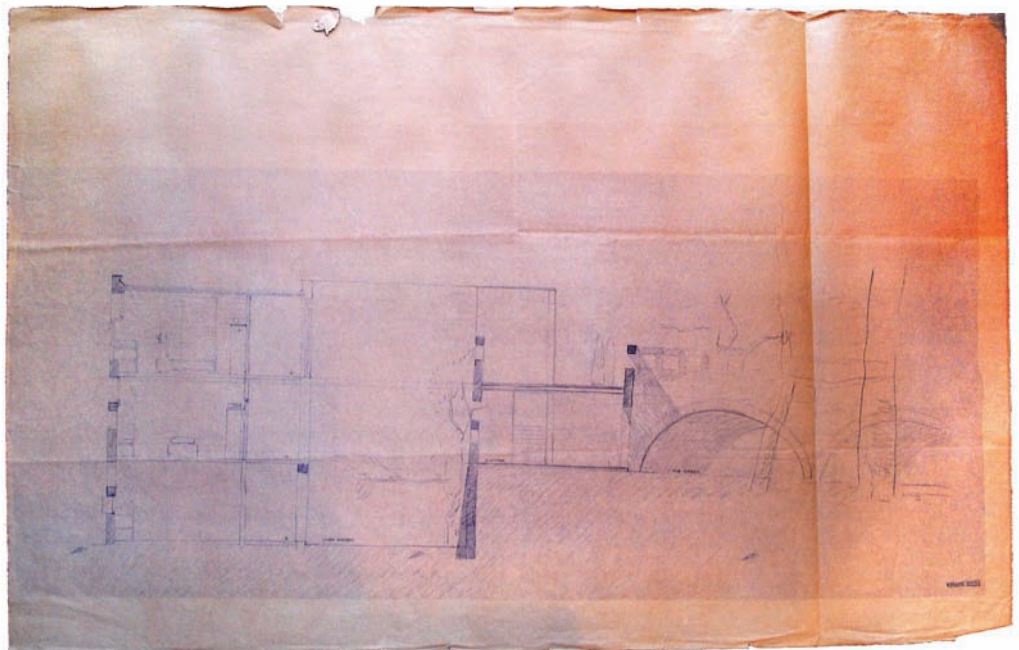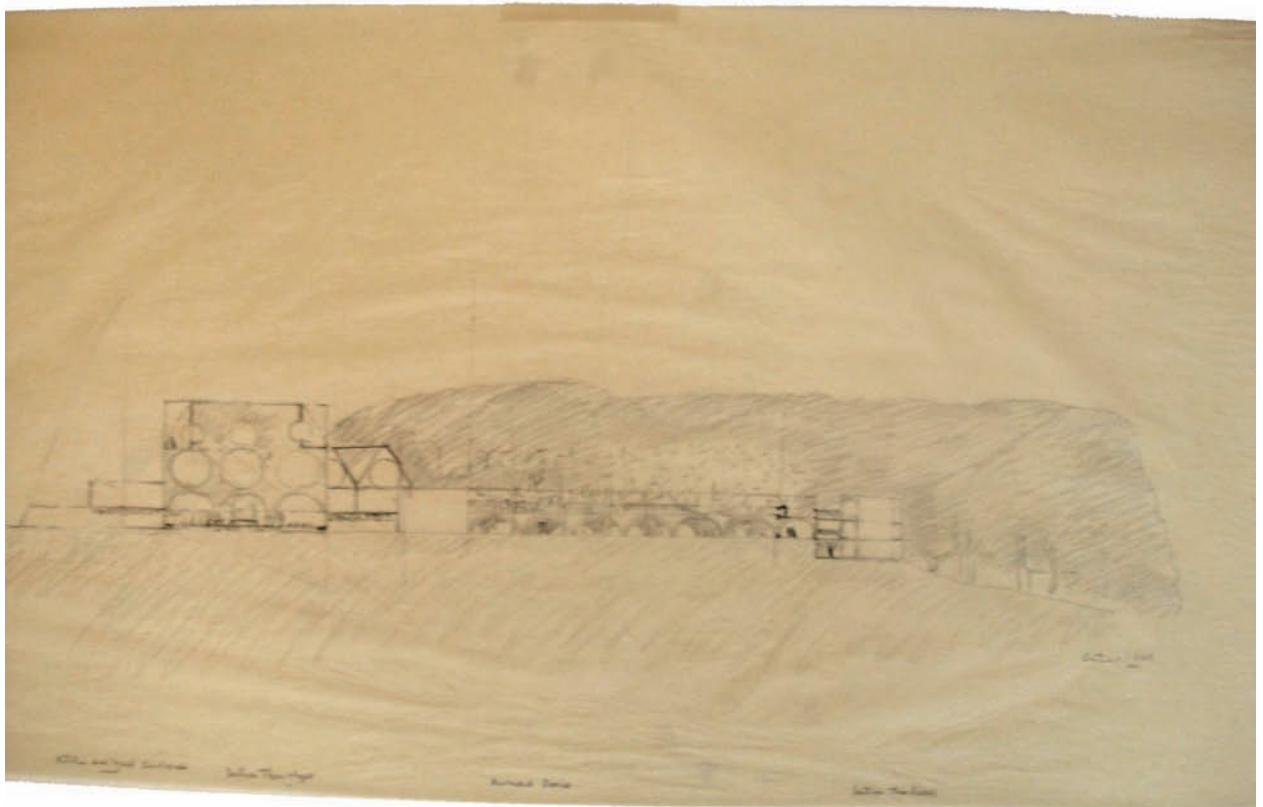
Fig. 5.44
Scheme 3
Section LIK

Fig. 5.45
National Assembly,
Dhaka: Section
LIK
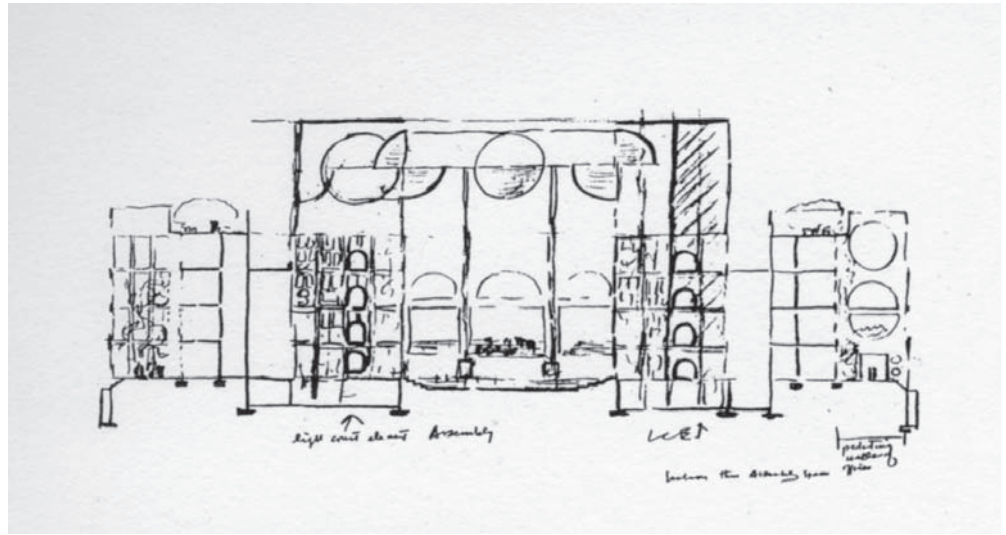
Fig. 5.46
Scheme 3
Section
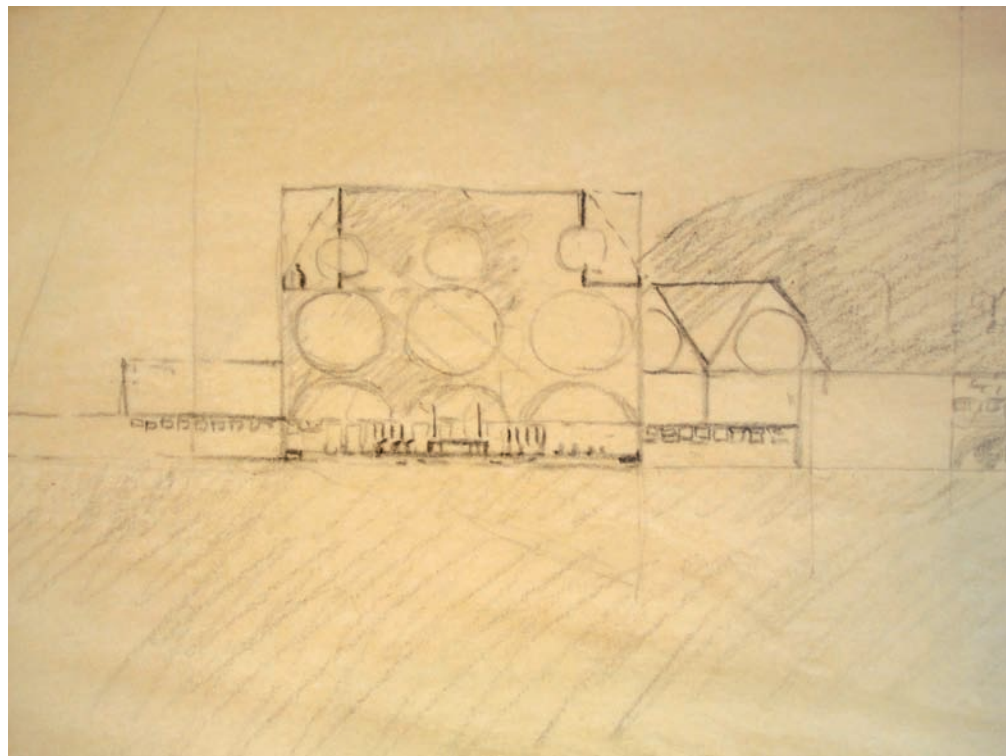
Fig. 5.47
Scheme 3
Section at Cells,
Cloister
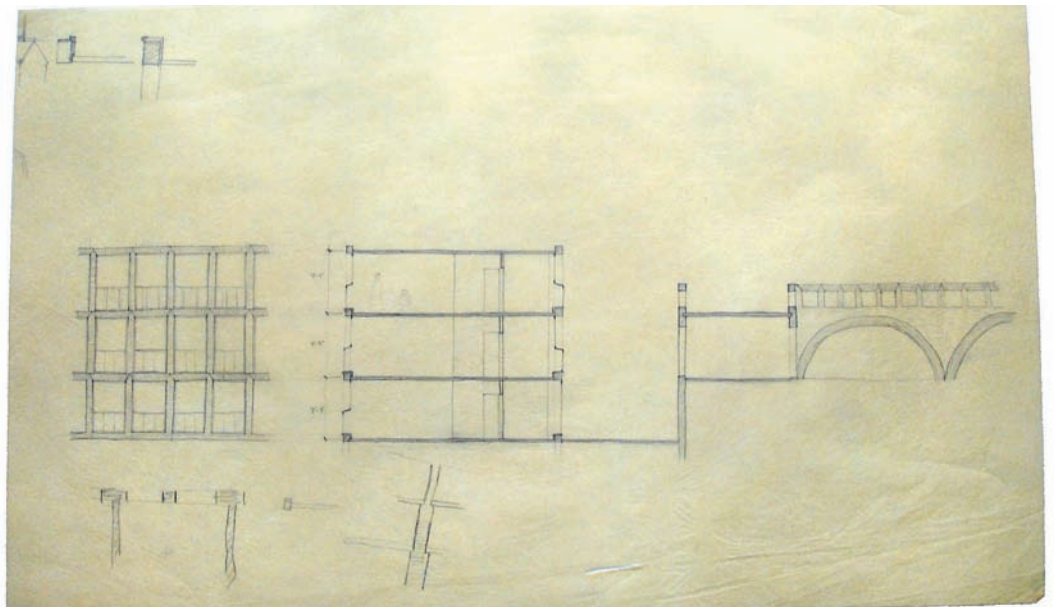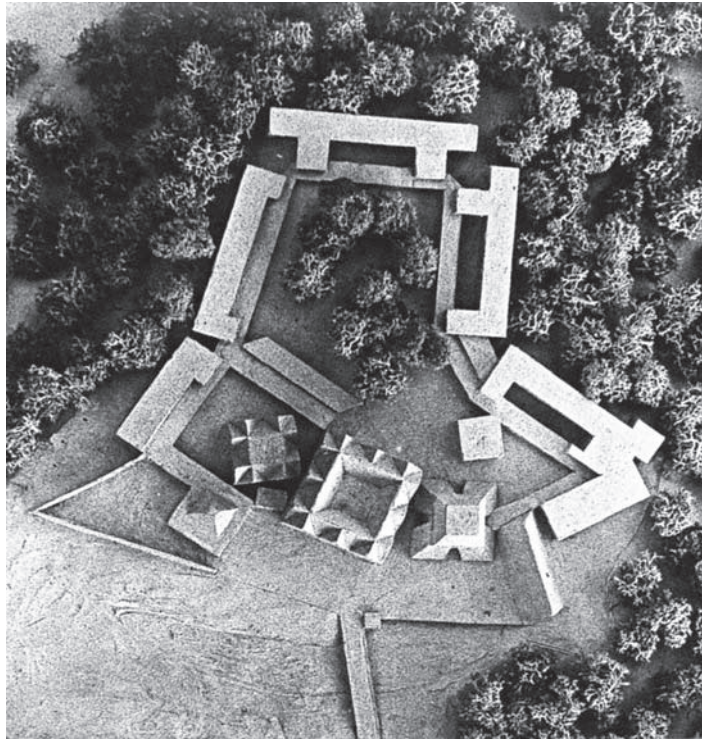
Fig. 5.48
Scheme 3
Model

Fig. 5.49
Scheme 3
Overlay Plan

Fig. 5.50
Sketch LIK
ca Feb. 1967
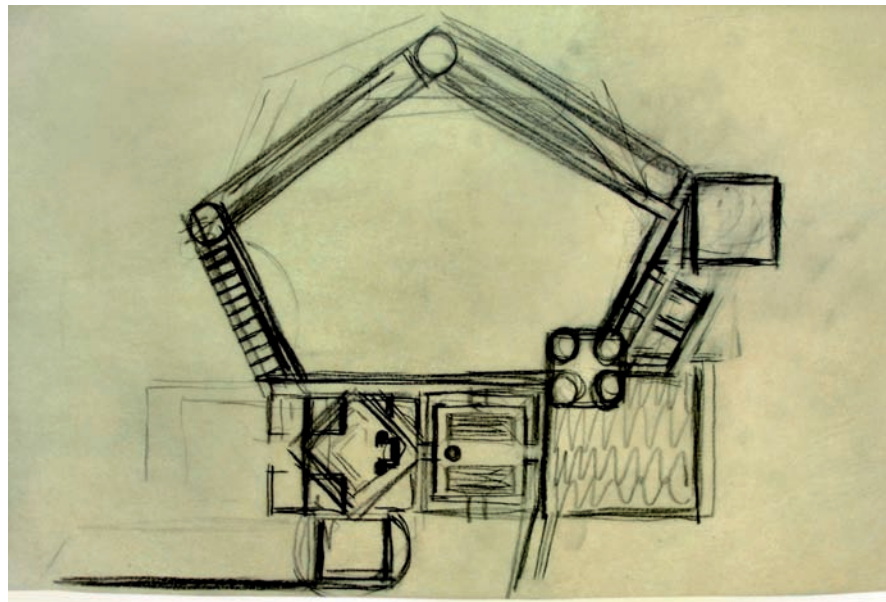
Fig. 5.51
Sketch Polk?
ca Feb. 1967
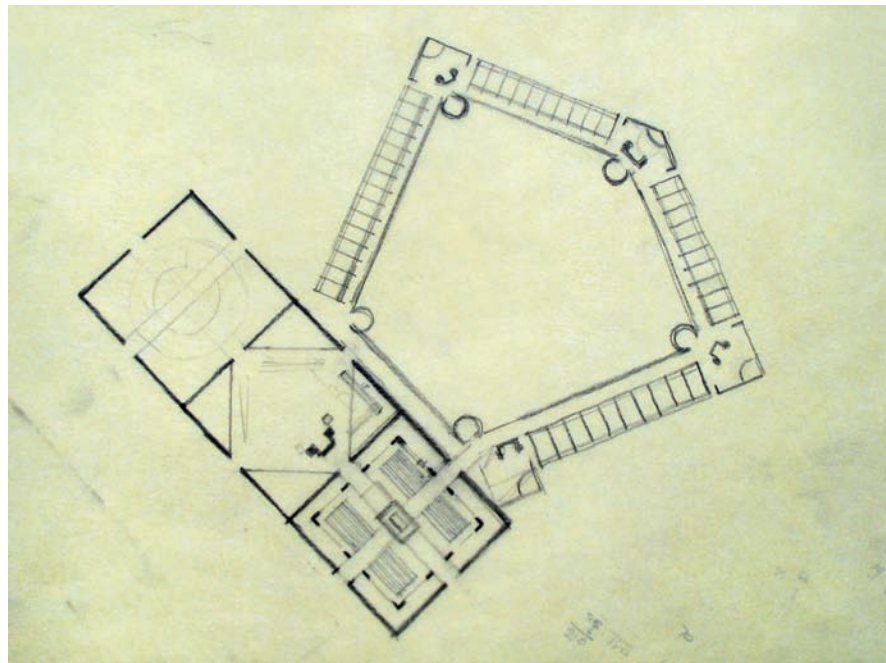
Fig. 5.52
Sketch Polk?
ca Feb. 1967
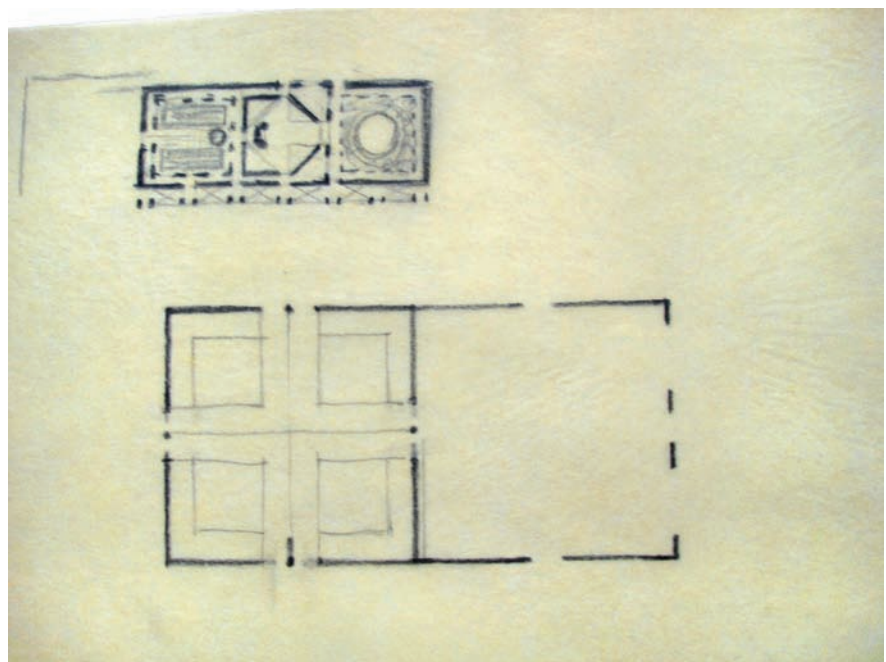
Fig. 5.53
Sketch LIK
ca Feb. 1967
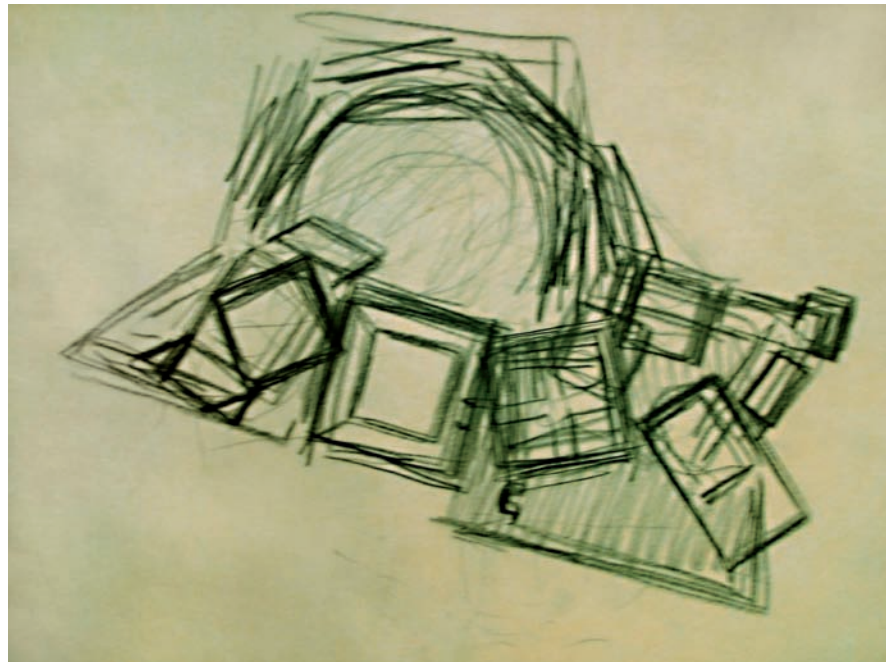
Fig. 5.54
Sketch LIK
ca Feb. 1967
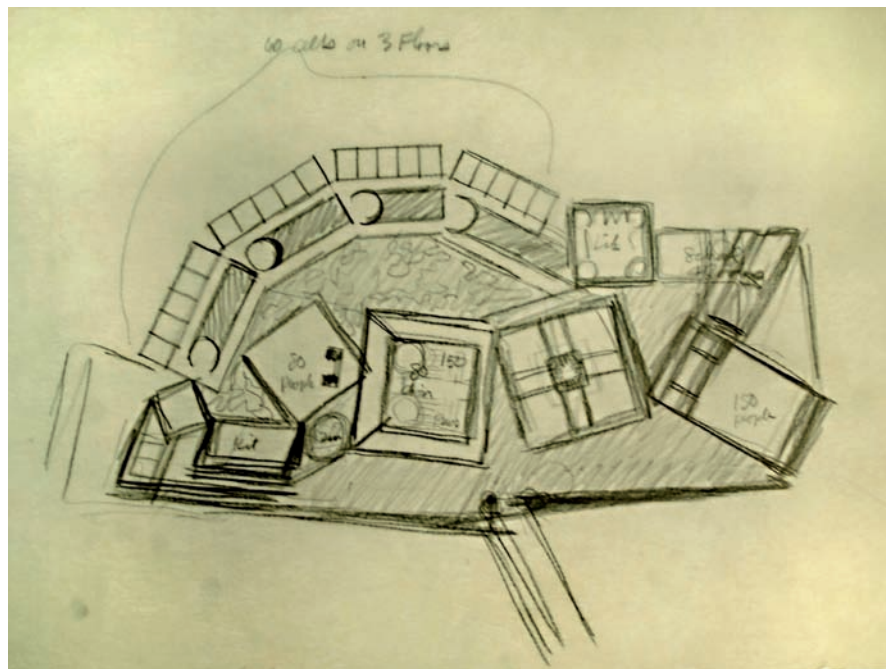
Fig. 5.55
Sketch LIK
ca. Feb. 1967
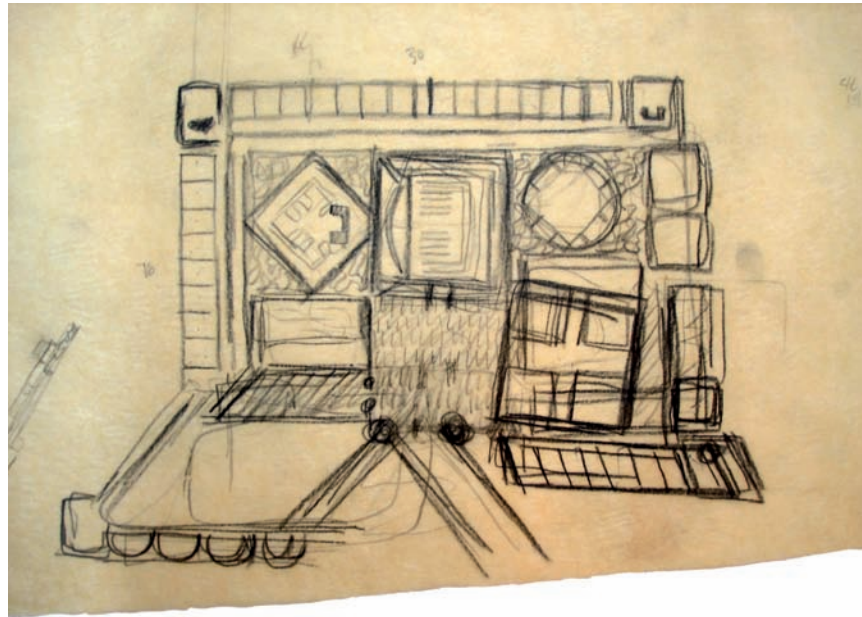
Fig. 5.56
Sketch LIK
ca. Feb. 1967
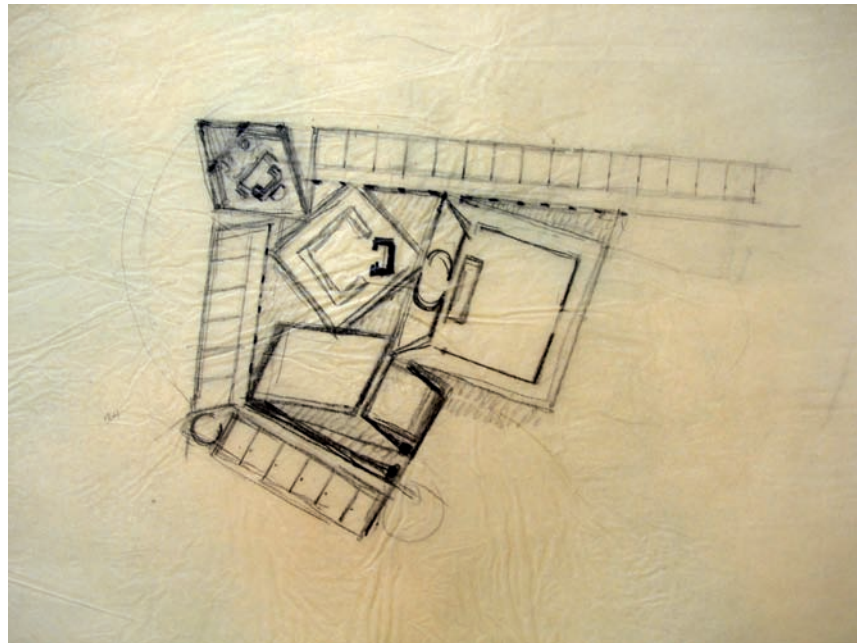
Fig. 5.57
Sketch LIK
ca. Feb. 1967
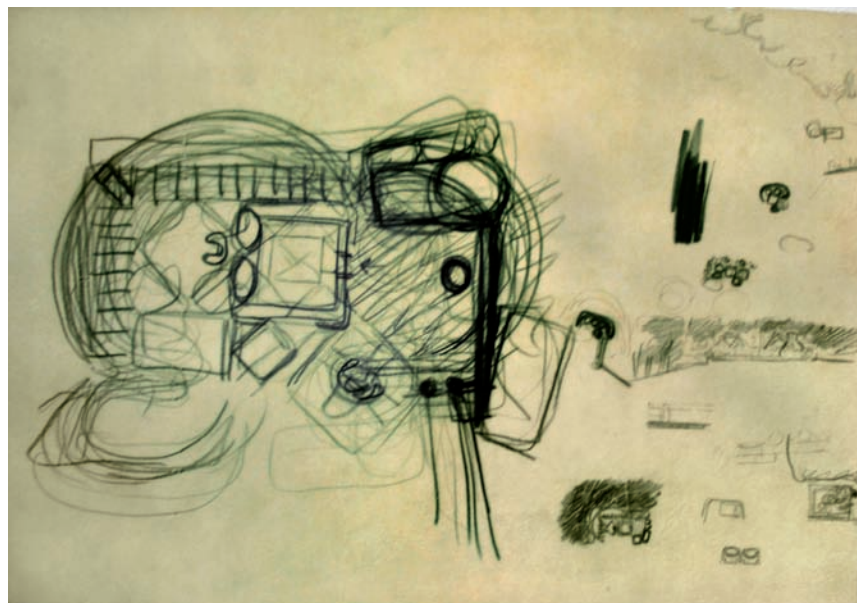
Fig. 5.58
Sketch LIK
ca. Feb. 1967
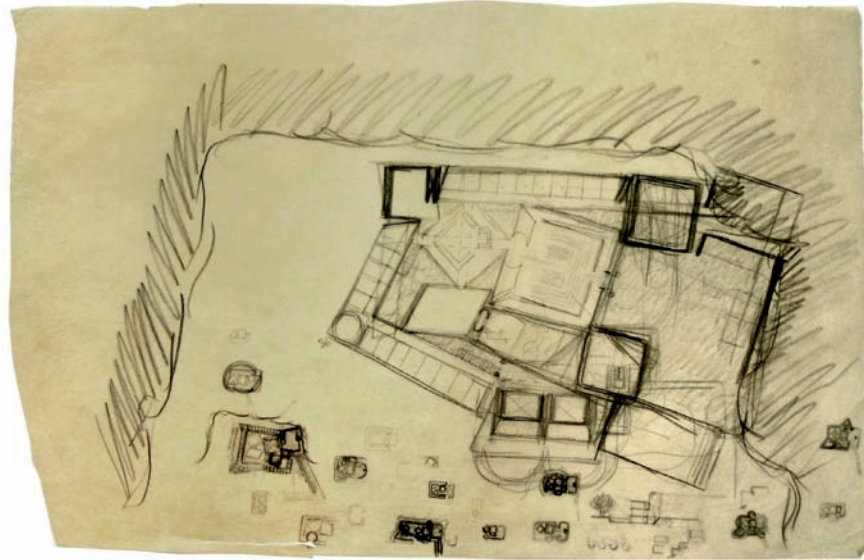
Fig. 5.59
Sketch LIK
ca. Feb. 1967
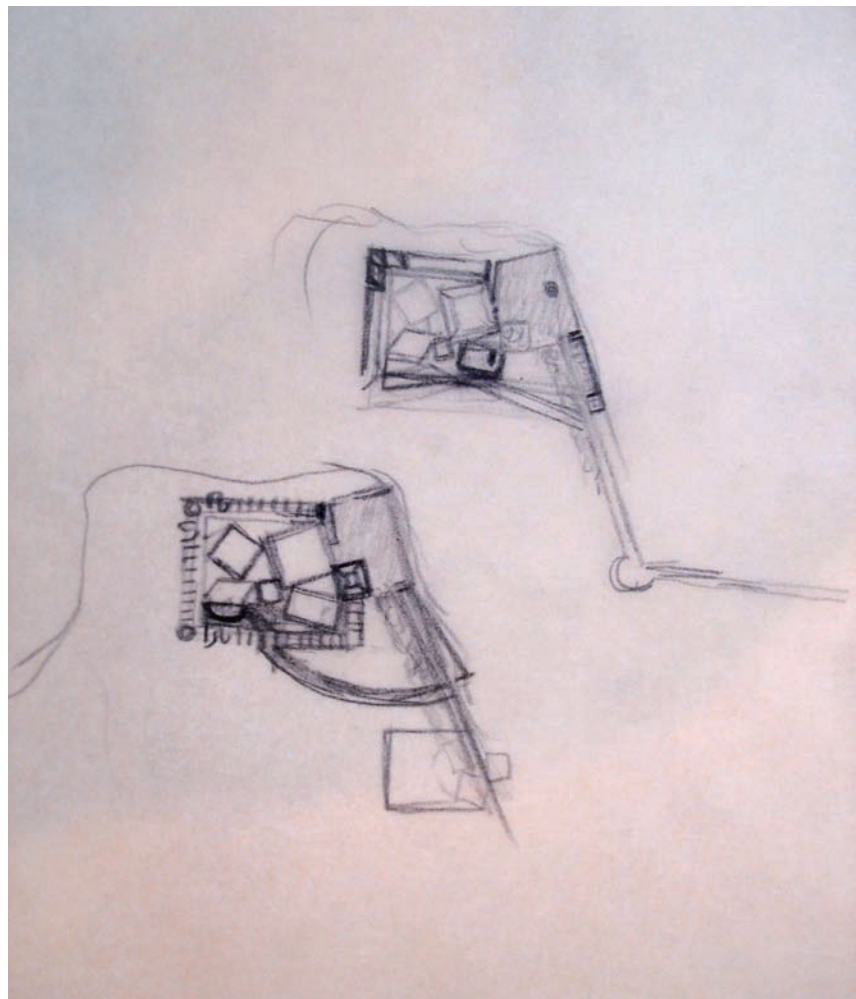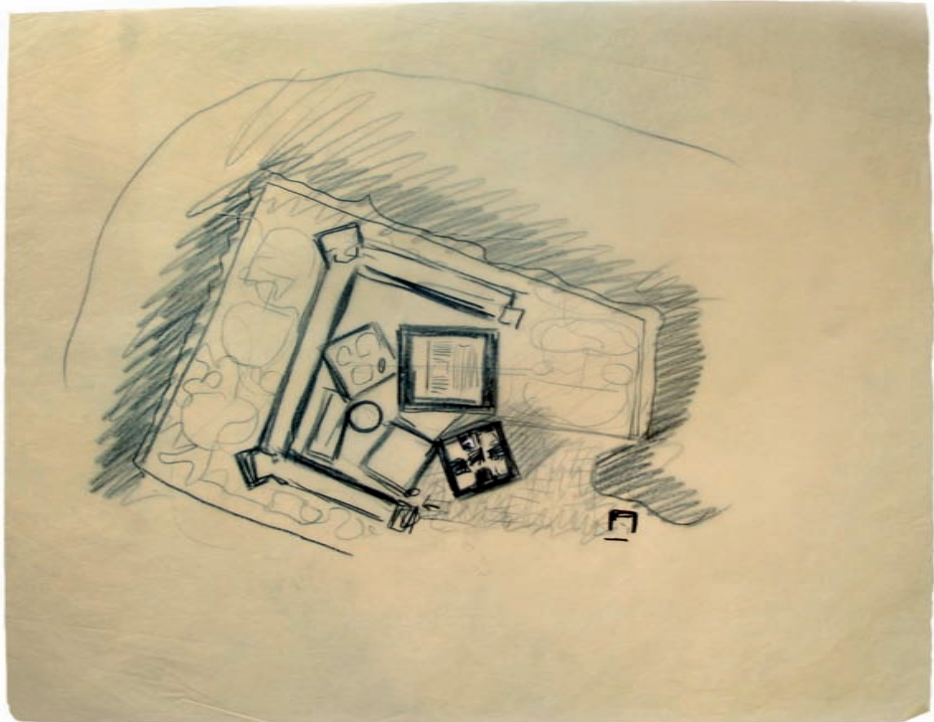
Fig. 5.60
Sketch LIK
ca. Feb. 1967

Fig. 61
Diagram:
Clearing as Pocket,
Tower as Threshold
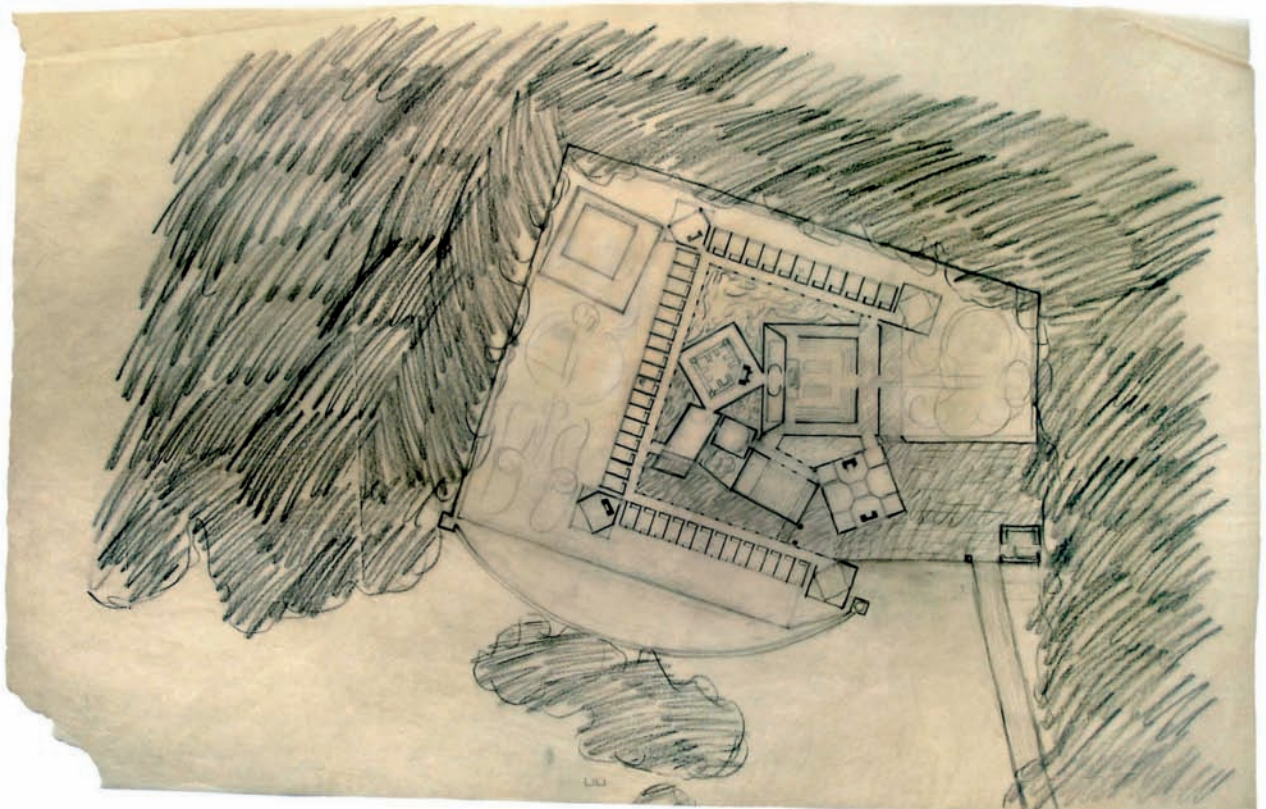
Fig. 5.62
Plan
26 Feb. 1967

Fig. 5.63
Plan
26 Feb. 1967

Fig. 5.64
Sketch LIK
ca. March-April 1967
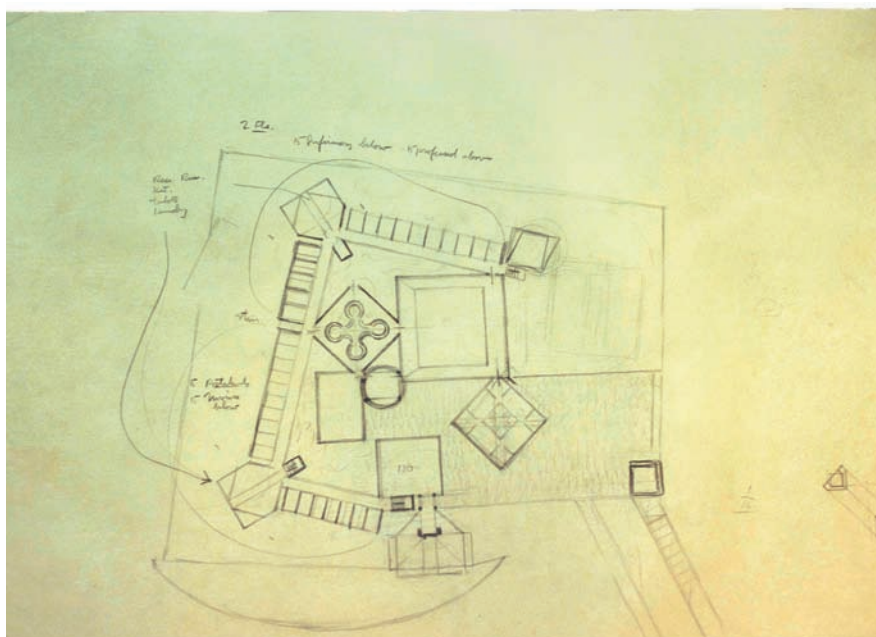
Fig. 5.65
Sketch LIK?
ca. March-April 1967
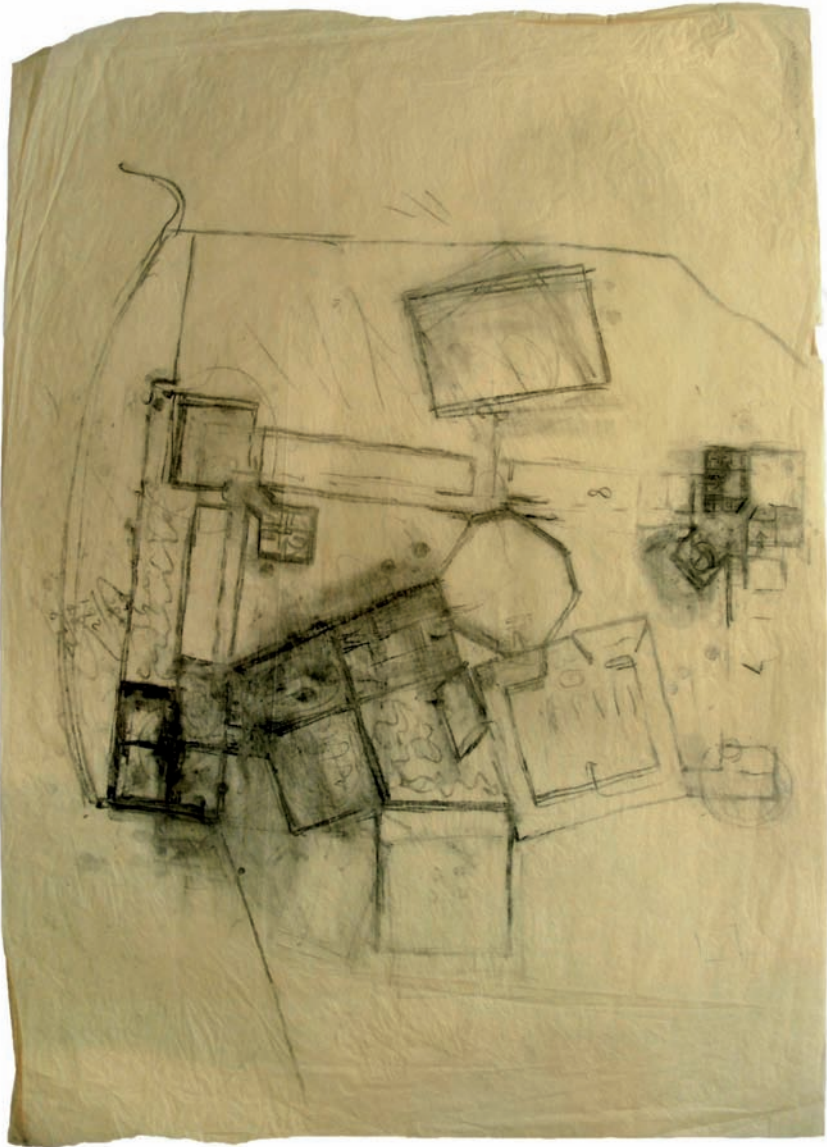
Fig. 5.66
Sketch LIK
ca. April-May 1967
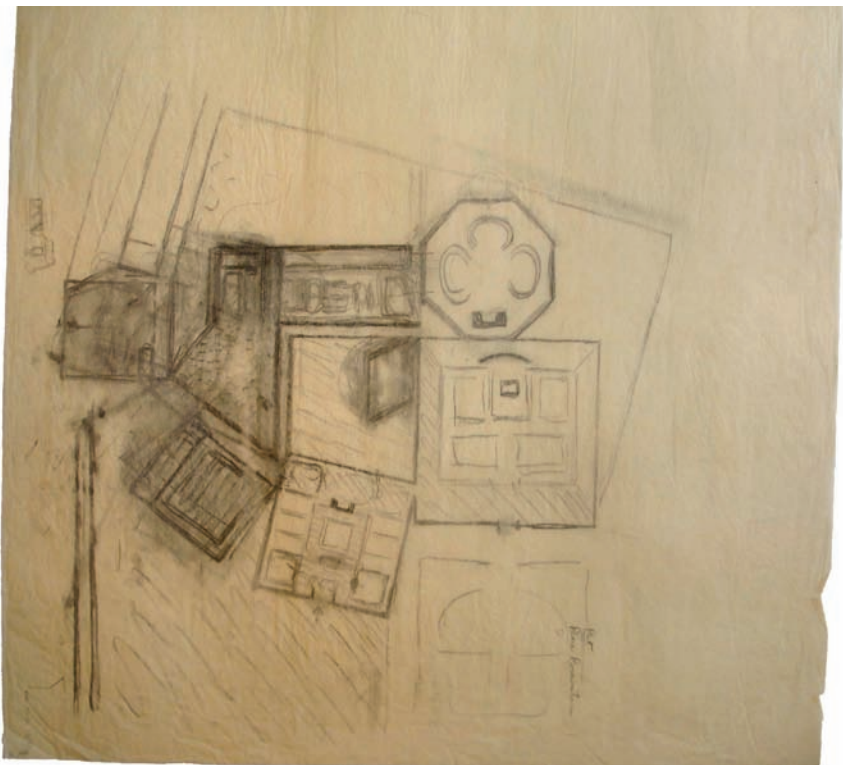
Fig. 5.67
Sketch LIK
ca. April-May 1967
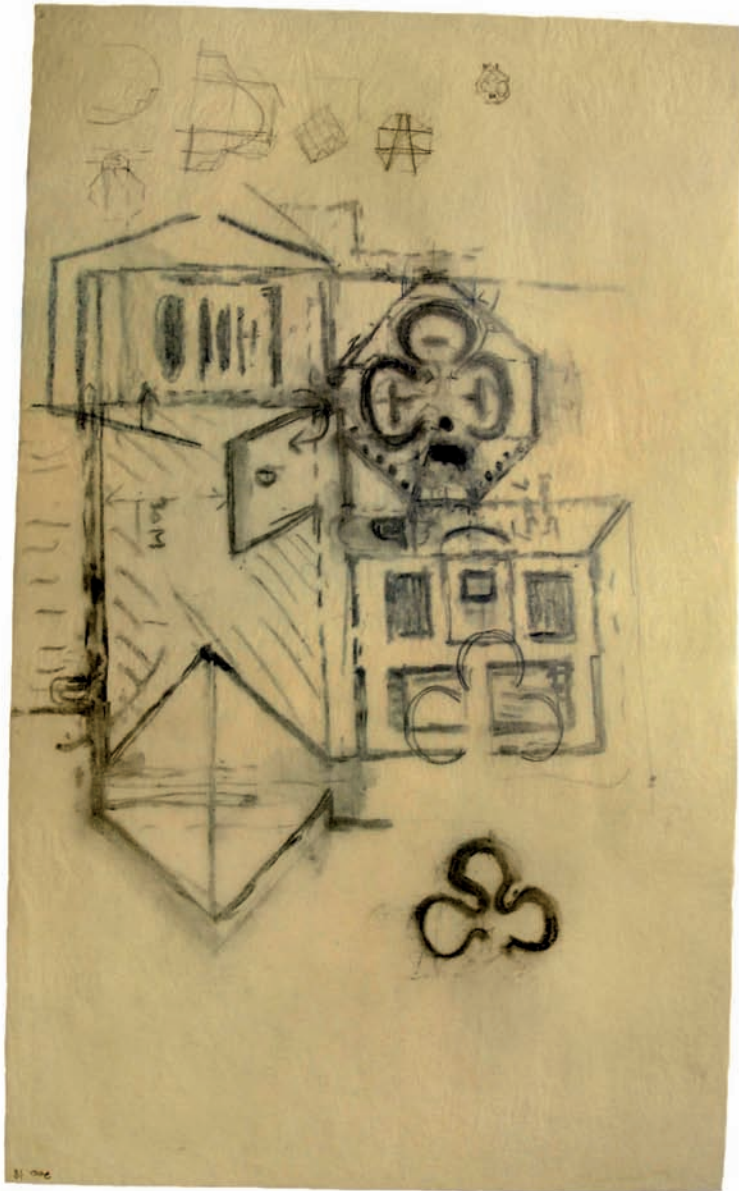
Fig. 5.68
Sketch LIK
ca. April-May 1967
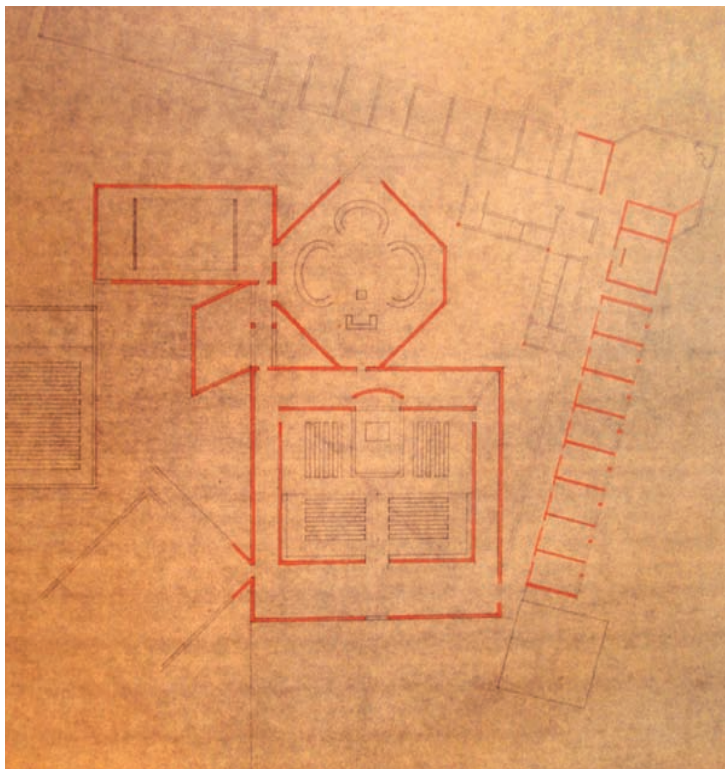
Fig. 5.69
Plan Detail
ca. April-May 1967
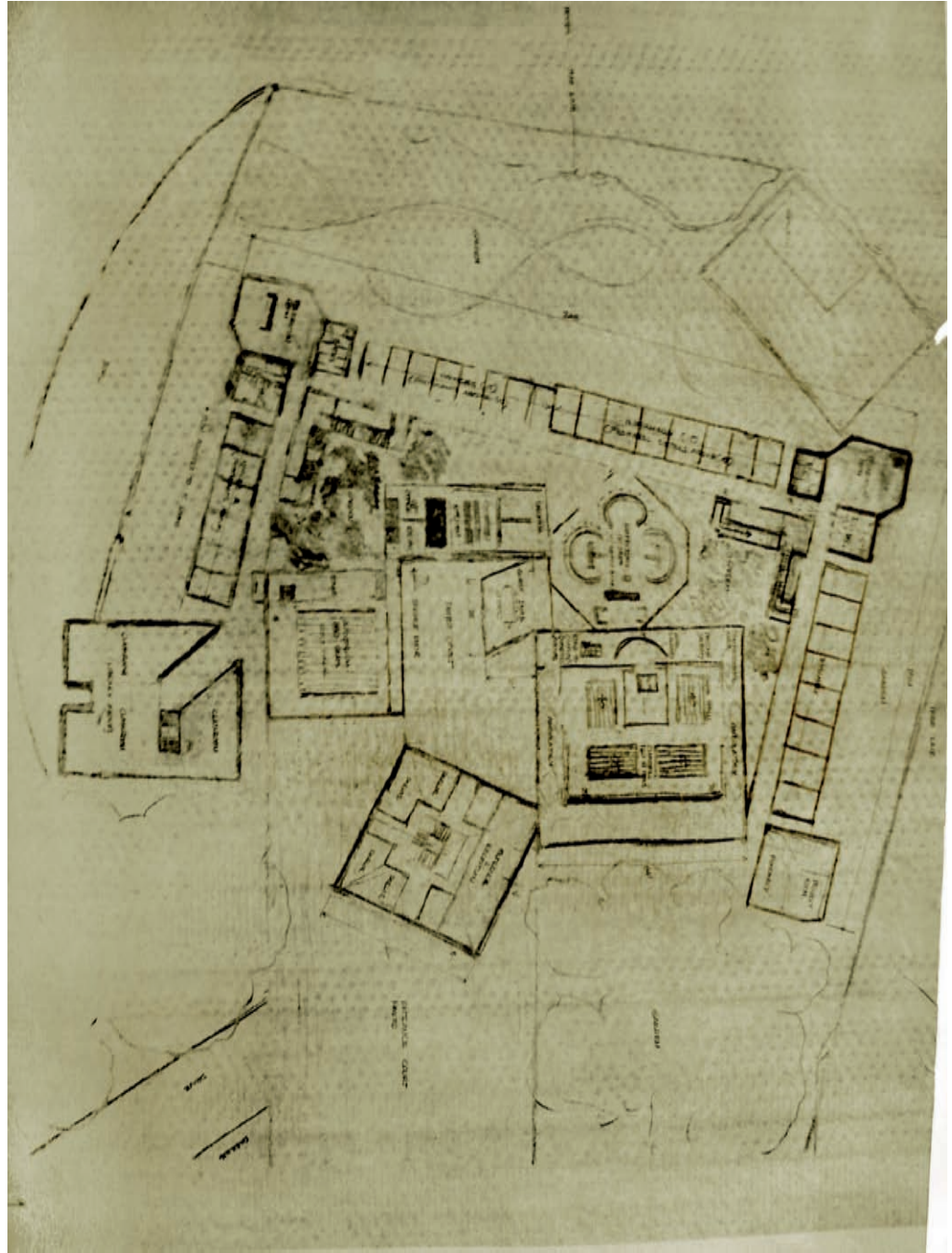
Fig. 5.70, 5.71
Plan of May 1967
LIK
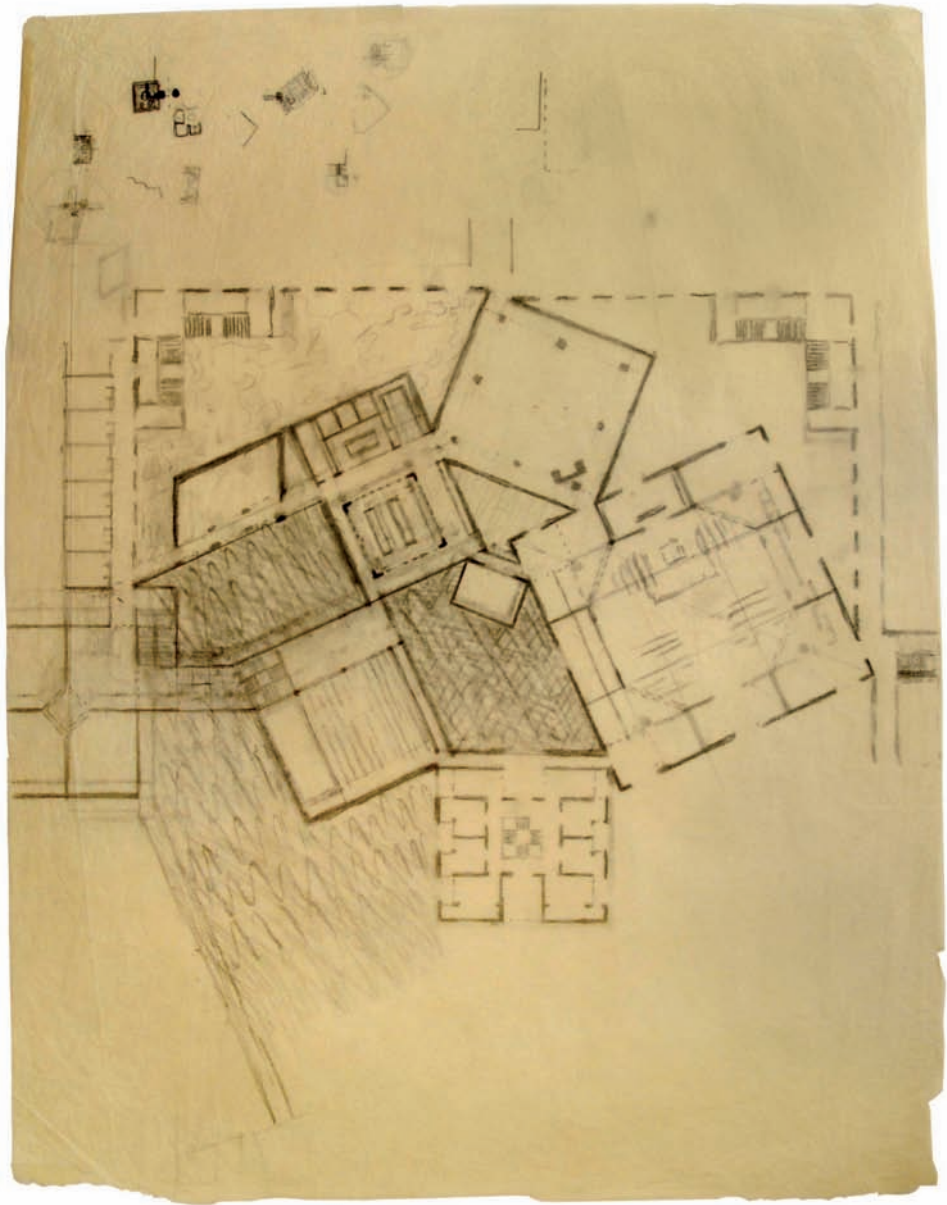
Fig 5.72
Sketch LIK
ca. June 1967
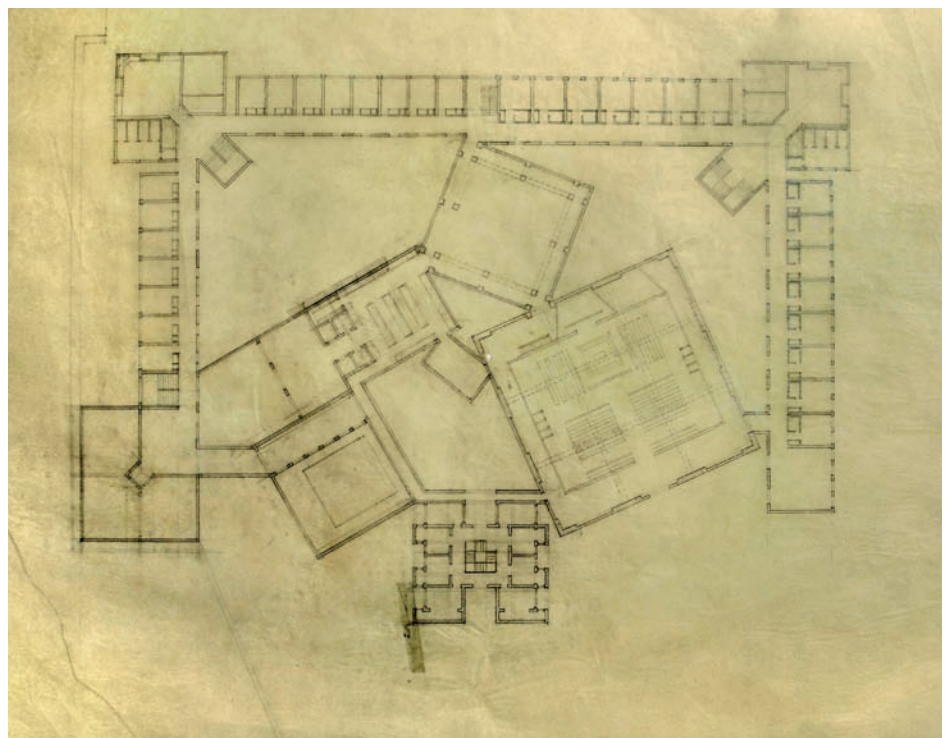
Fig 5.73
Plan
June 28 1967
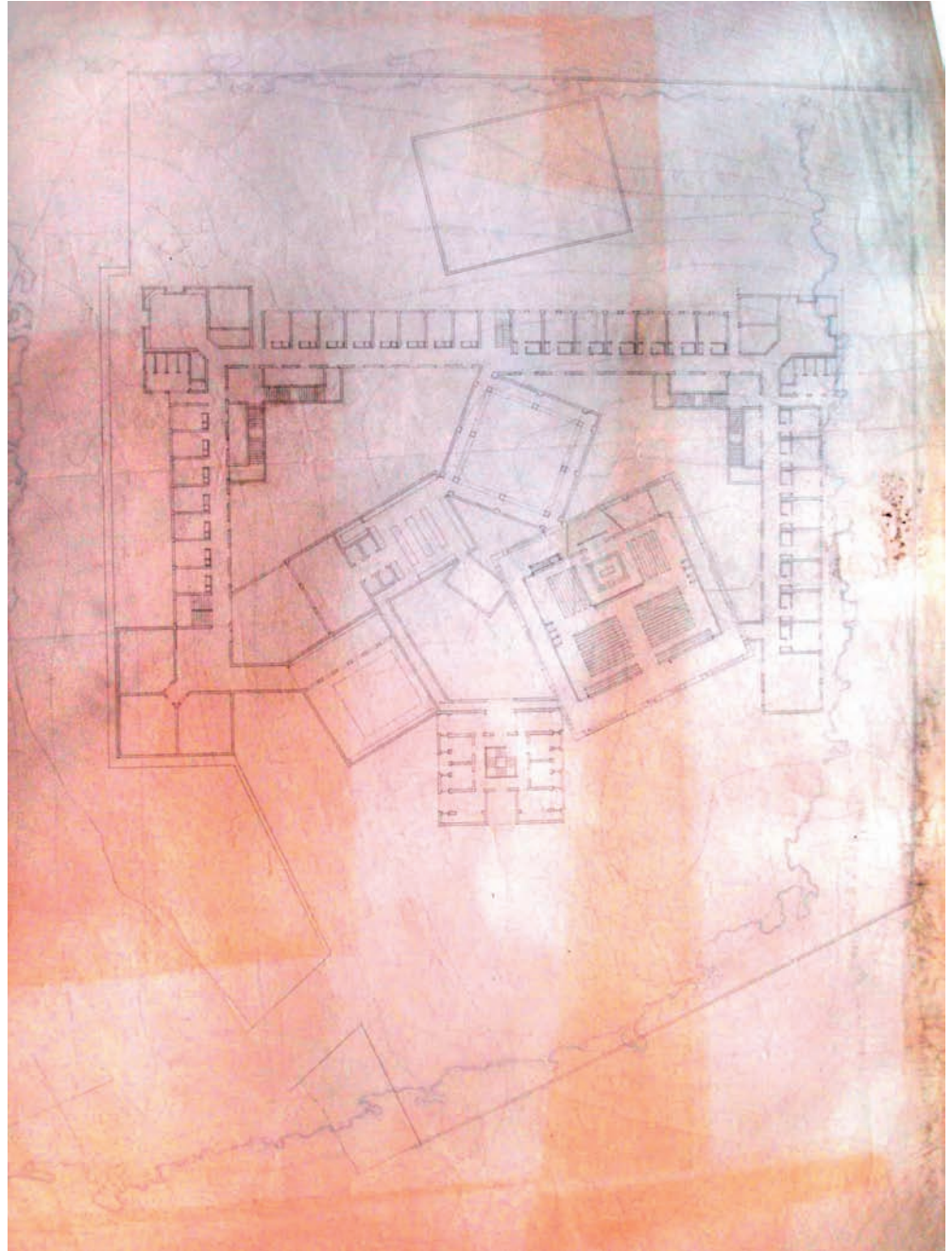
Fig. 5.74
Plan
August 7 1967

Fig. 5.75
Tower: Elev., Section
June 28 1967

TOWER THIRD FLOOR

JUNE 28, '67

TOWER FIRST FLOOR
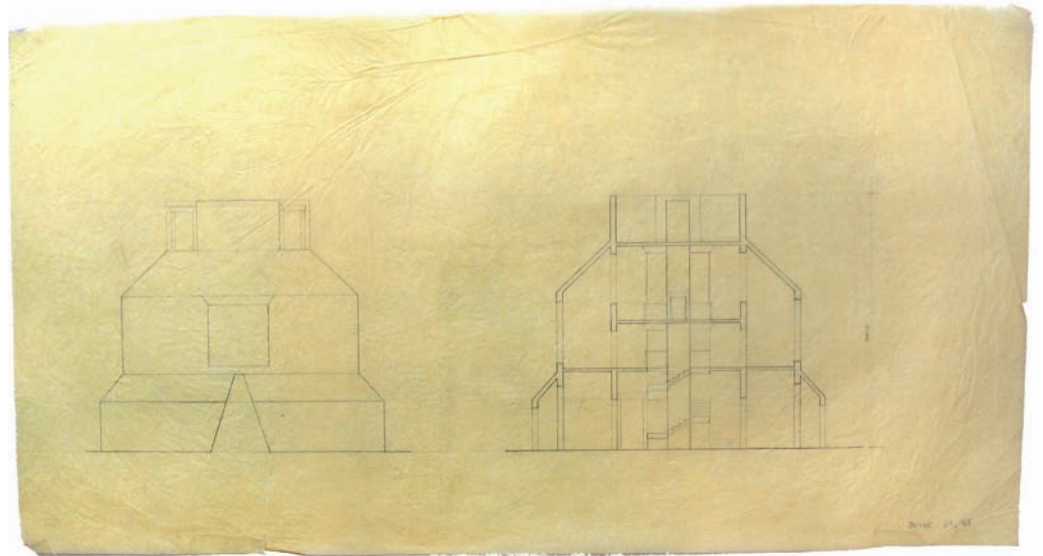
JUNE 28, '67

Fig. 5.76
Tower: Floors 2 + 3
June 28 1967
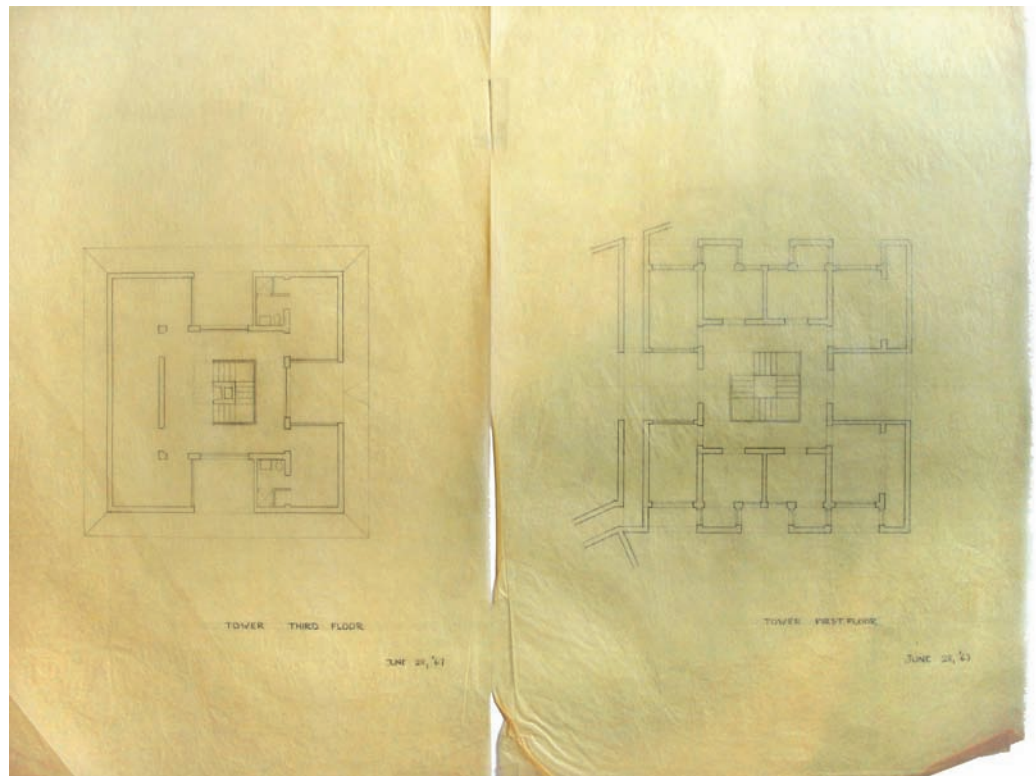
Fig. 5.77
Diagram:
Circulation
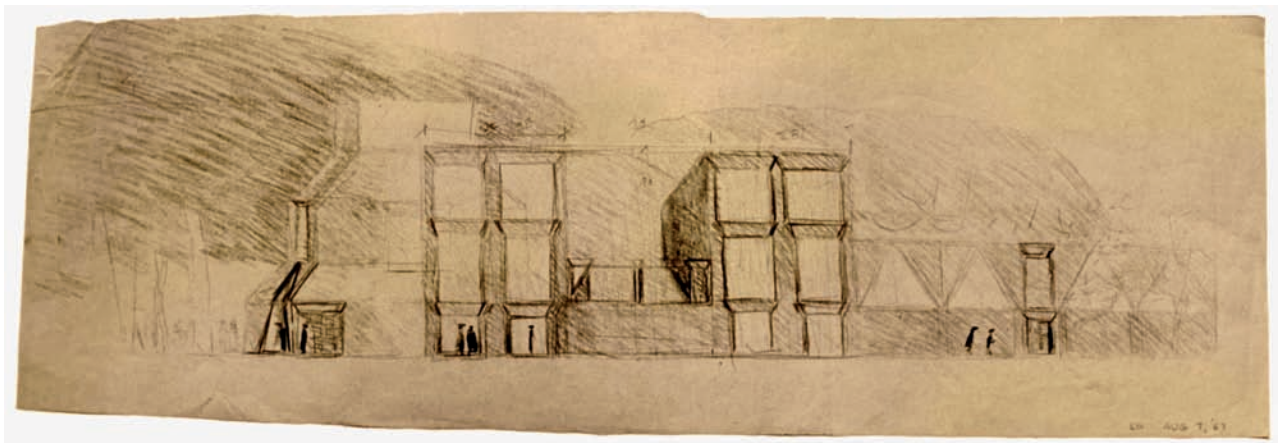
Fig. 5.78
South Elevation LIK
August 7 1967
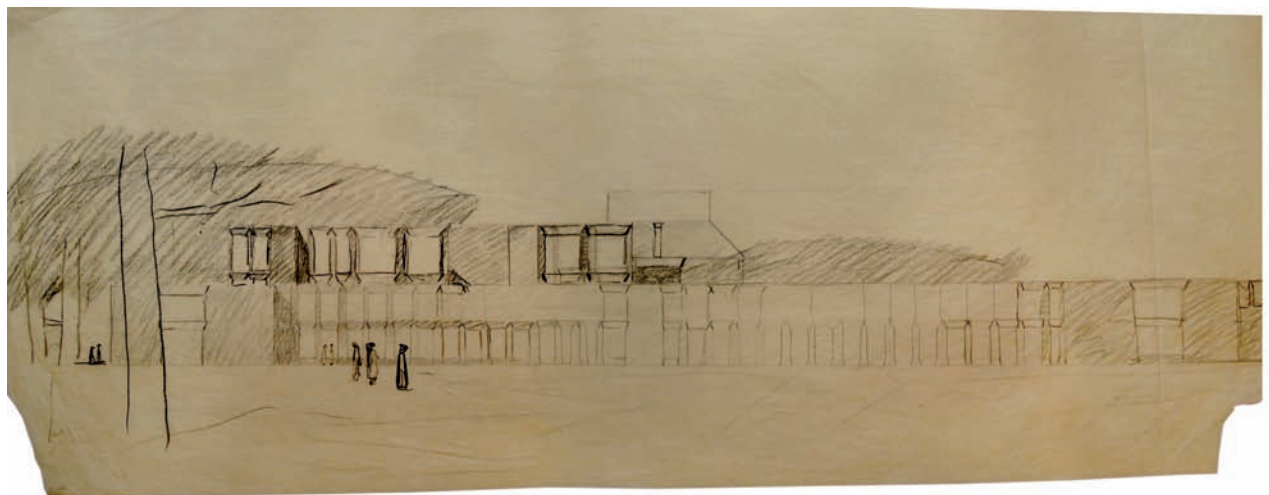
Fig. 5.79
East Elevation LIK
August 7 1967
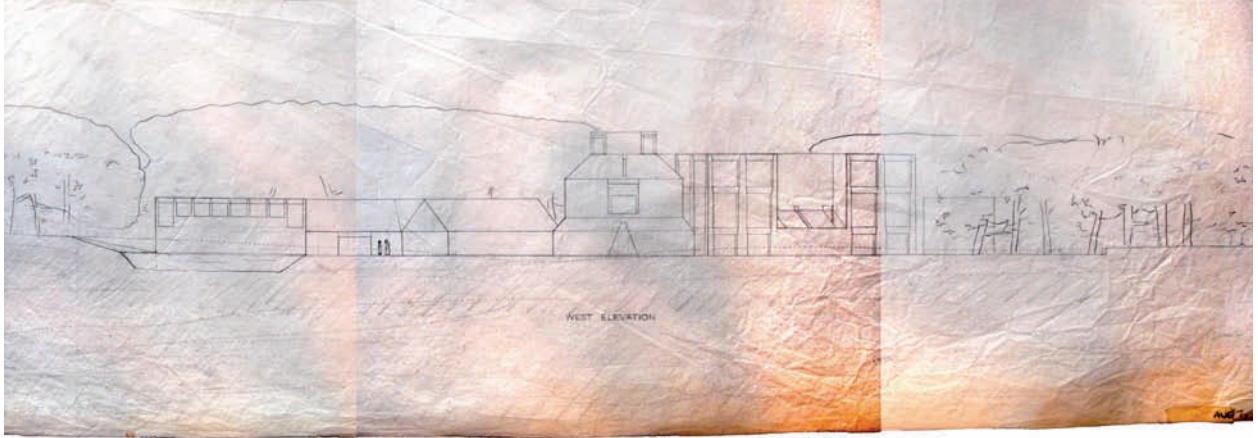
Fig. 5.80
West Elevation
August 7 1967
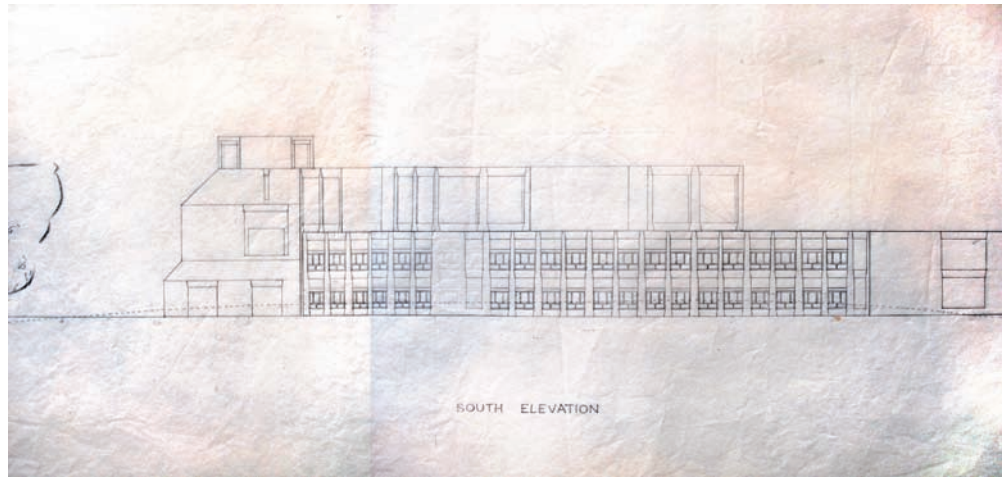
Fig. 5.81
South Elevation
August 7 1967
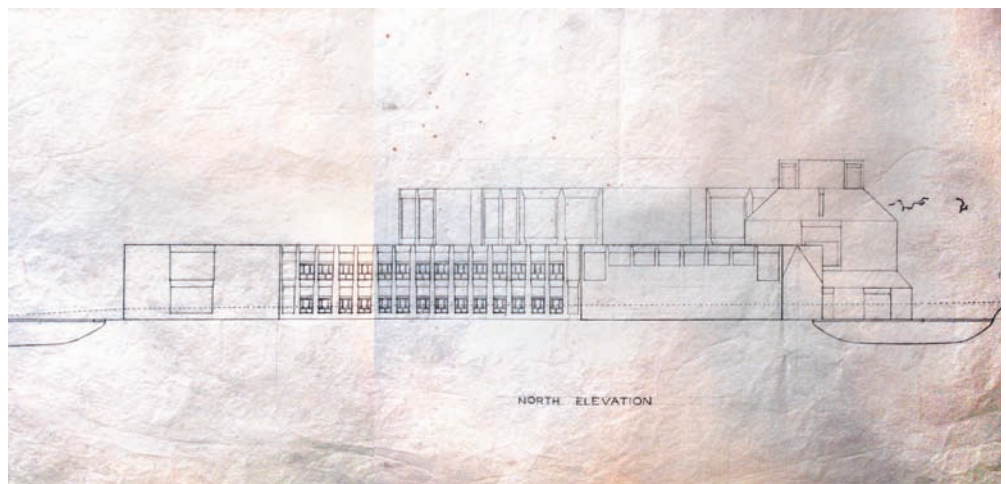
Fig. 5.82
North Elevation
August 7 1967
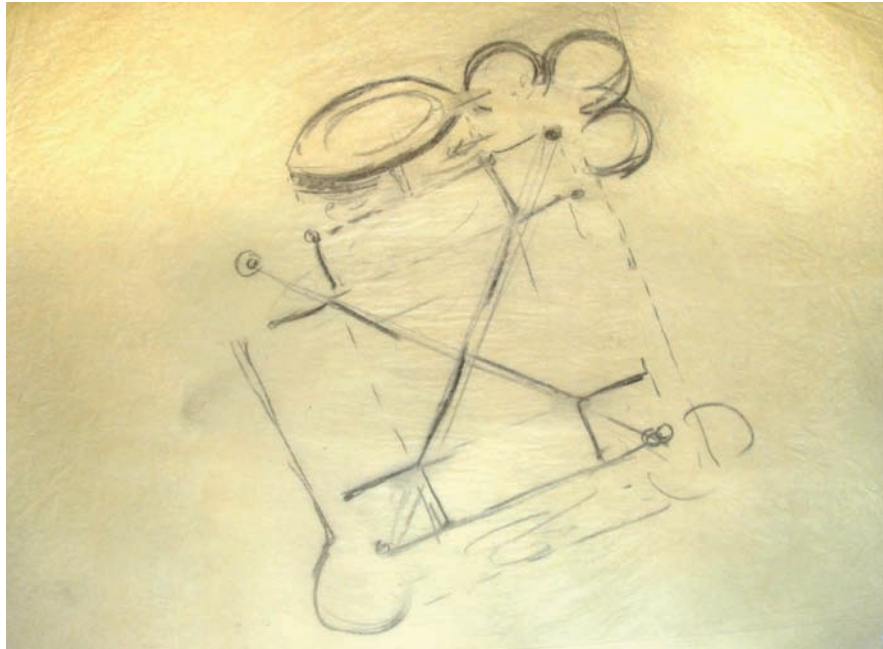
Fig. 5.84
Chapel Plan LIK
ca. October 1967
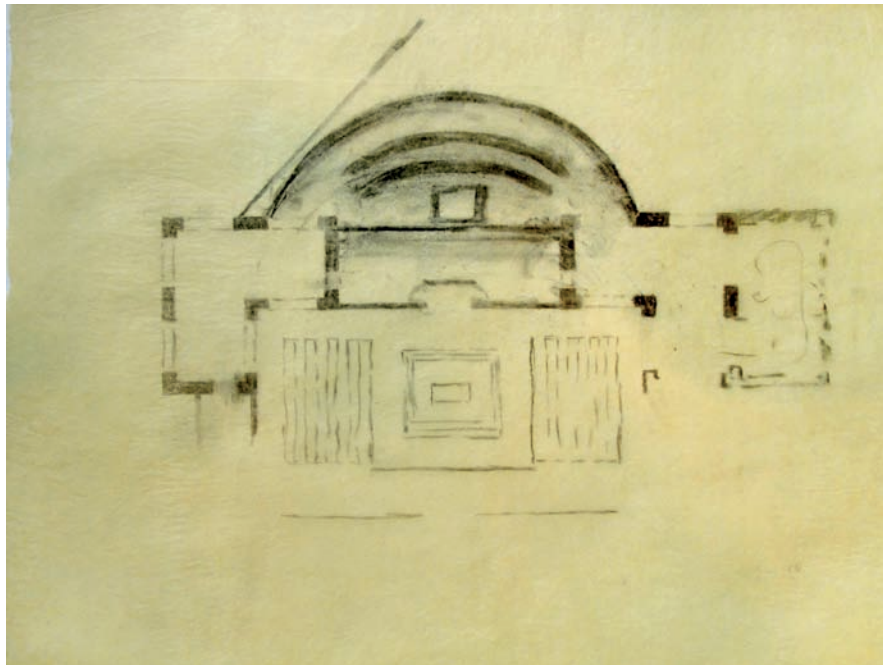
Fig. 5.85
Chapel Plan LIK
ca. October 1967
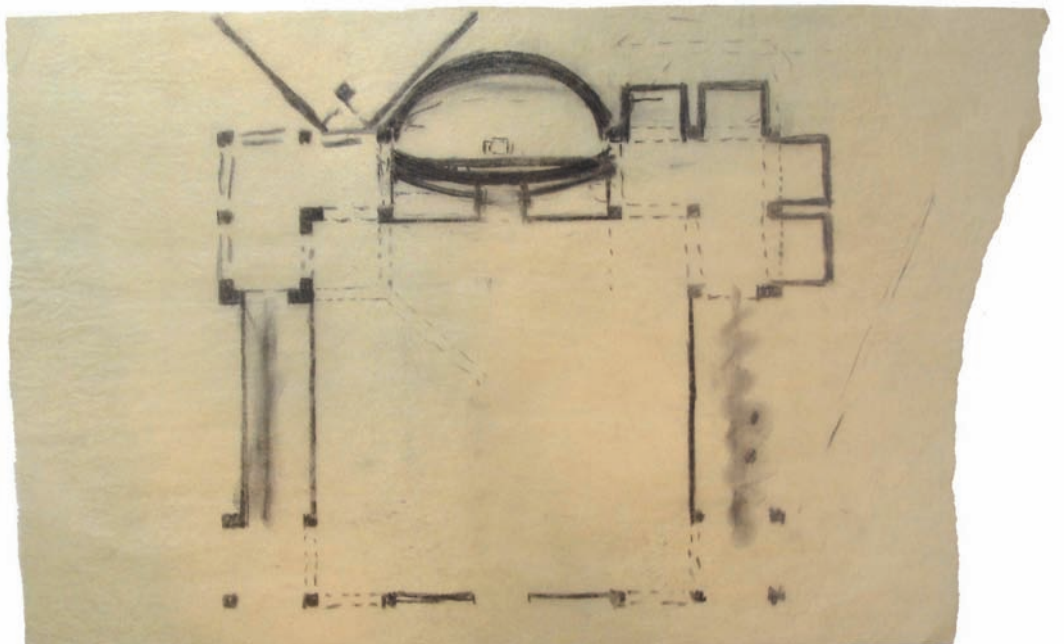
Fig. 5.86
Chapel Plan LIK
ca. October 1967

Fig. 5.87
Core Spaces LIK
ca. October 1967
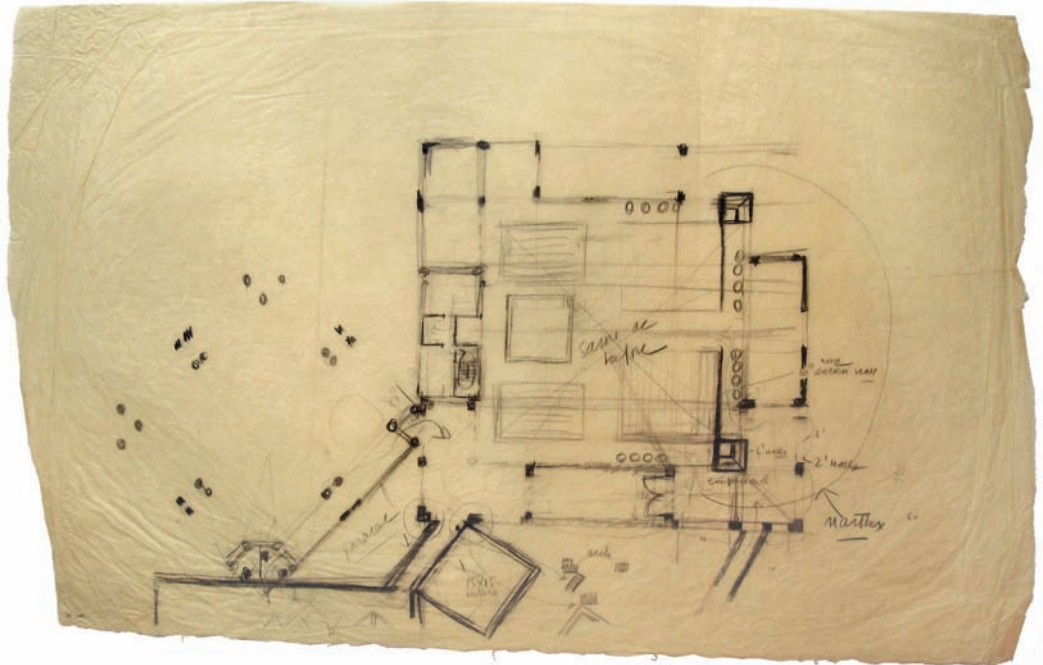
Fig. 5.88
Chapel Plan
October 12 1967
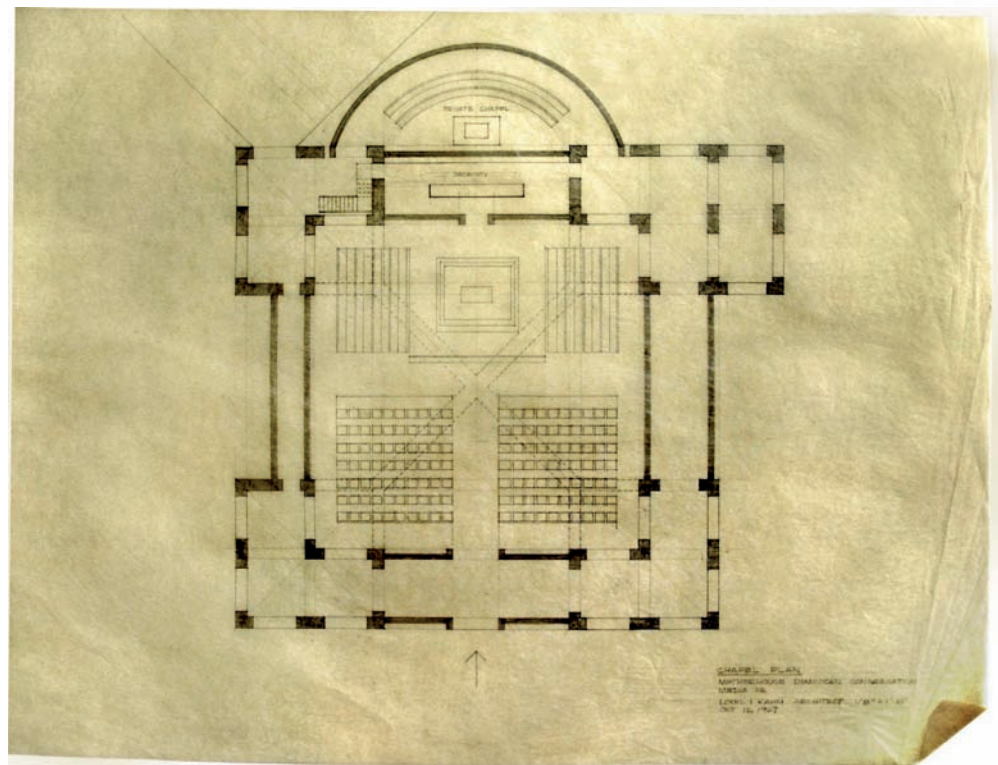
Fig. 5.89
Refectory Plan
October 12 1967
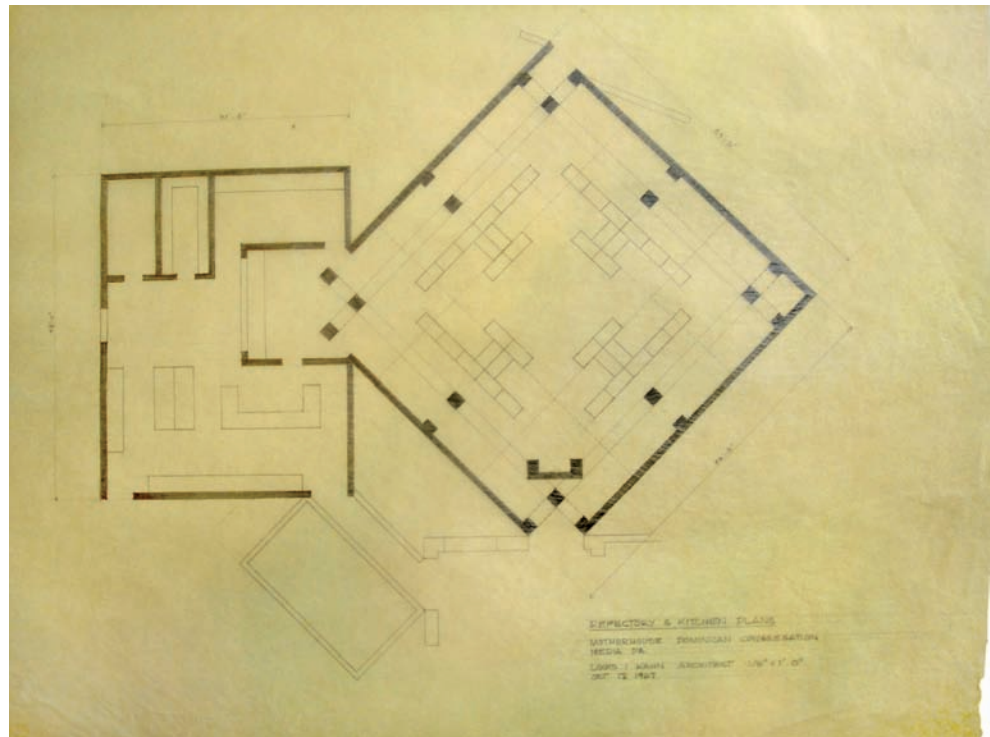
Fig. 5.90
School Plan
October 12 1967
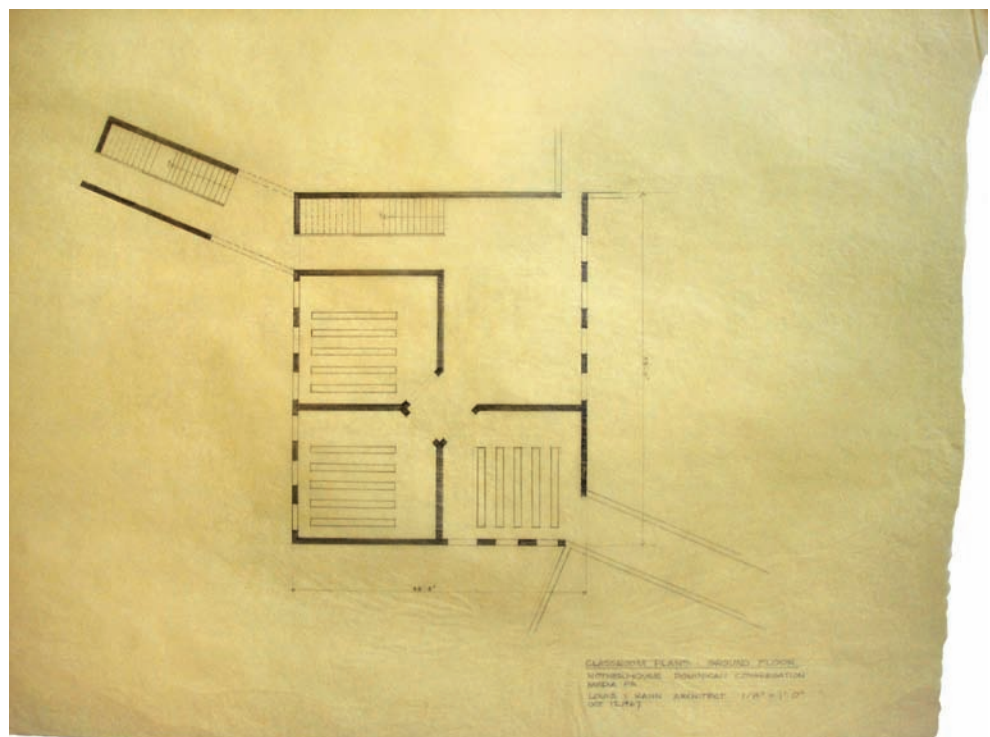
Fig. 5.91
Tower First Floor
October 12 1967
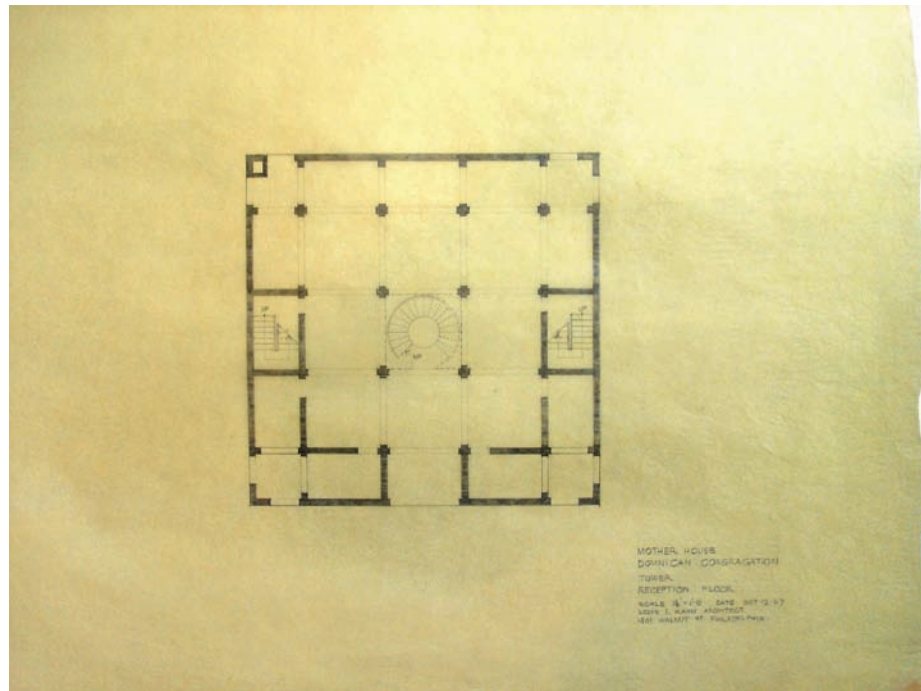
Fig. 5.92
Tower Third Floor
October 12 1967
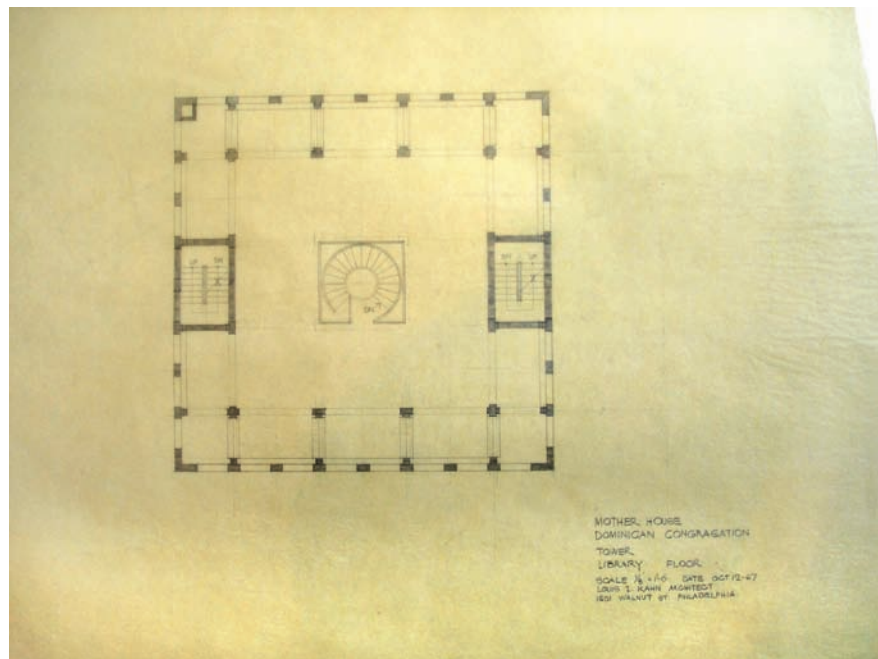
Fig. 5.93
Tower Second Floor
October 12 1967
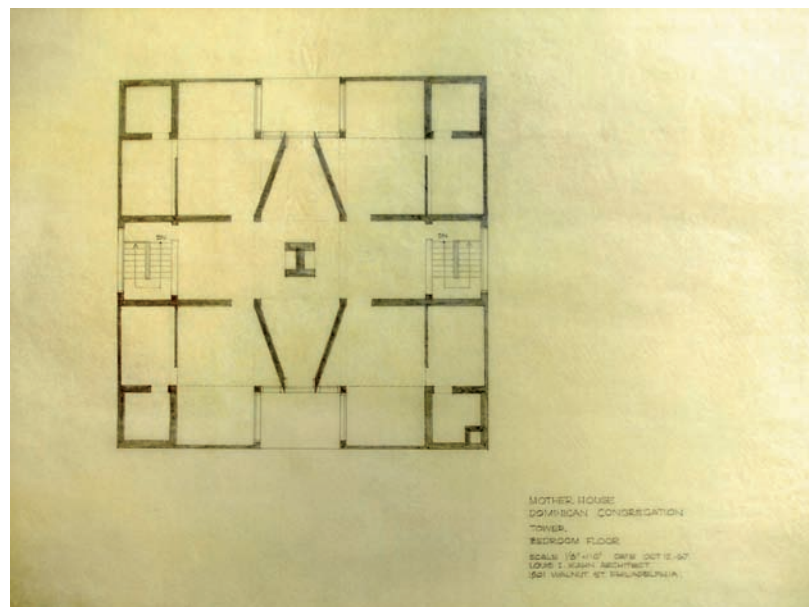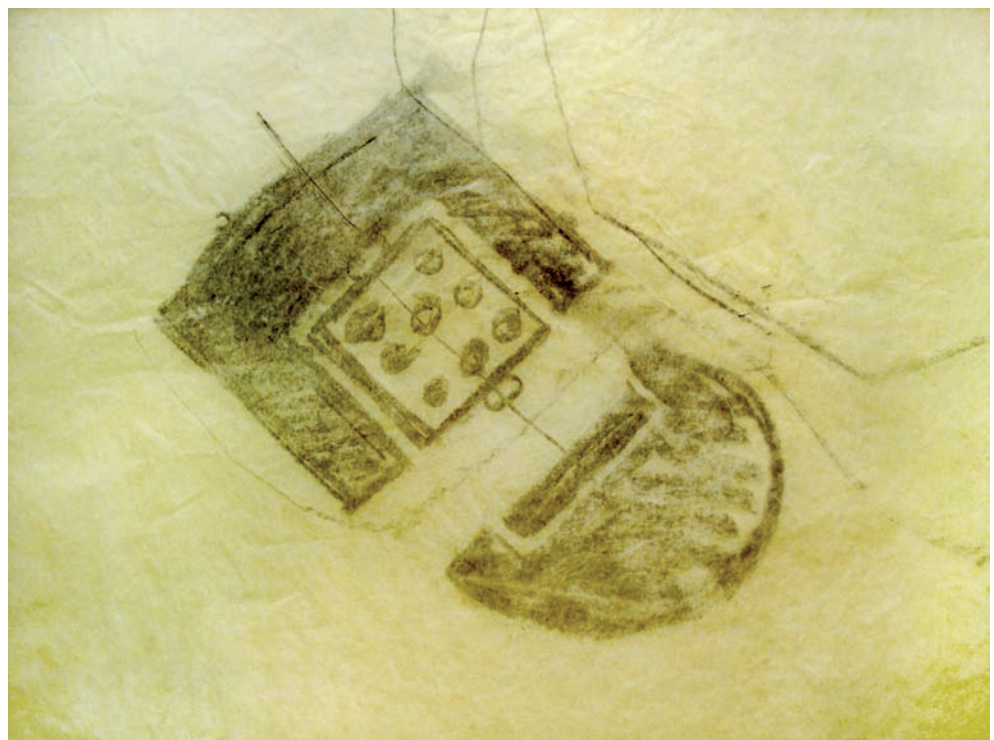
Fig. 5.94
Sketch LIK
March 7 1968
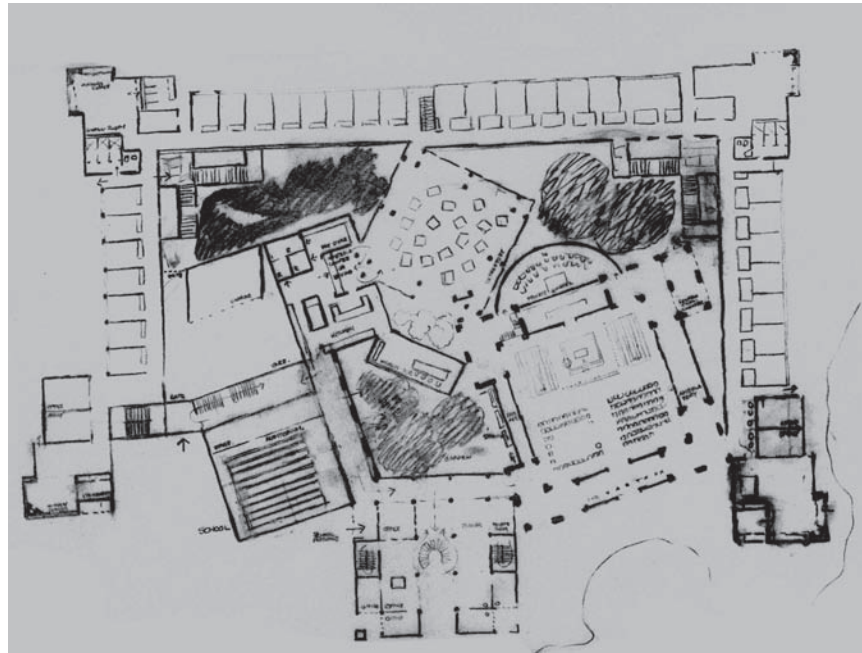
Fig. 5.95
Plan LIK
ca. February 1968
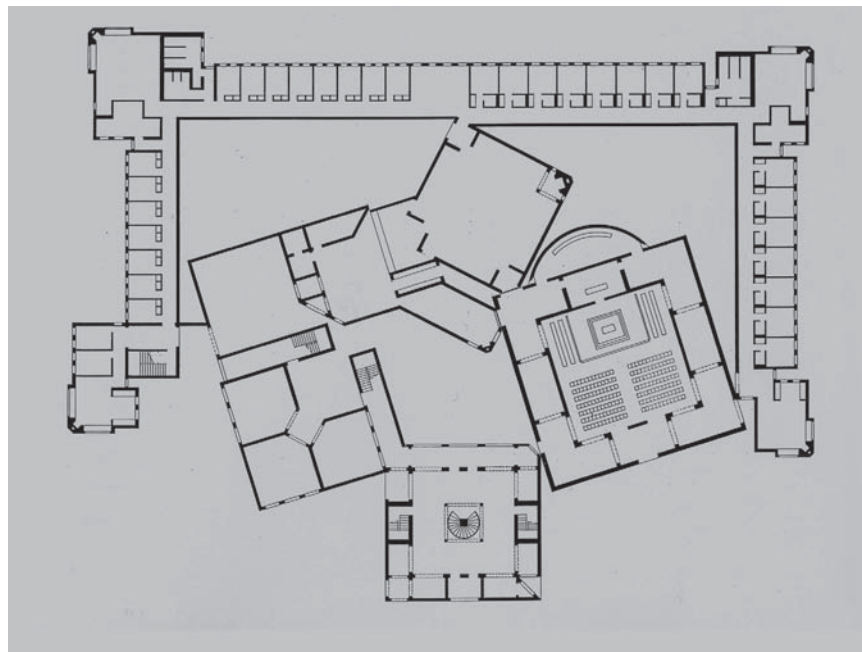
Fig. 5.96
Plan
April 22 1968
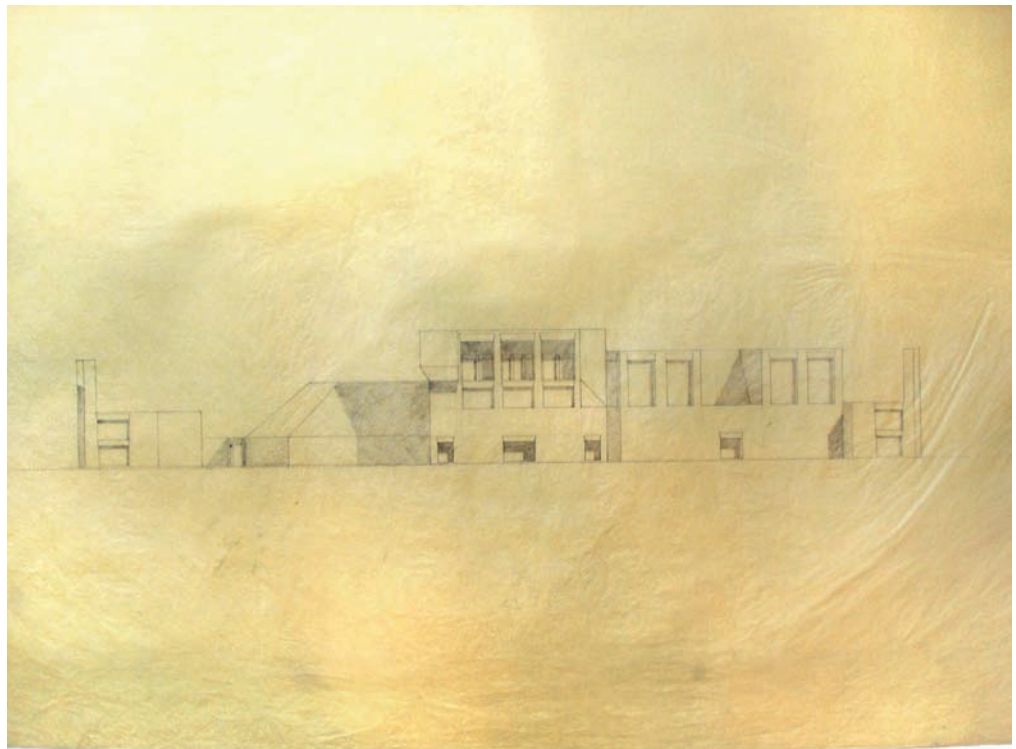
Fig. 5.97
West Elevation
April 22 1968
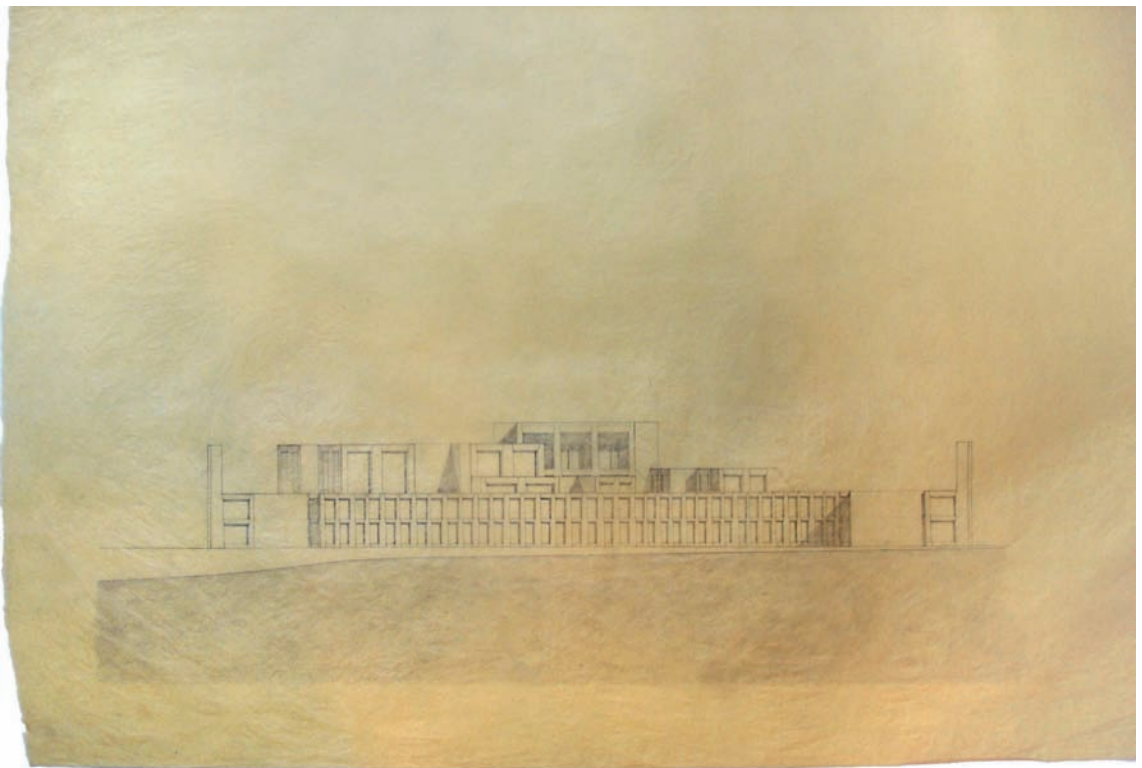
Fig. 5.98
East Elevation
April 22 1968
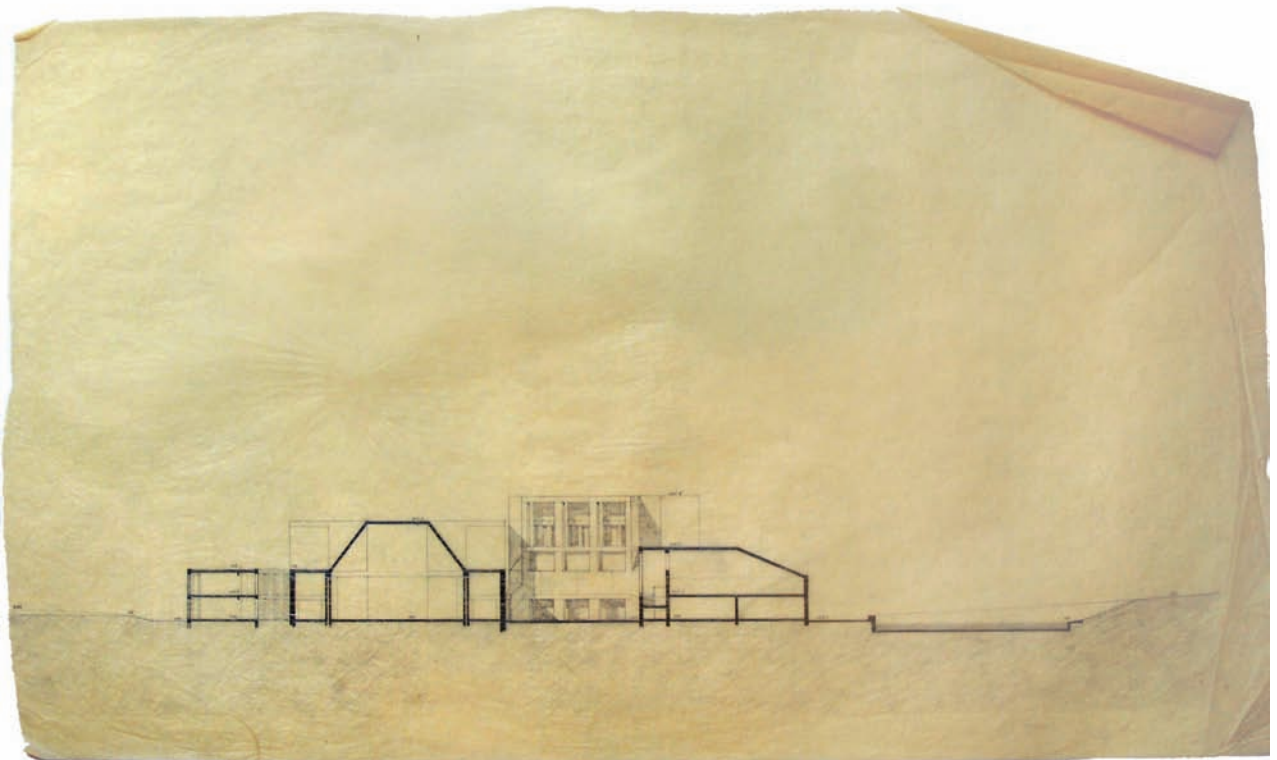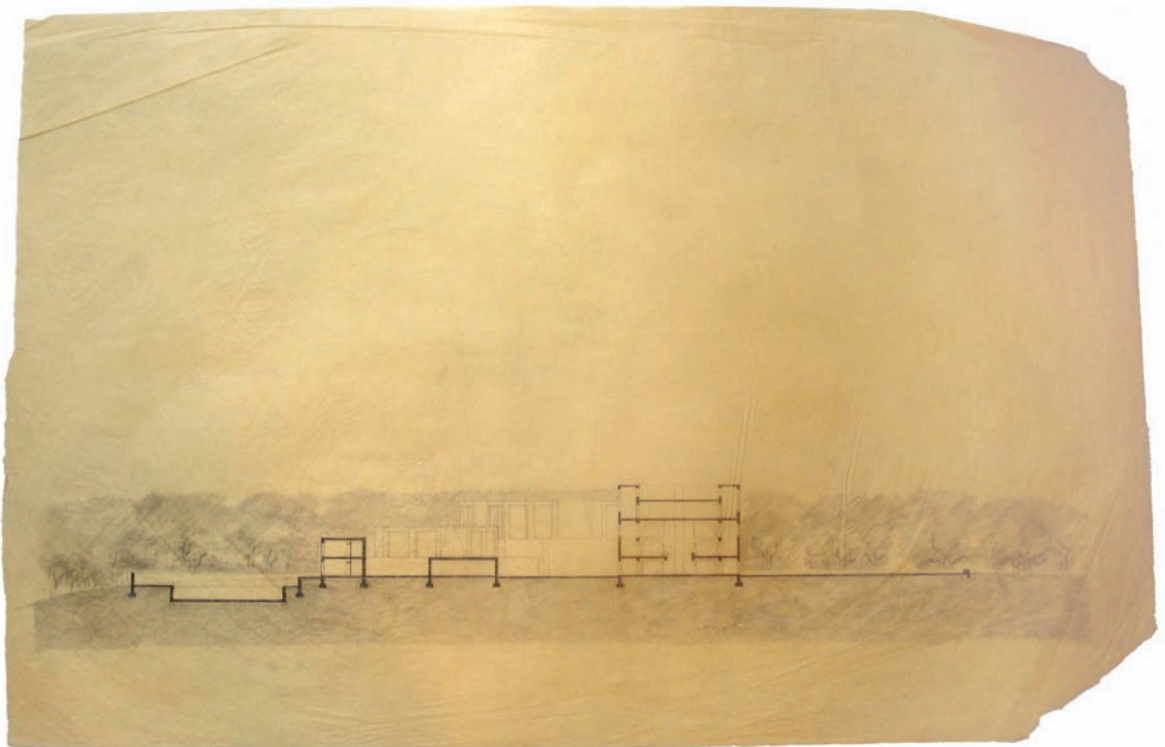
Fig. 5.99,
Fig. 5.100
Sections
April 22 1968
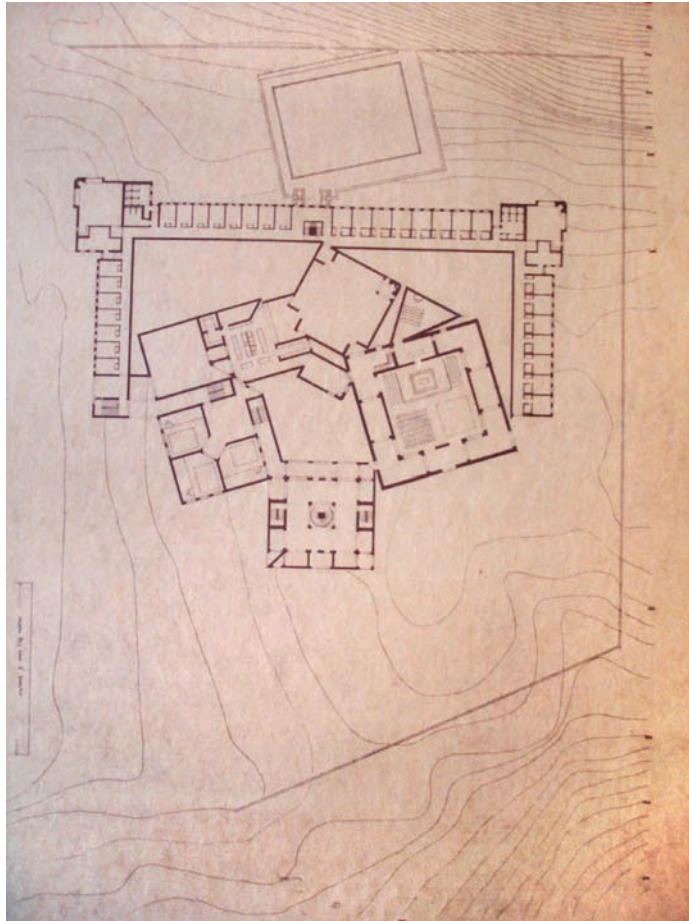
Fig. 5.102
Plan
ca. April / May 1968
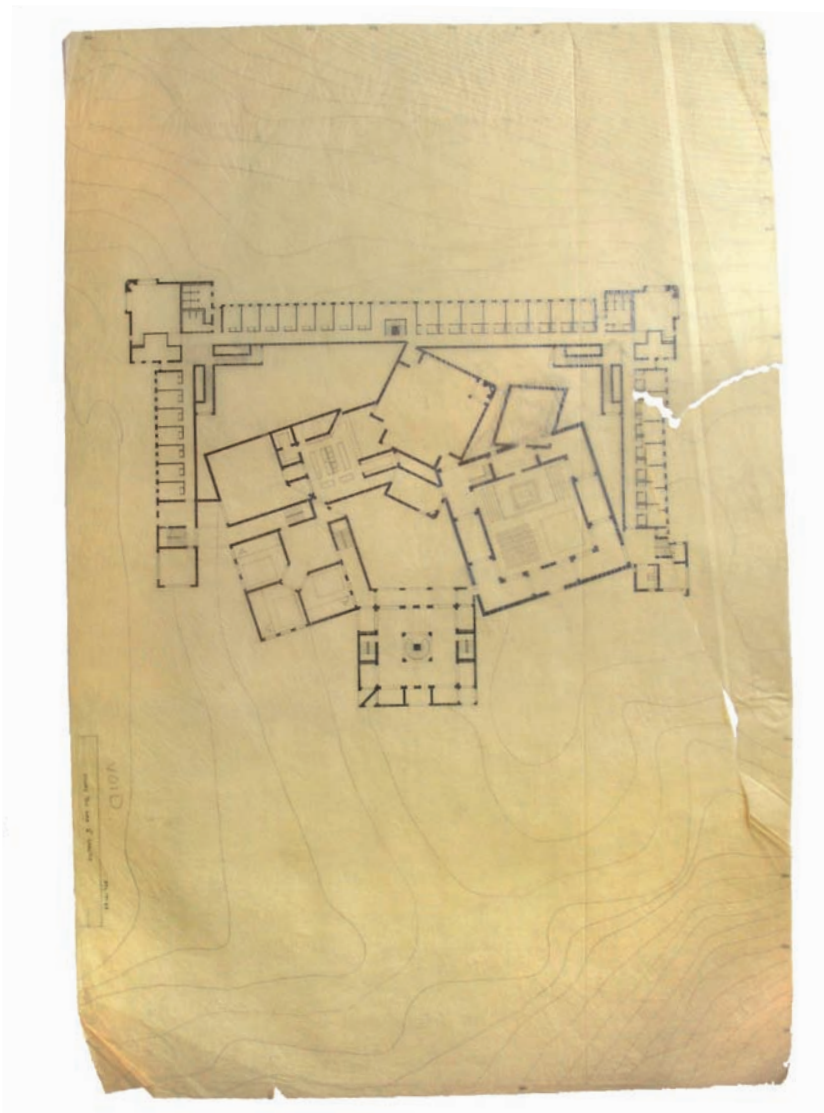
Fig. 5.103
Plan
ca. April / May 1968
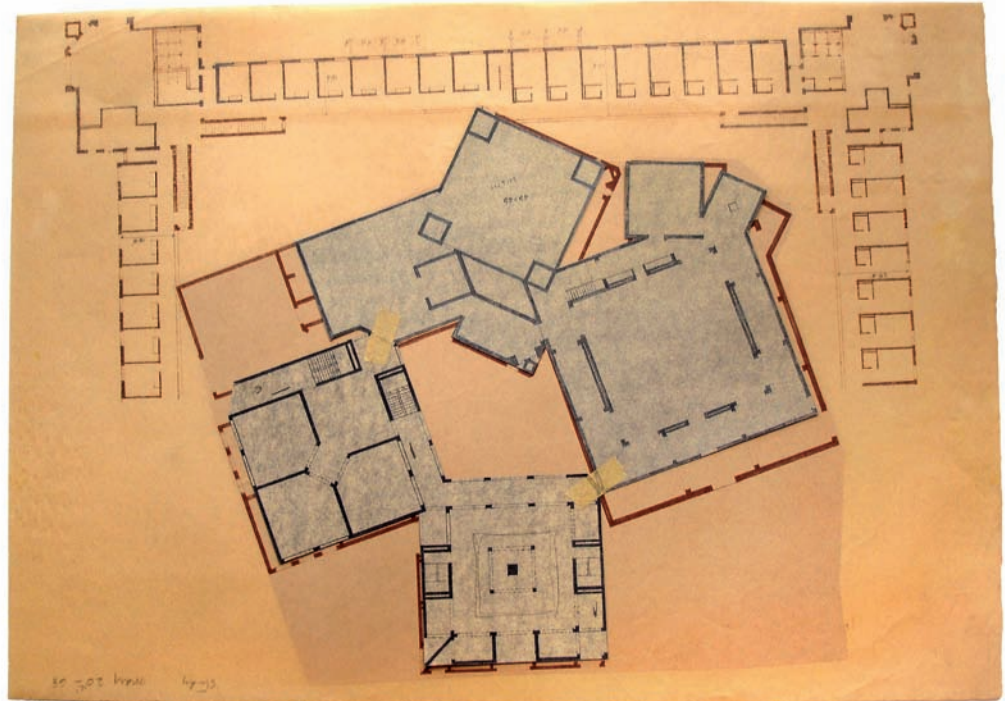
Fig. 5.104
Overlay Plan
May 20 1968
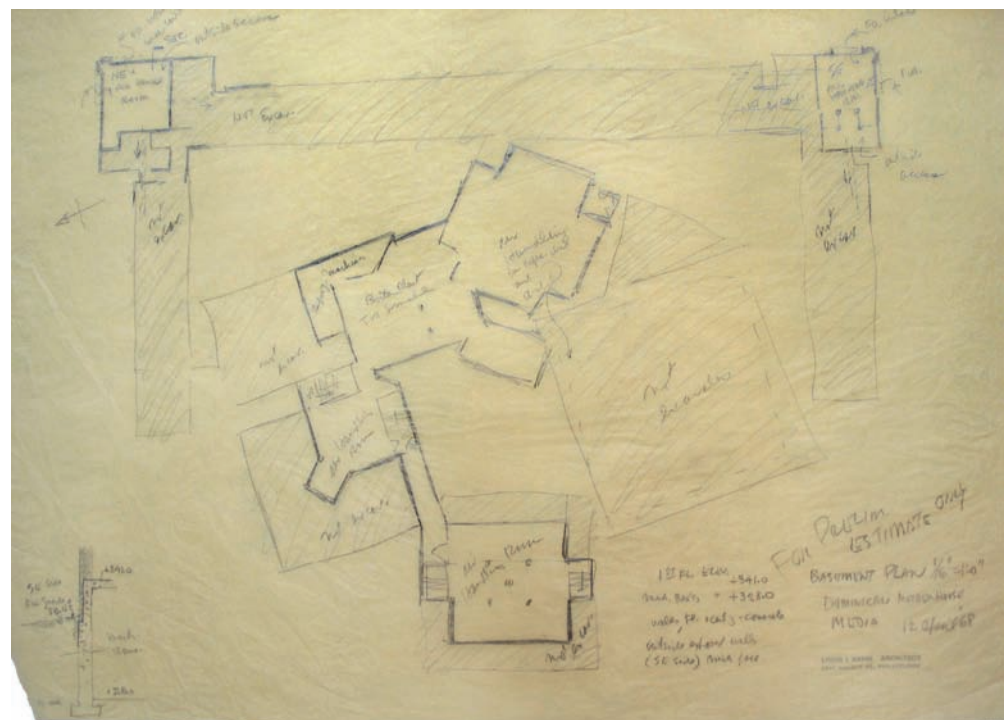
Fig. 5.105
Basement Scheme
LIK
April 12 1968
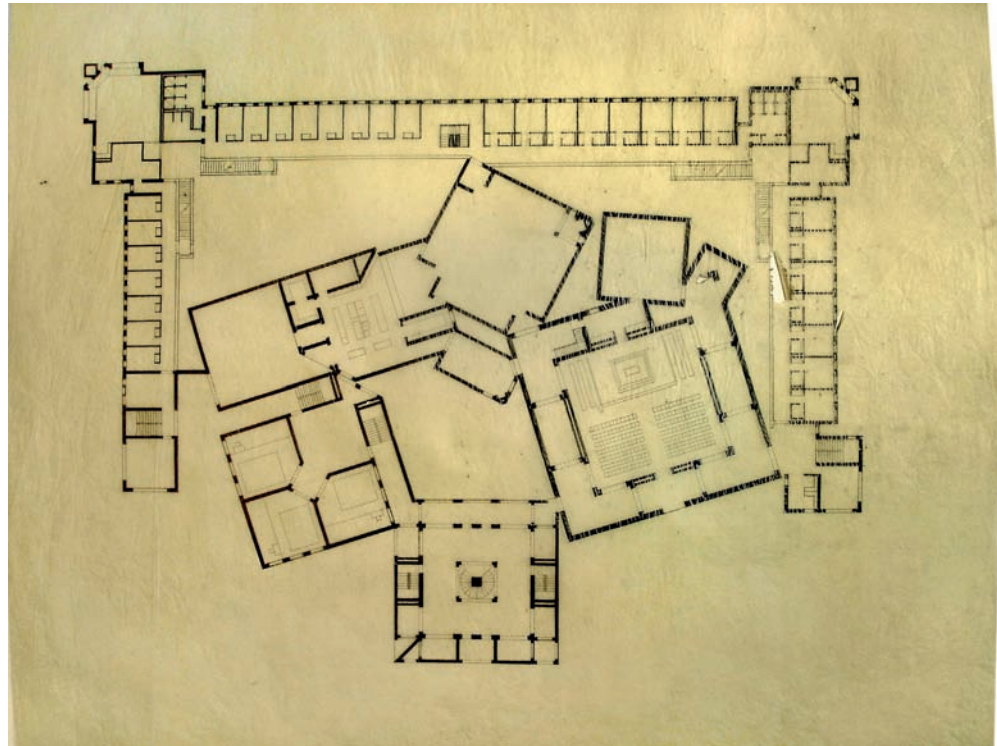
Fig. 5.106
First Floor Plan
ca. May 1968
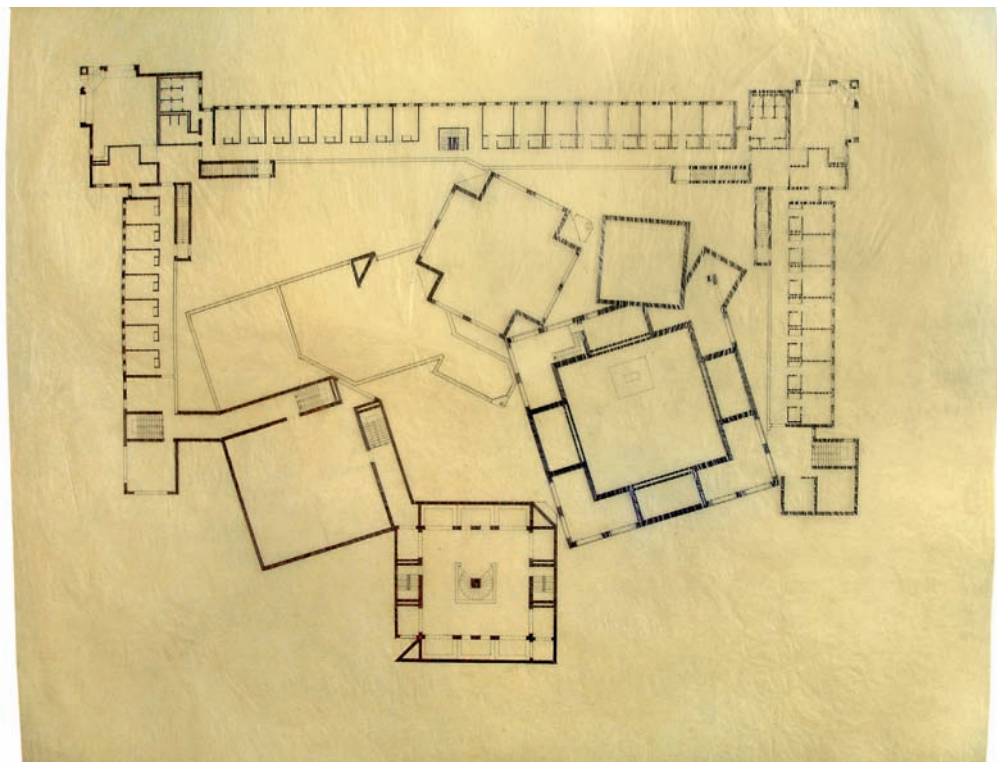
Fig. 5.107
Second Floor Plan
ca. May 1968
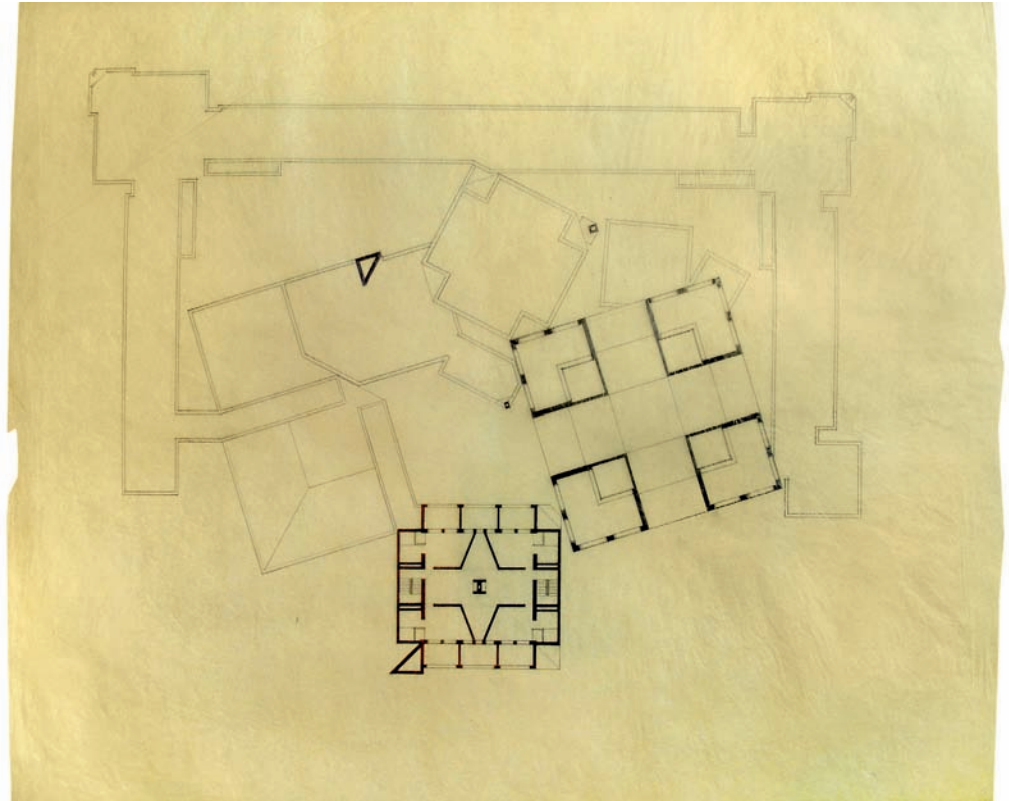
Fig. 5.108
Third Floor Plan
ca. May 1968
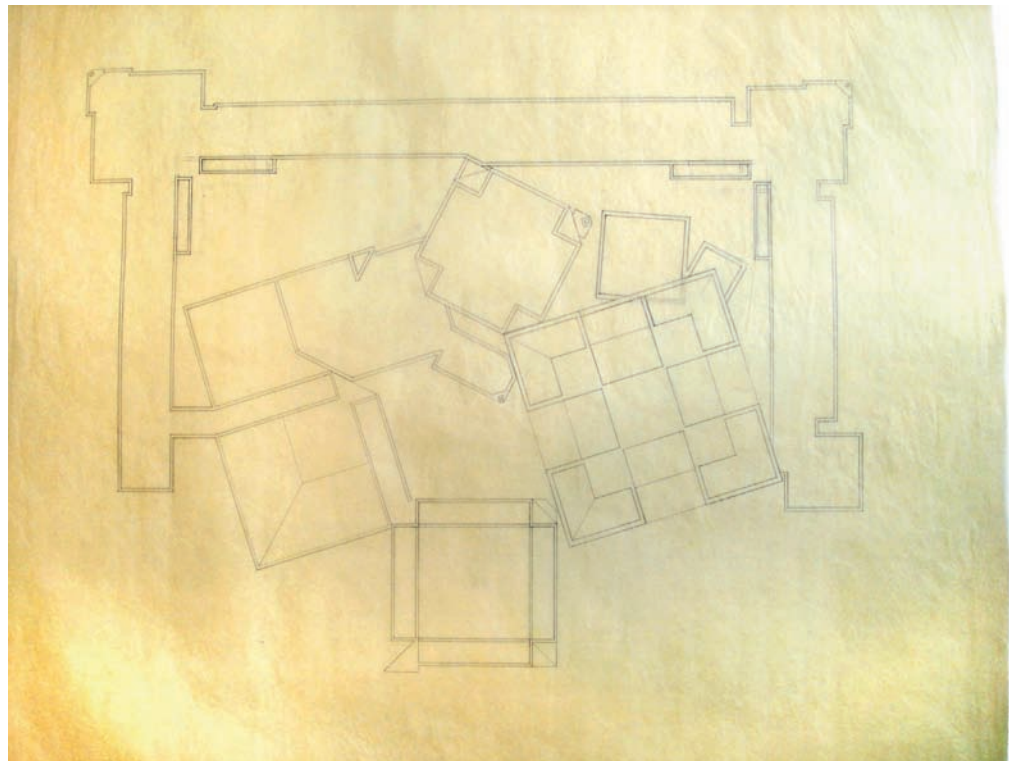
Fig. 5.109
 Roof Plan
ca. May 1968

Fig. 5.110
Overlay Plan
ca. May 1968
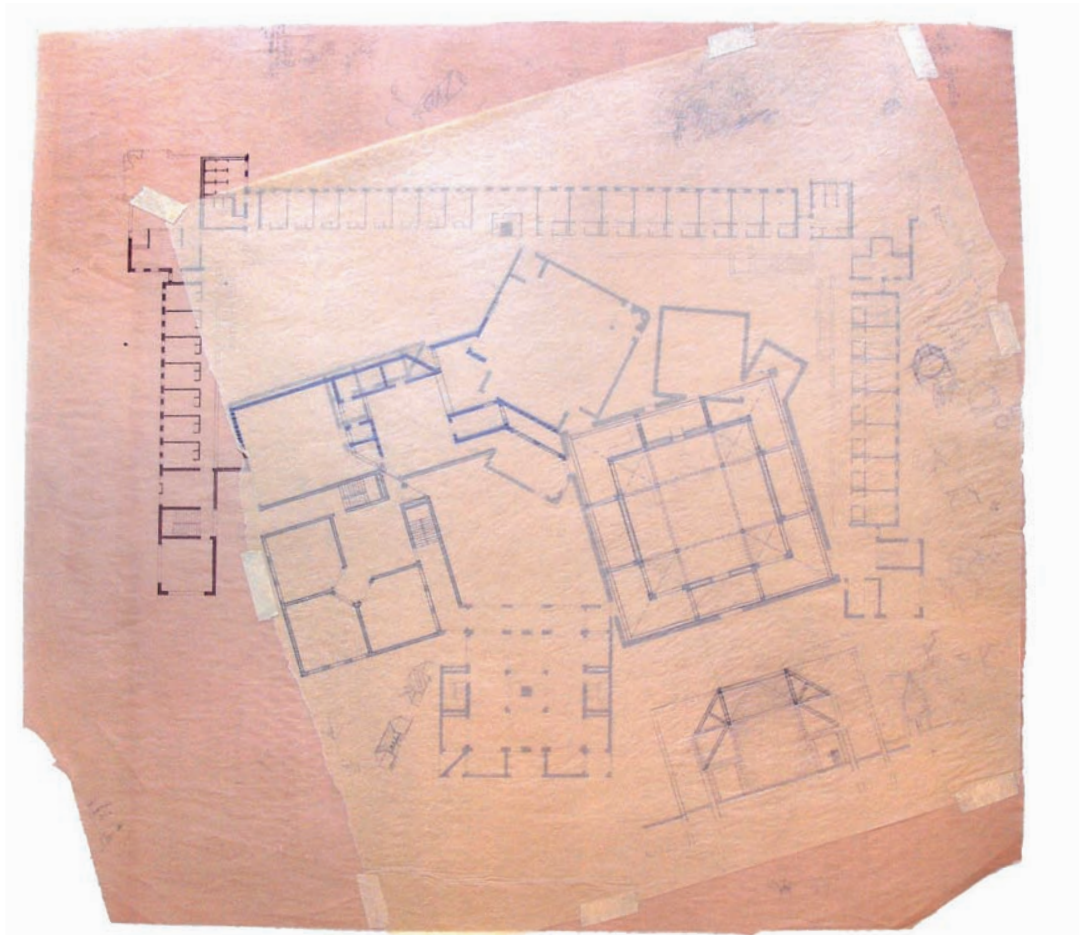
Fig. 5.111
Section Study
ca. May 1968
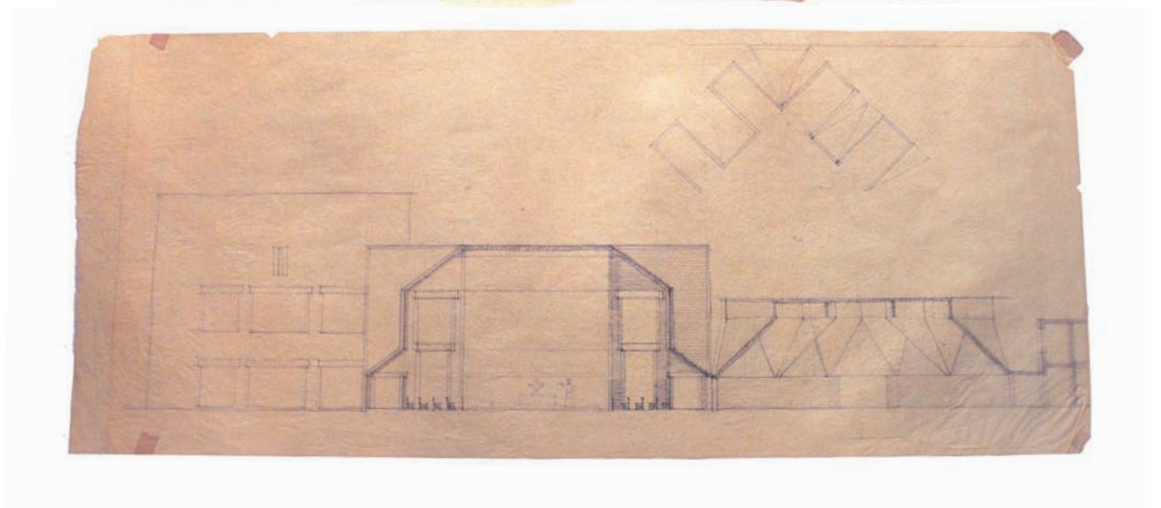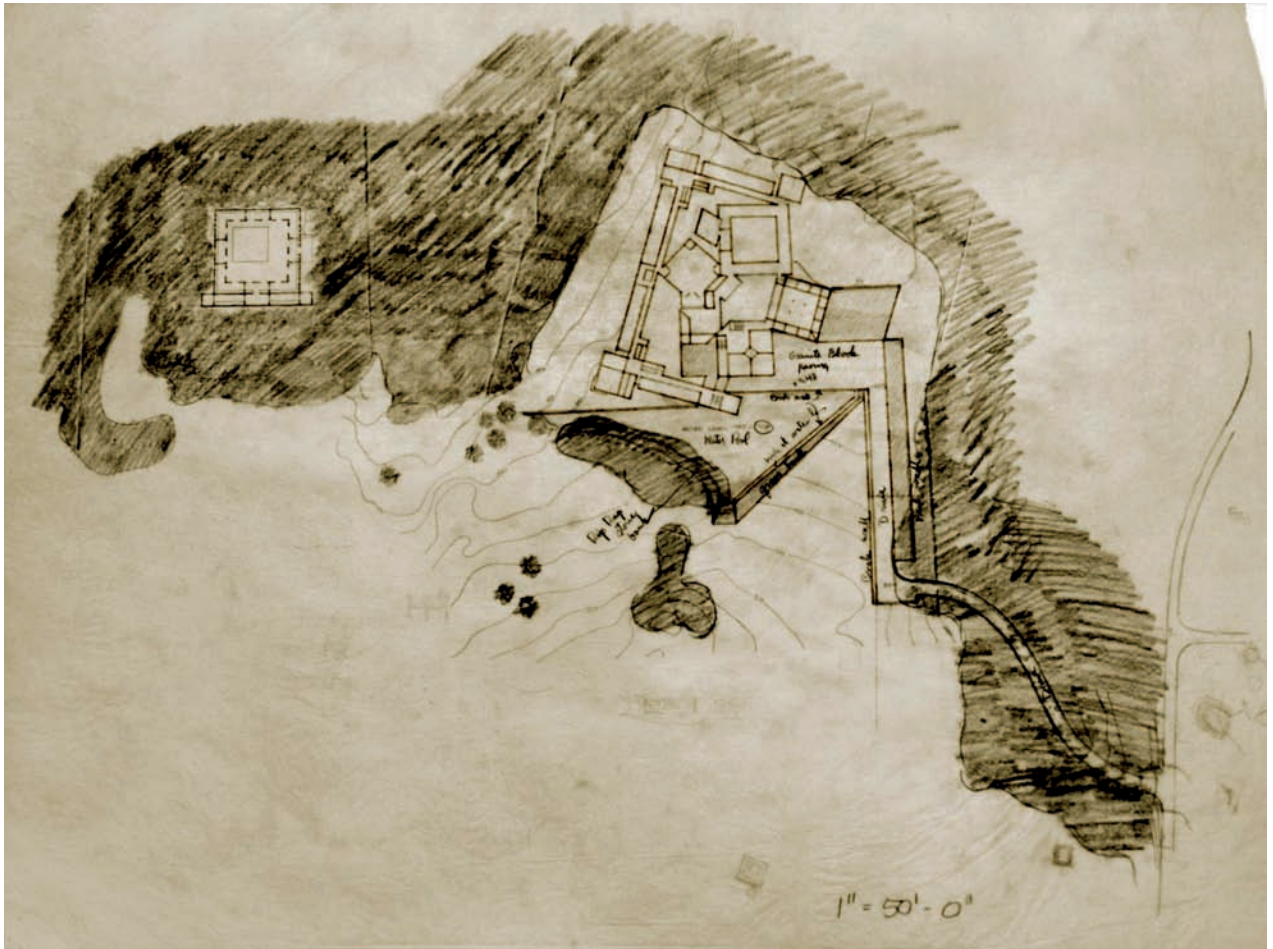
Fig. 5.112
Site Plan
ca. April / May 1968
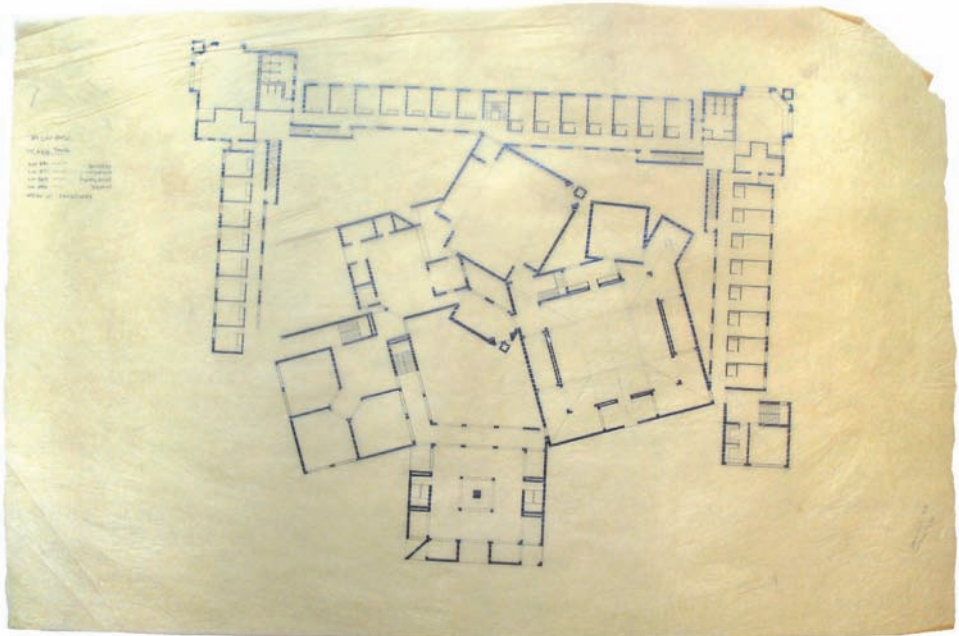
Fig. 5.13a
Intermediate Plan,
ca. July 1967
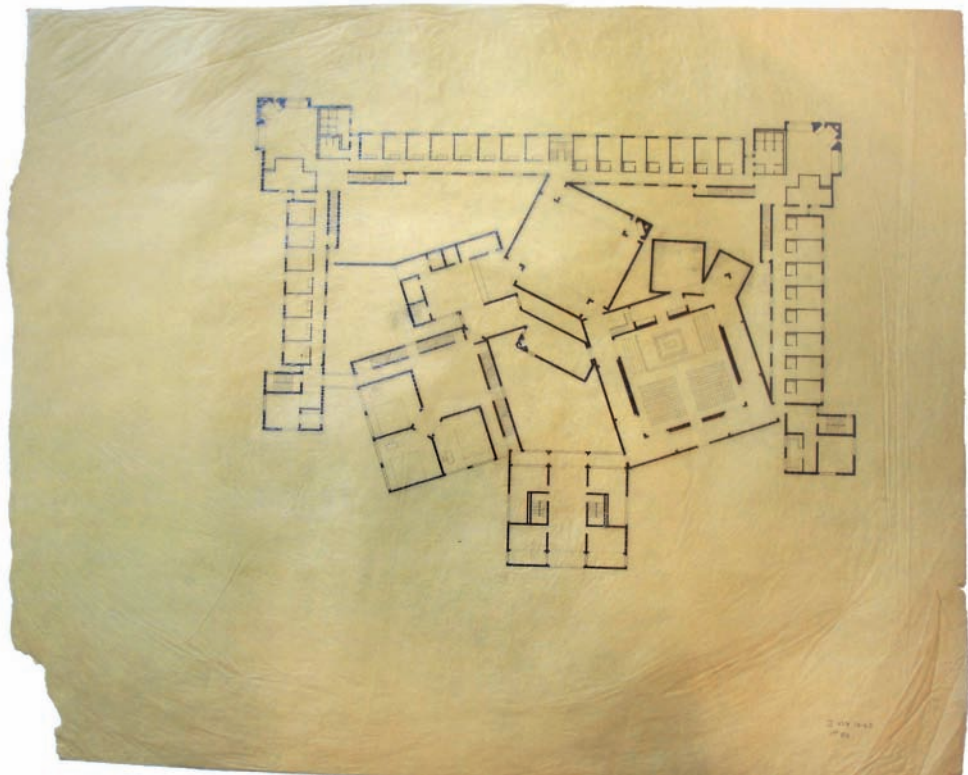
Fig. 5.113b
First Floor Plan
July 17 1968
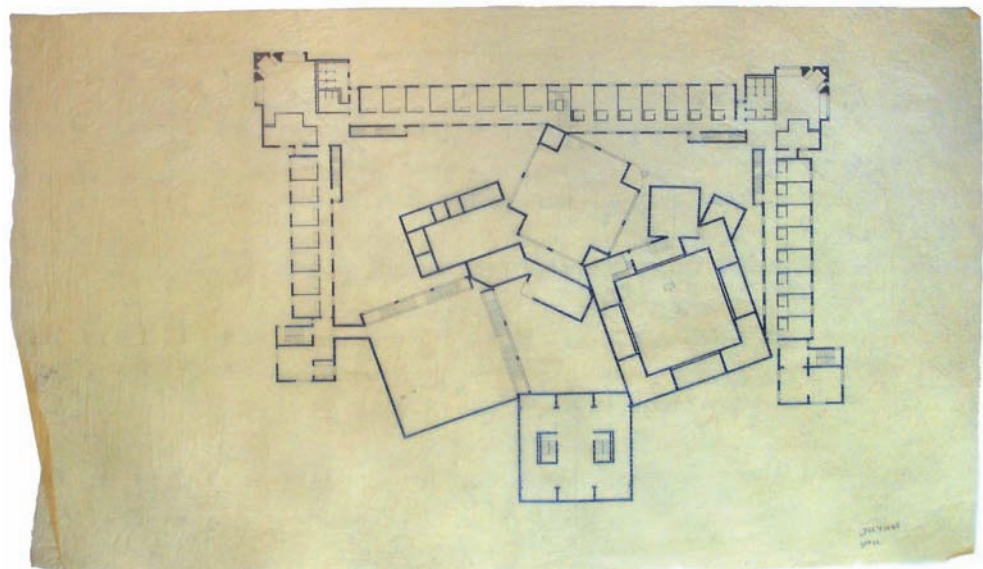
Fig. 5.114
Second Floor Plan
July 17 1968

Fig. 5.115
First Floor Plan
August 5 1968
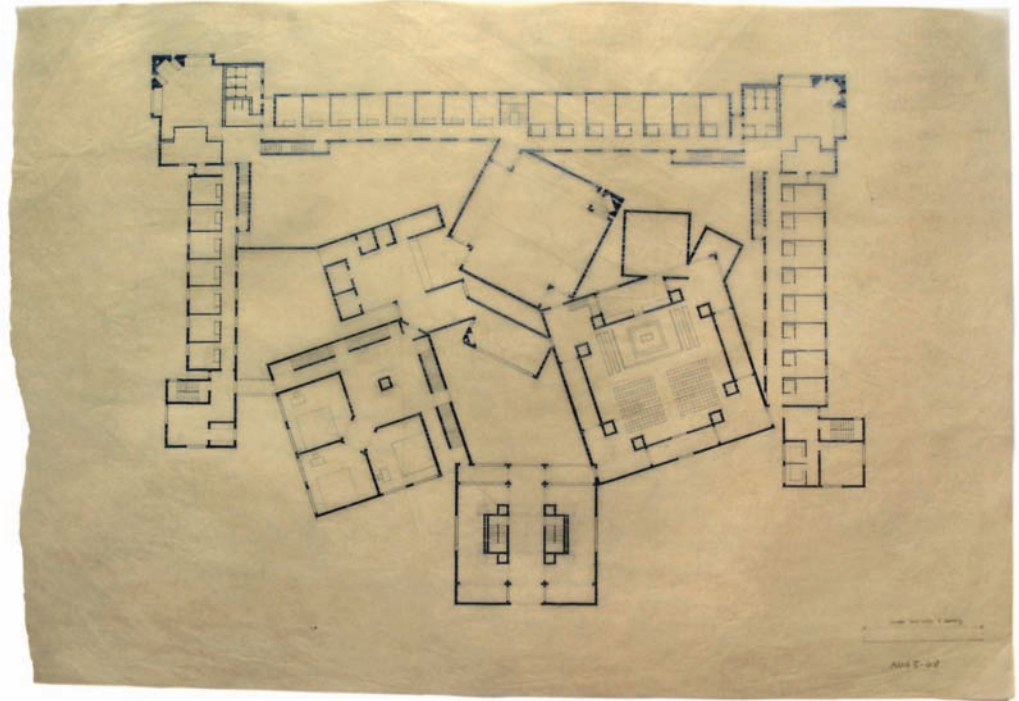
Fig. 5.116
Second Floor Plan
August 5 1968
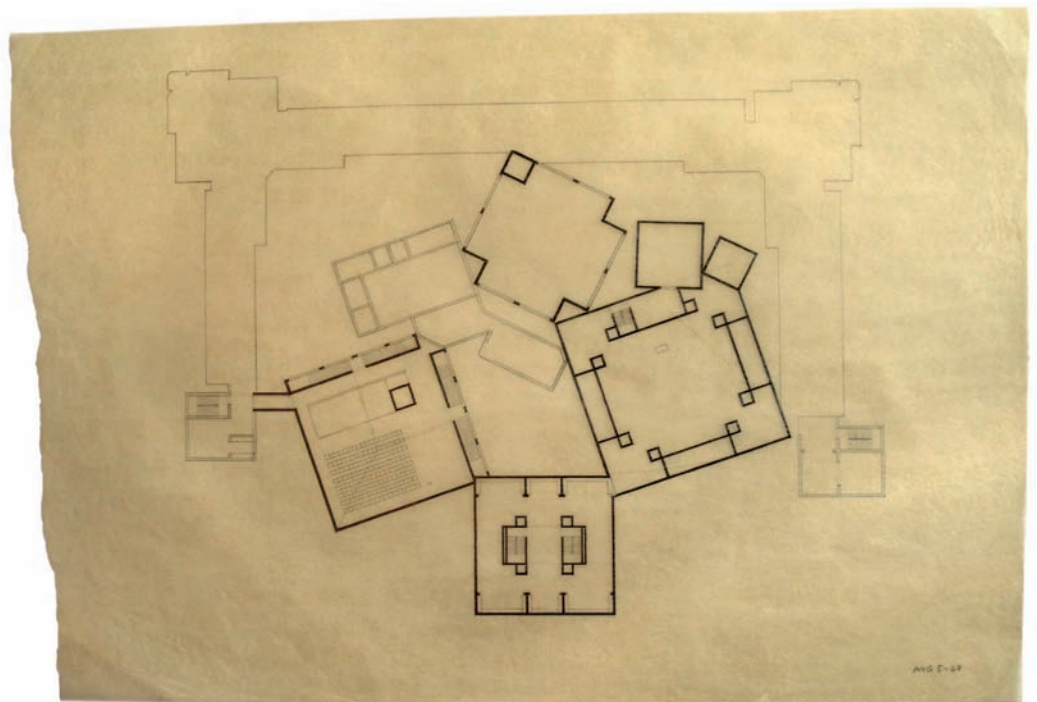
Fig. 5.117
Third Floor Plan
August 5 1968
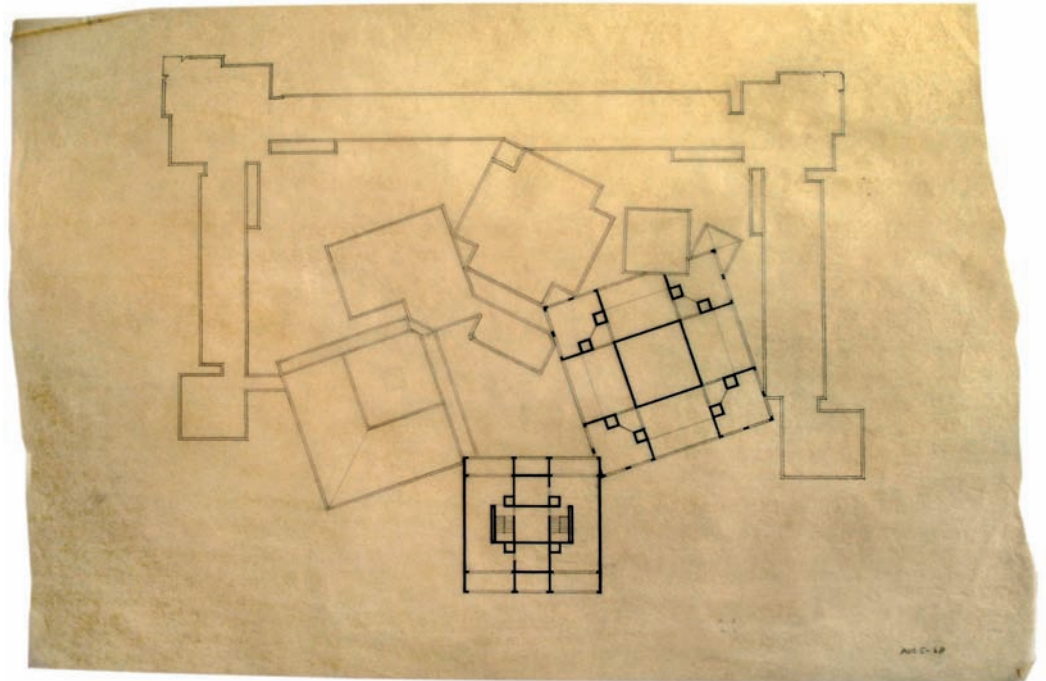
Fig. 5.118
Basement Plan
August 5 1968
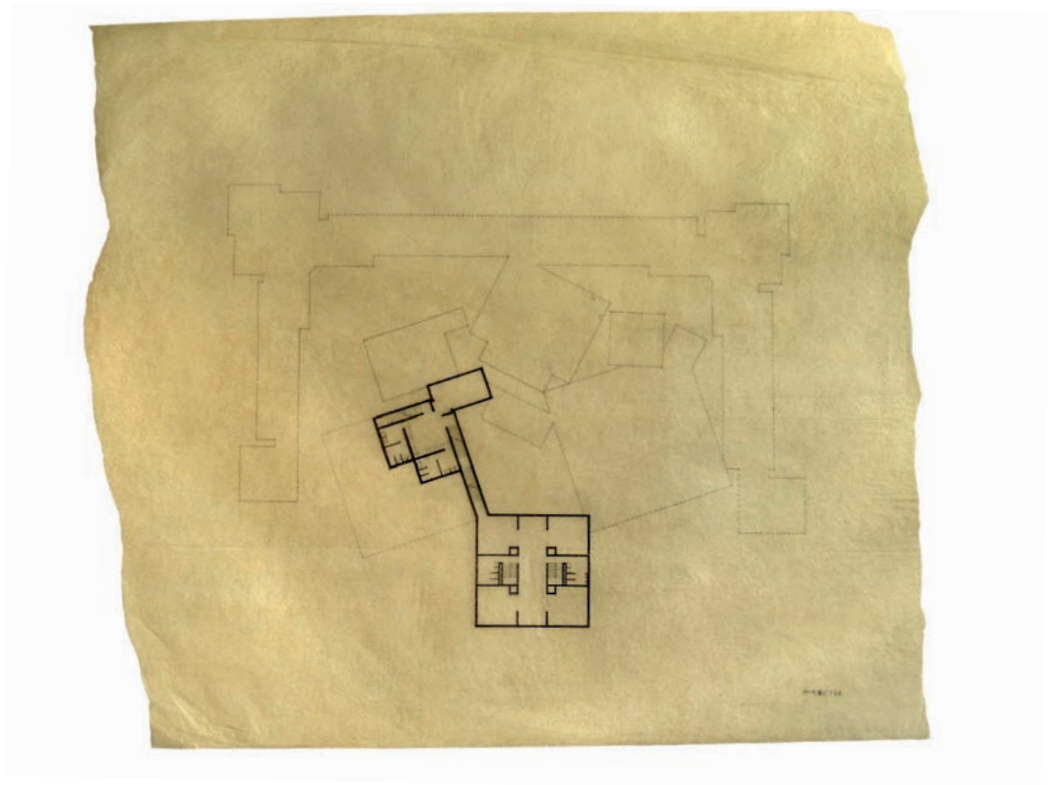
Fig. 5.119
First Floor Plan V2
August 5 1968
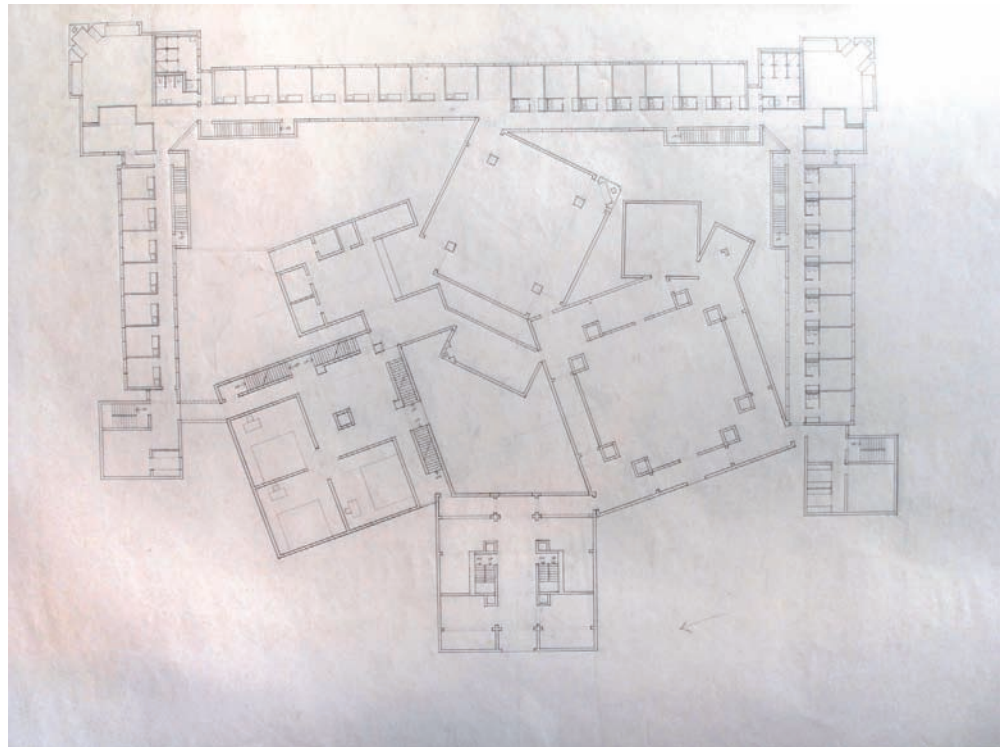
Fig. 5.120
Second Floor Plan
V2
August 5 1968
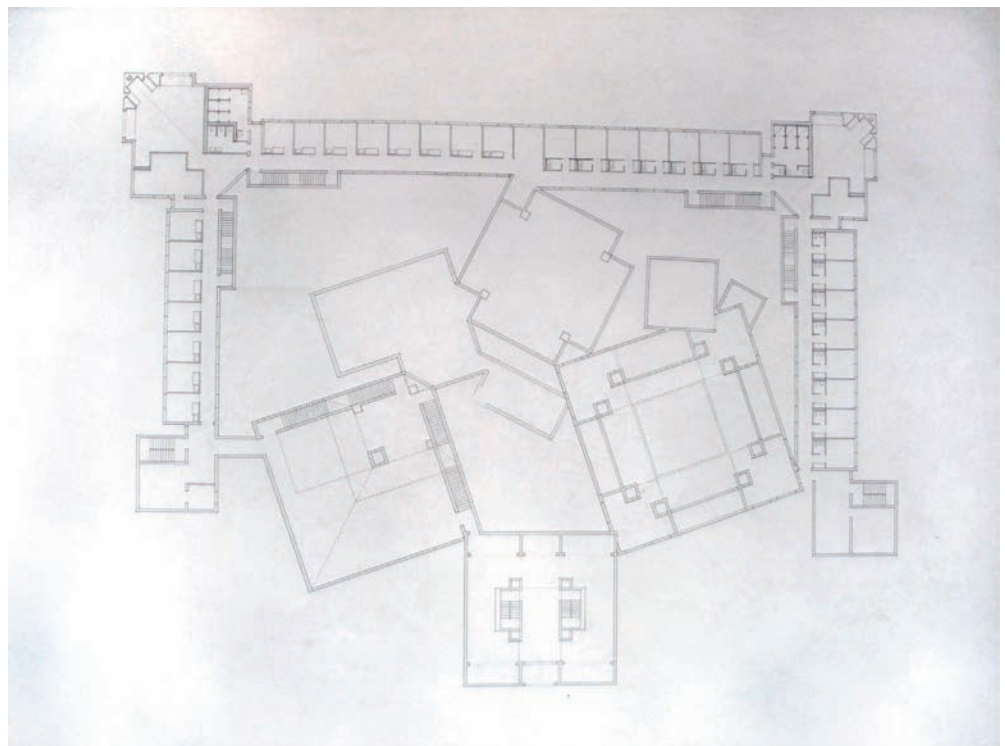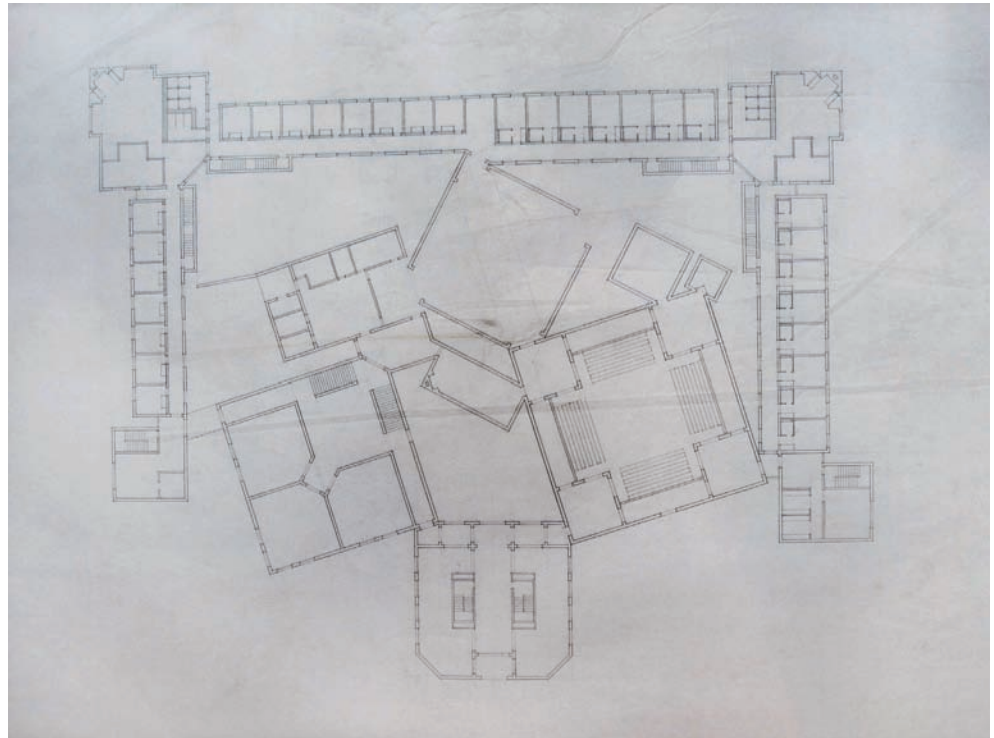
Fig. 5.121, 5.122
Plan Variation
October 1968

Fig. 5.123
Tribune Review
Building

Fig. 5.124
West Elevation
August 5 1968
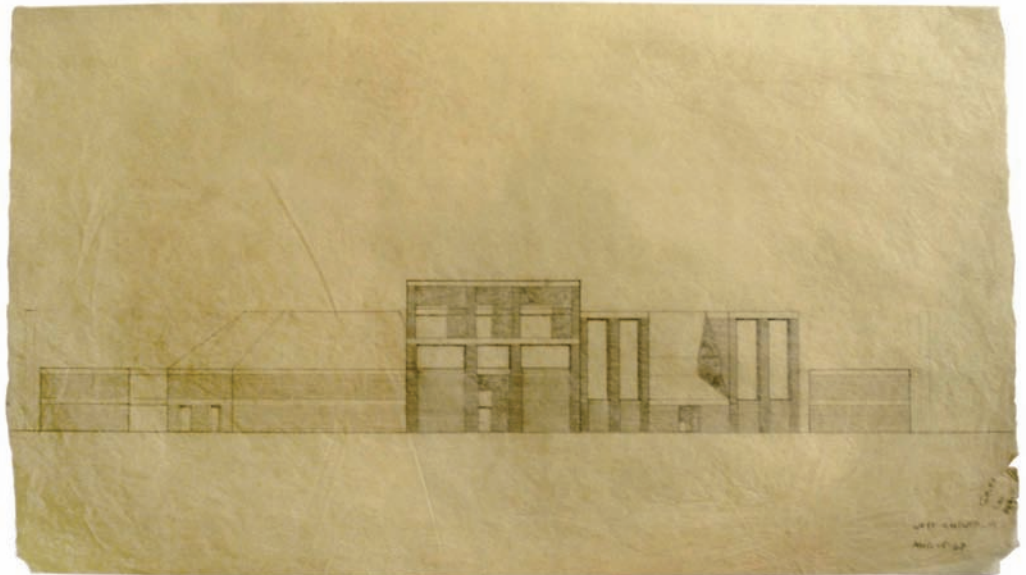
Fig. 5.125
West Elevation V2
ca. August 1968
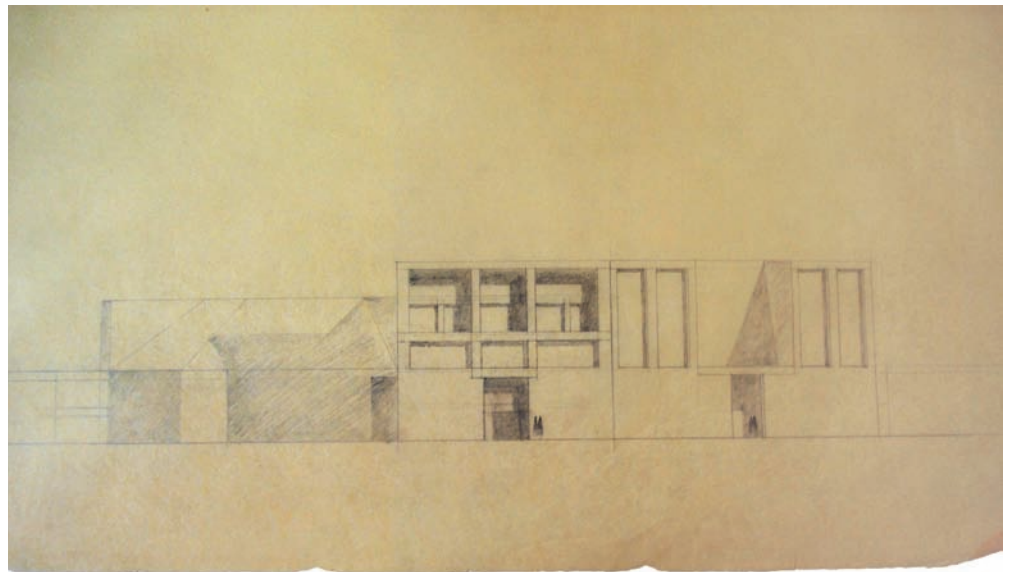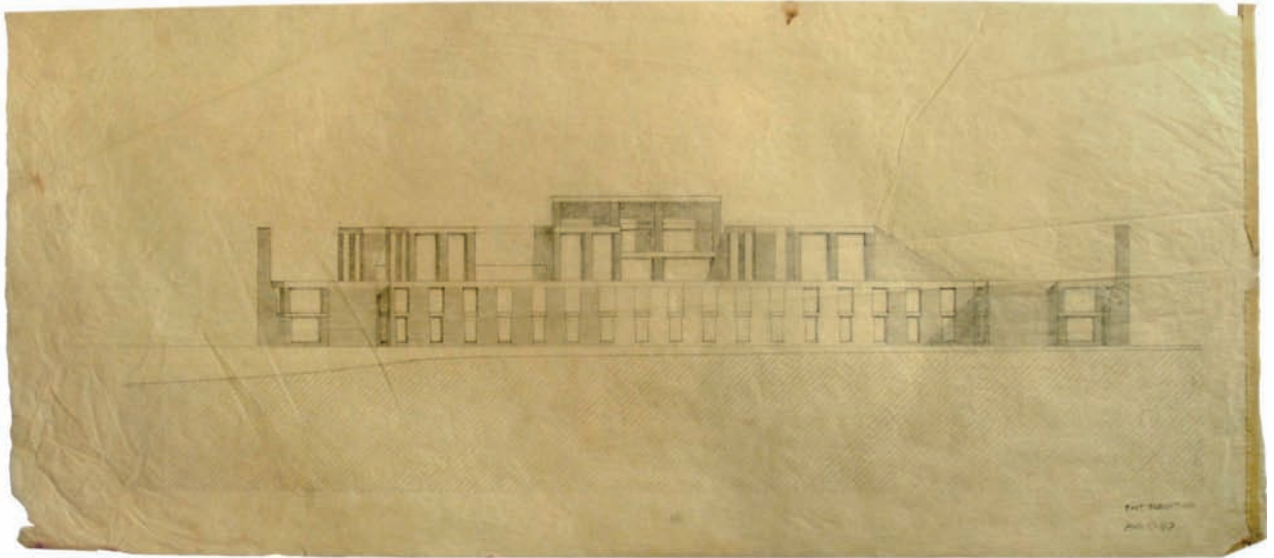
Fig. 5.126
East Elevation
August 5 1968
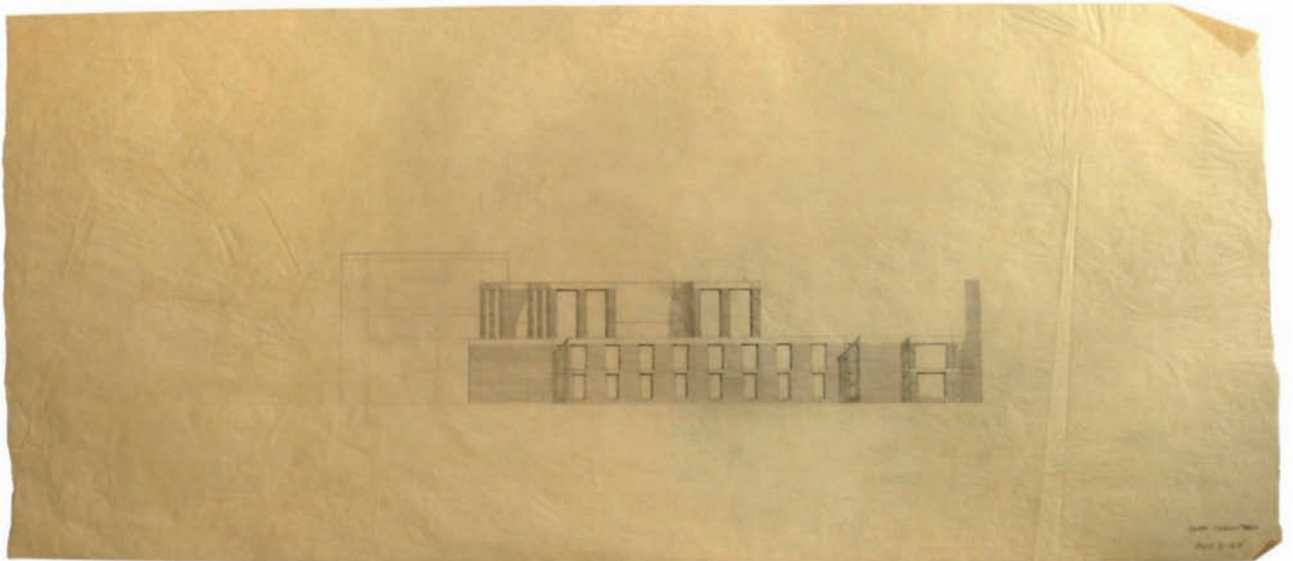
Fig. 5.127
South Elevation
August 5 1968

Fig. 5.128
Section: Core
August 5 1968
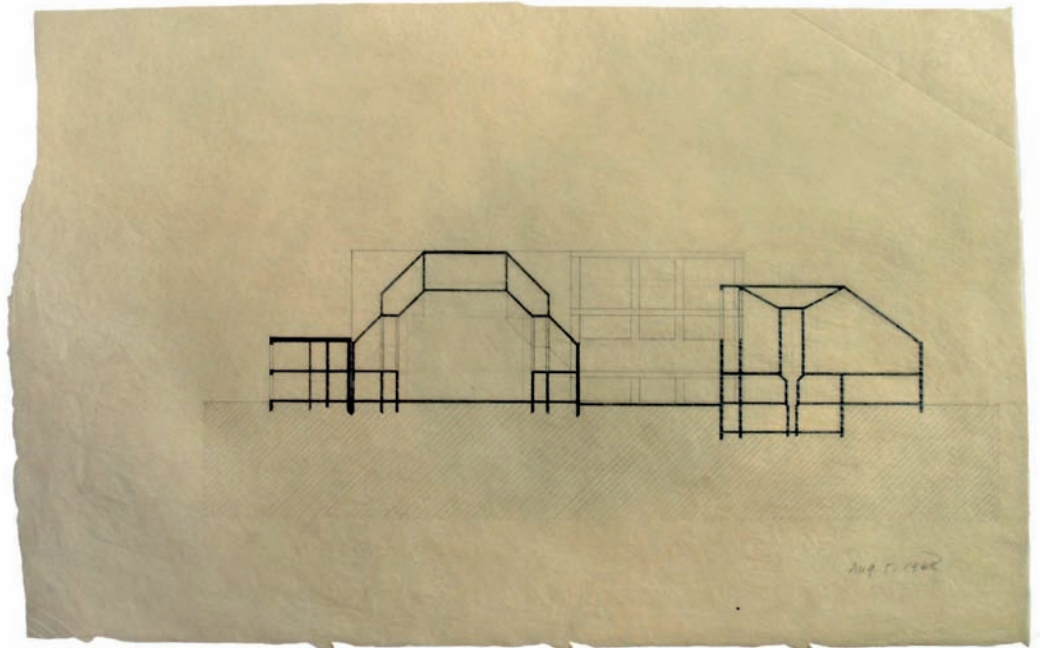
Fig. 5.129
Section: Core
August 5 1968
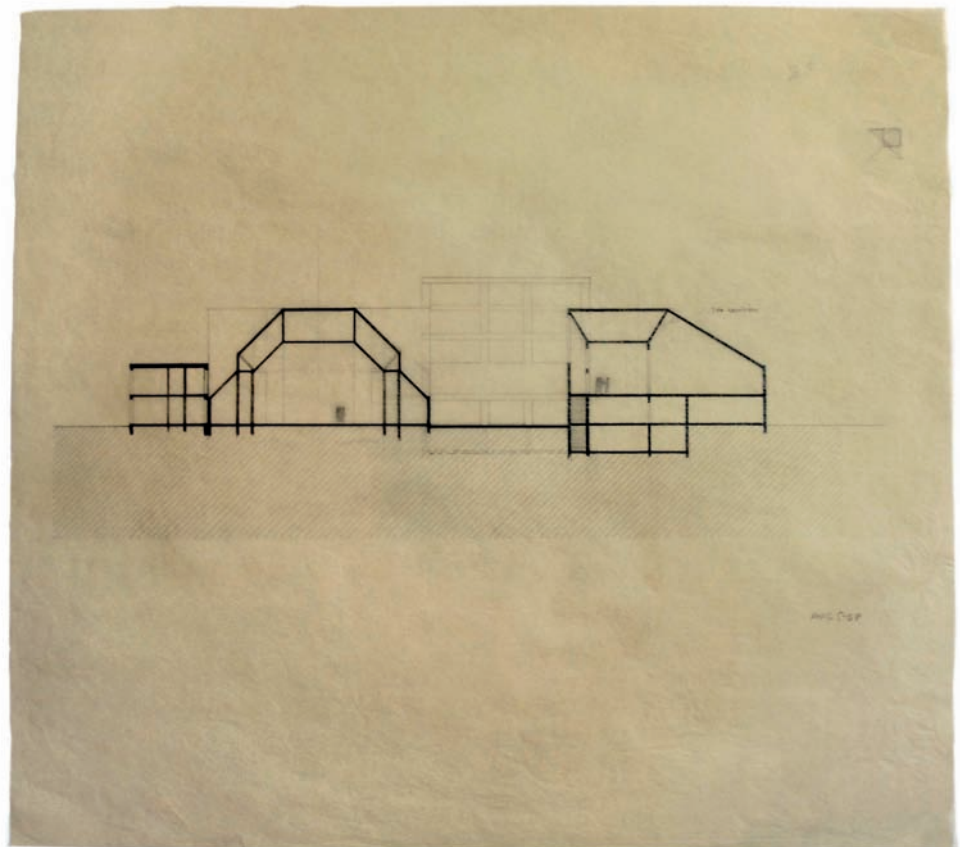
Fig. 5.130
Section: Core
August 5 1968
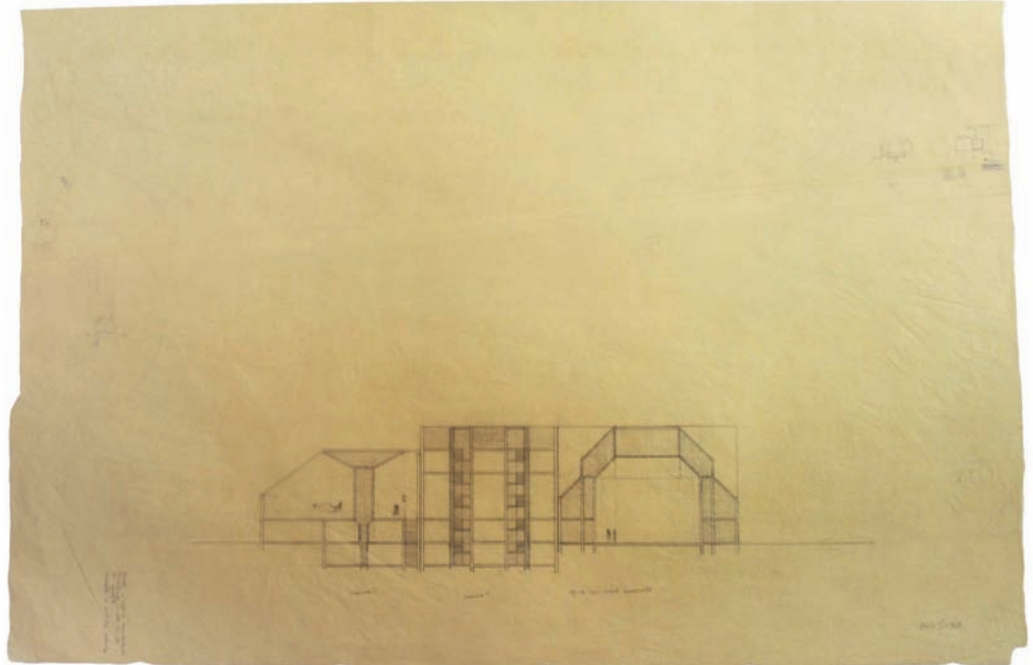
Fig. 5.131
Section: Core
August 5 1968
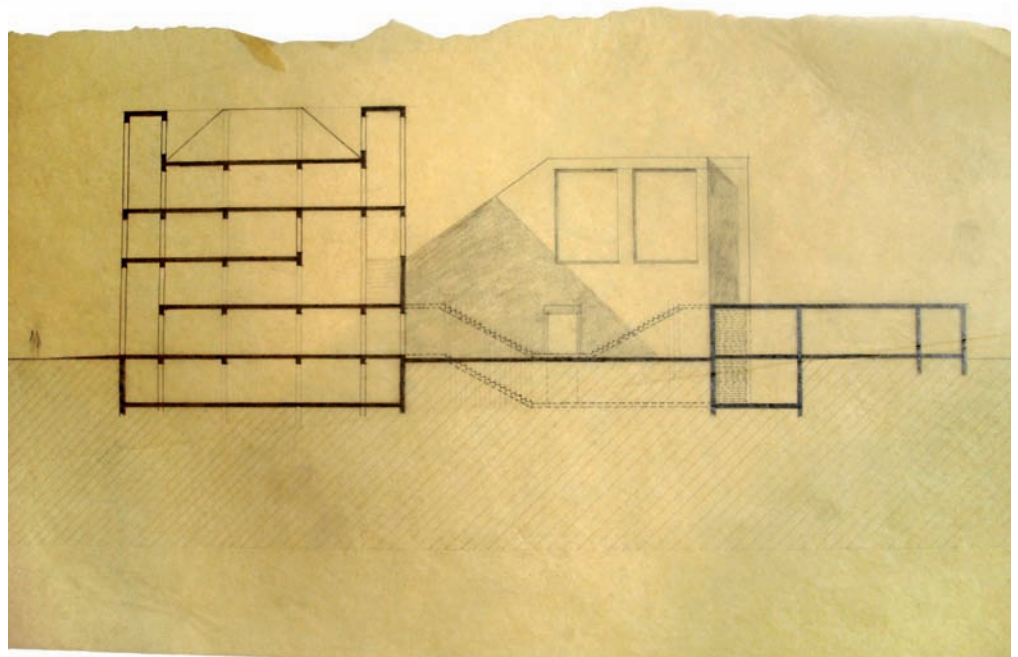
Fig. 5.132
Section: Core
August 5 1968
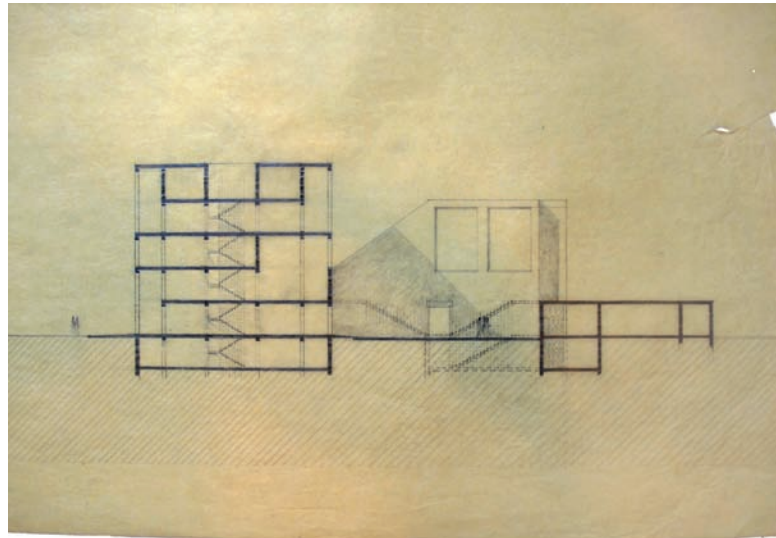
Fig. 5.133
Facade Study
ca. August 1968
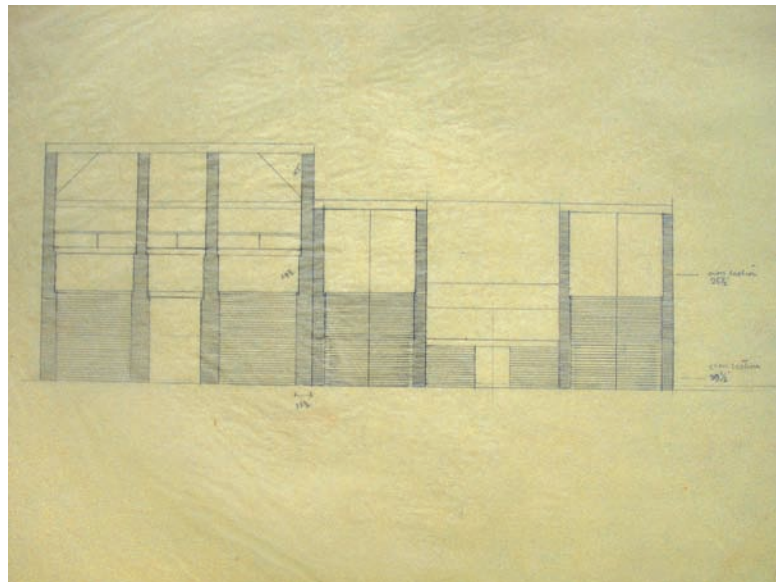
Fig. 5.134
Facade Study
ca. August 1968
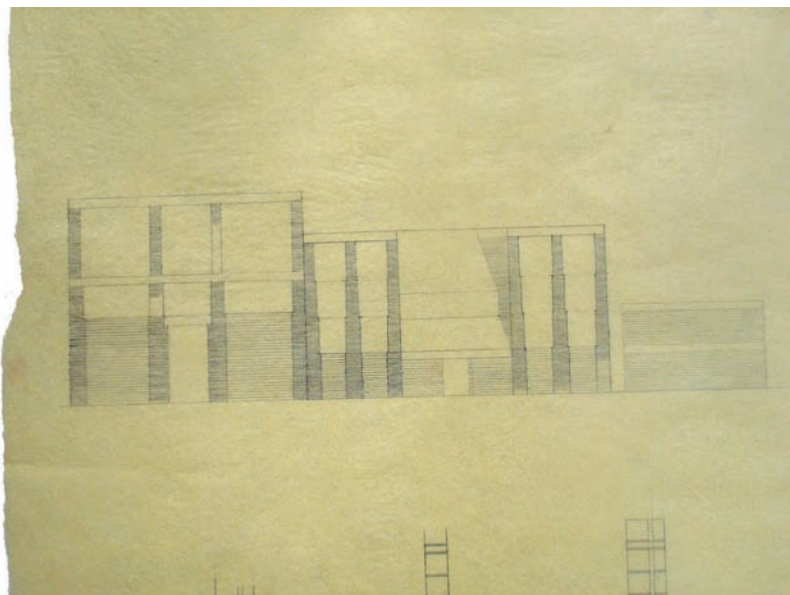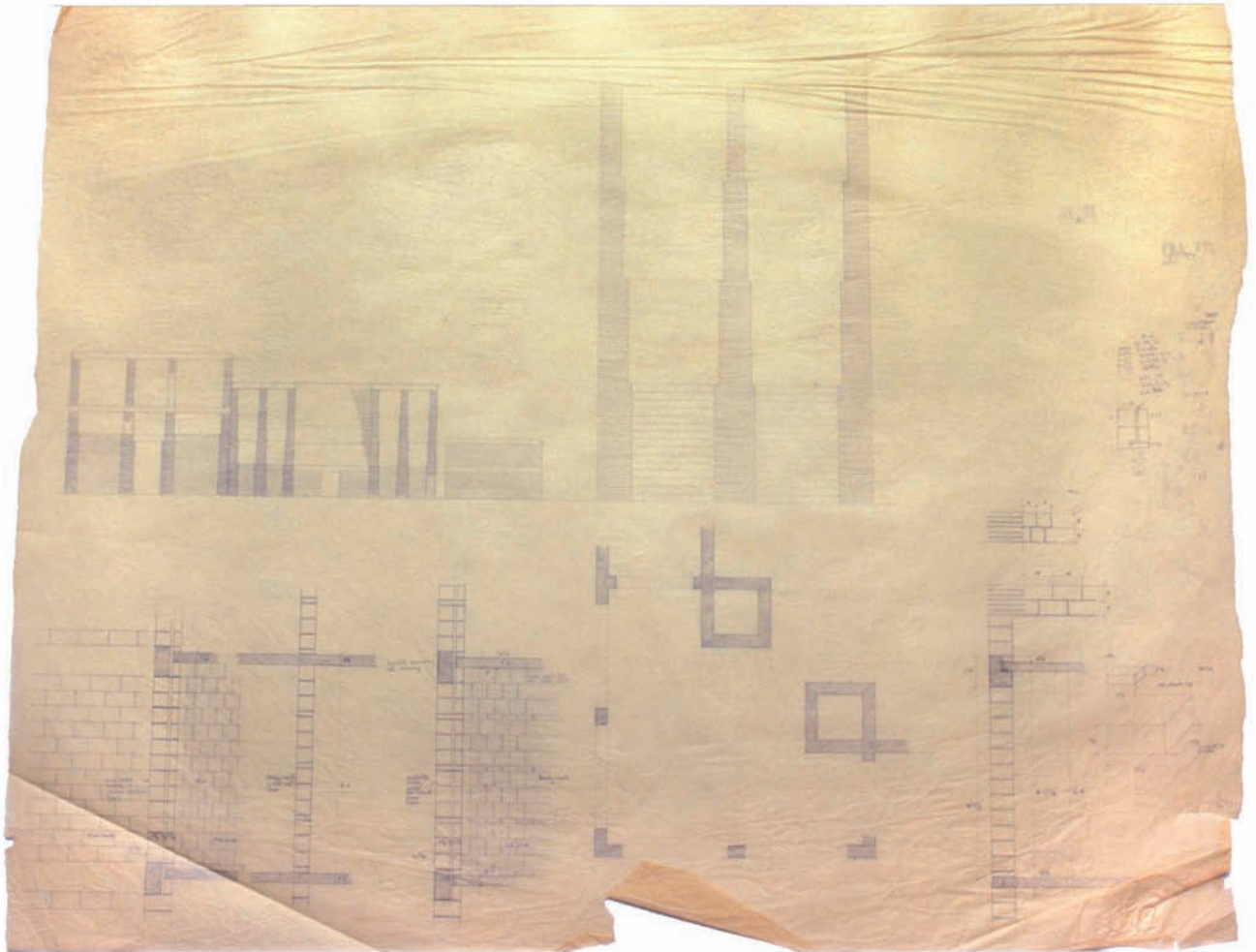
Fig. 5.135
Facade Study
ca. August 1968

Fig. 5.136
Wall Construction
Core
ca. Aug.- Oct. 1968
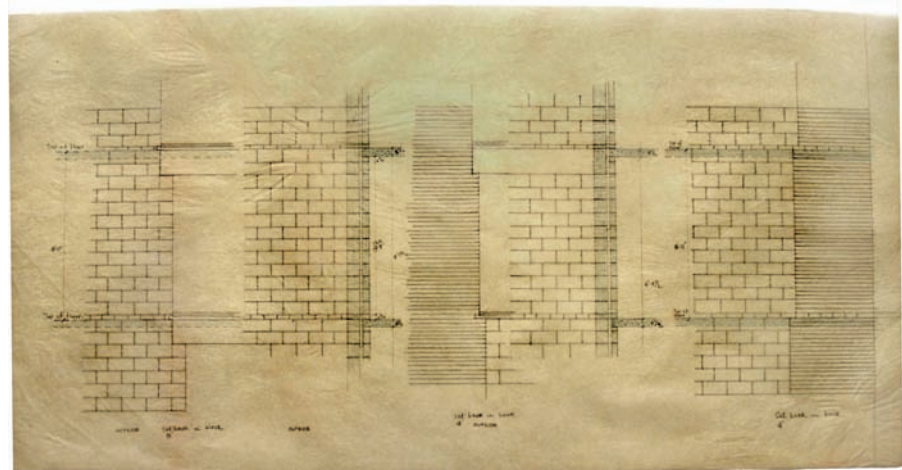
Fig. 5.137
Wall Construction
Core
ca. Aug.- Oct. 1968
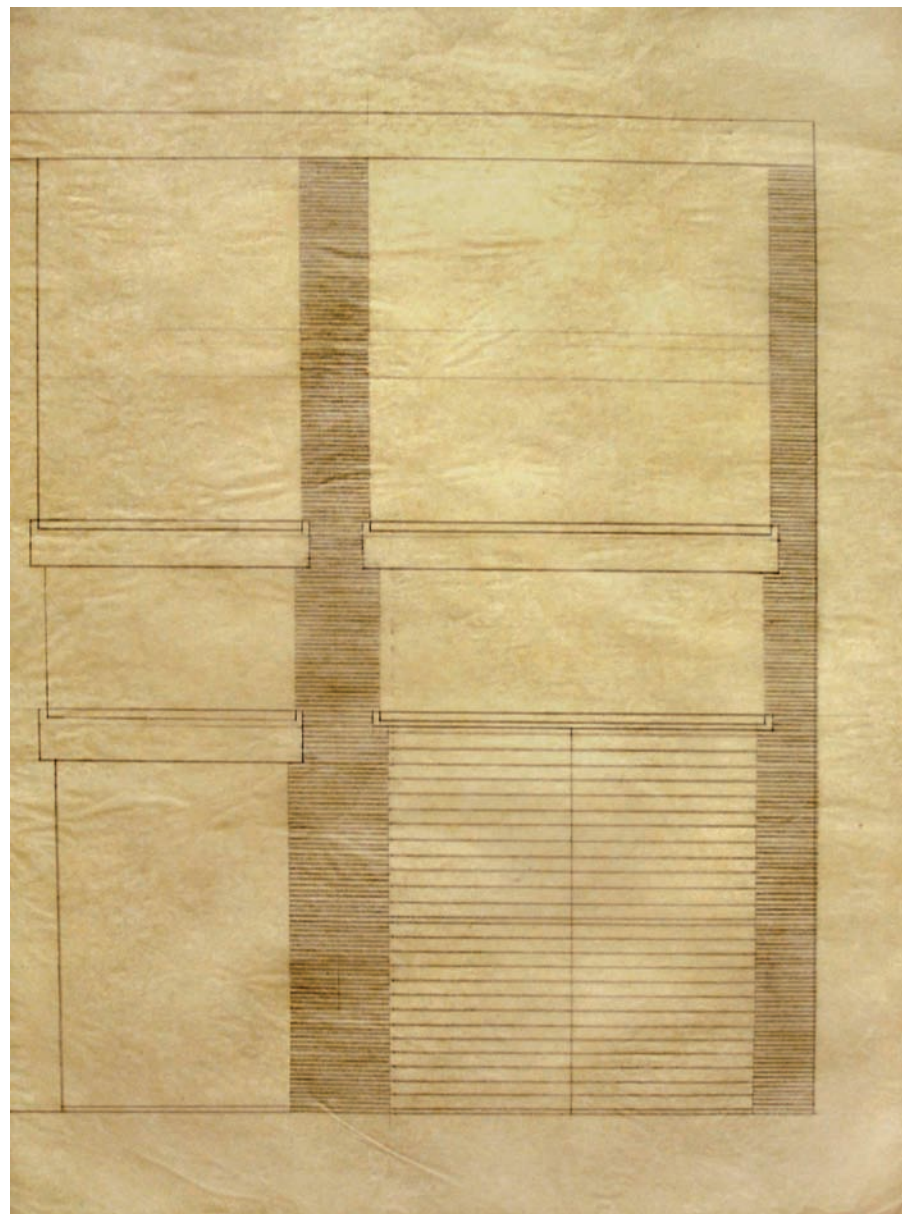
Fig. 5.138
Wall Construction
Cells
ca. Aug.- Oct. 1968
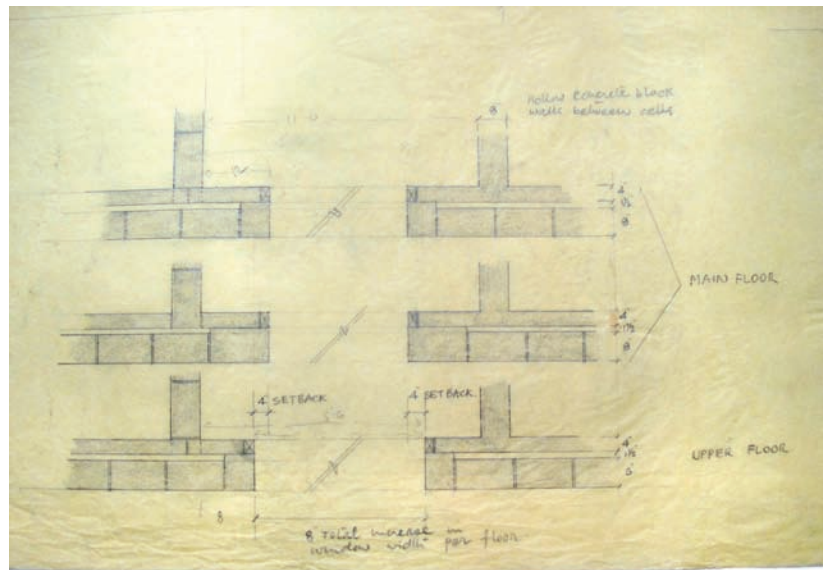
Fig. 5.139
Wall Construction
Cells
ca. Aug.- Oct. 1968
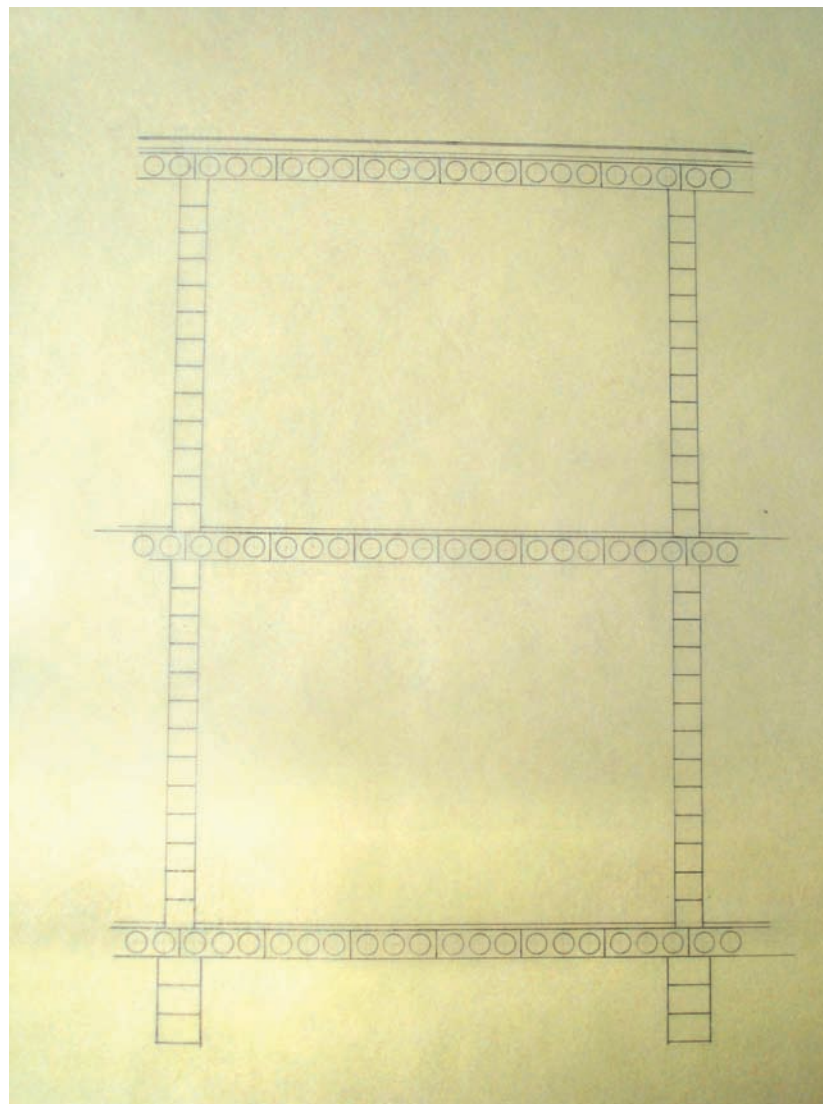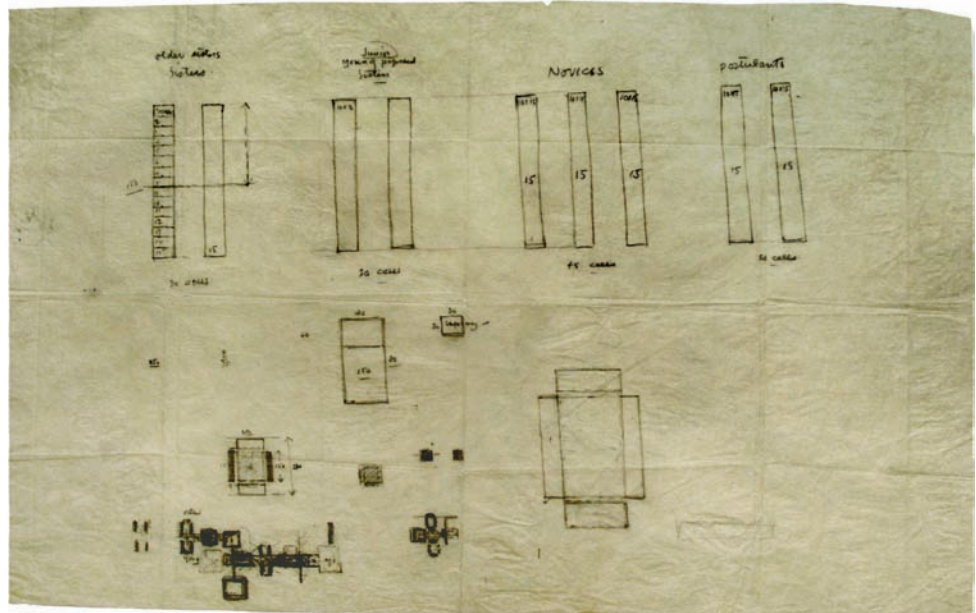
Fig. 6.1
Program Sketch
ca. April 1966
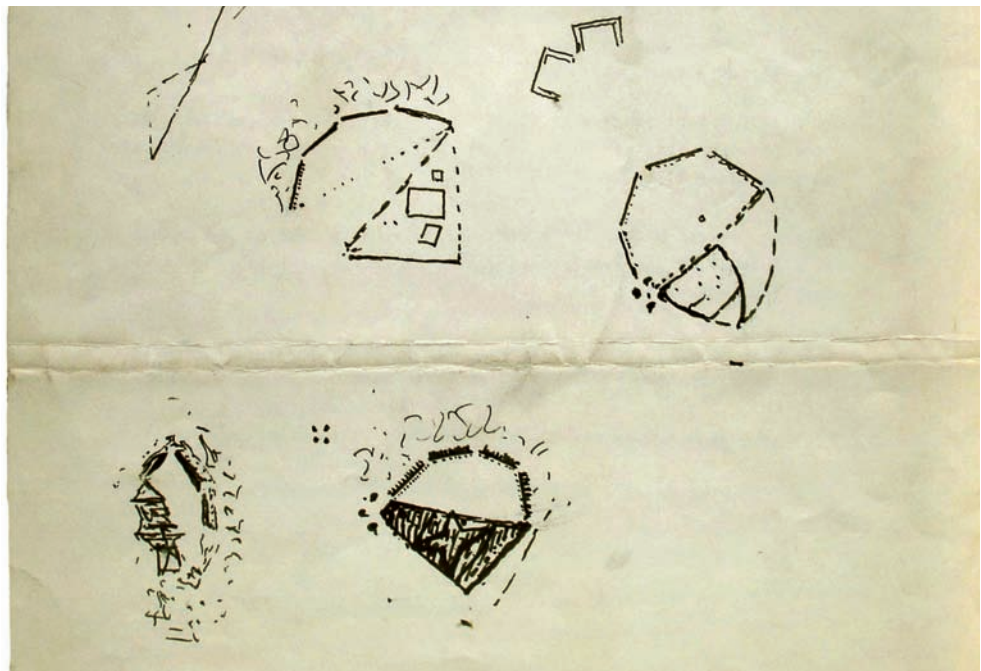
Fig. 6.2
Parti / „Form"
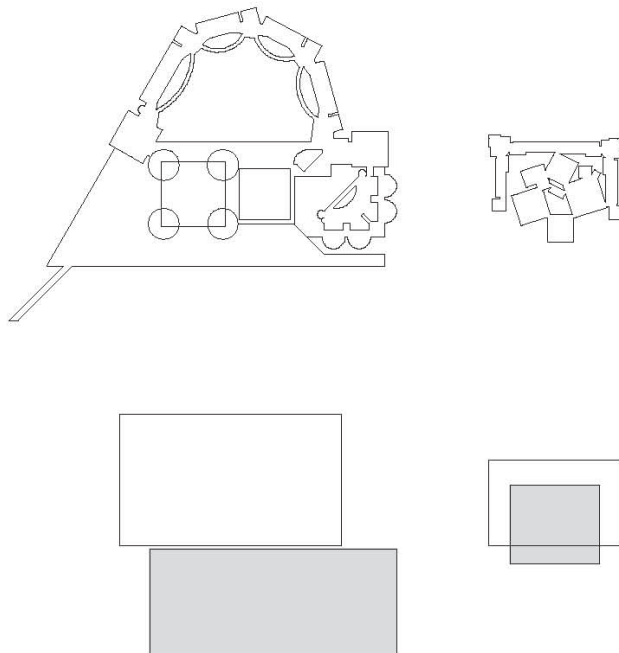
Fig. 6.3
Individual/Communal
Schemes 1 + 4
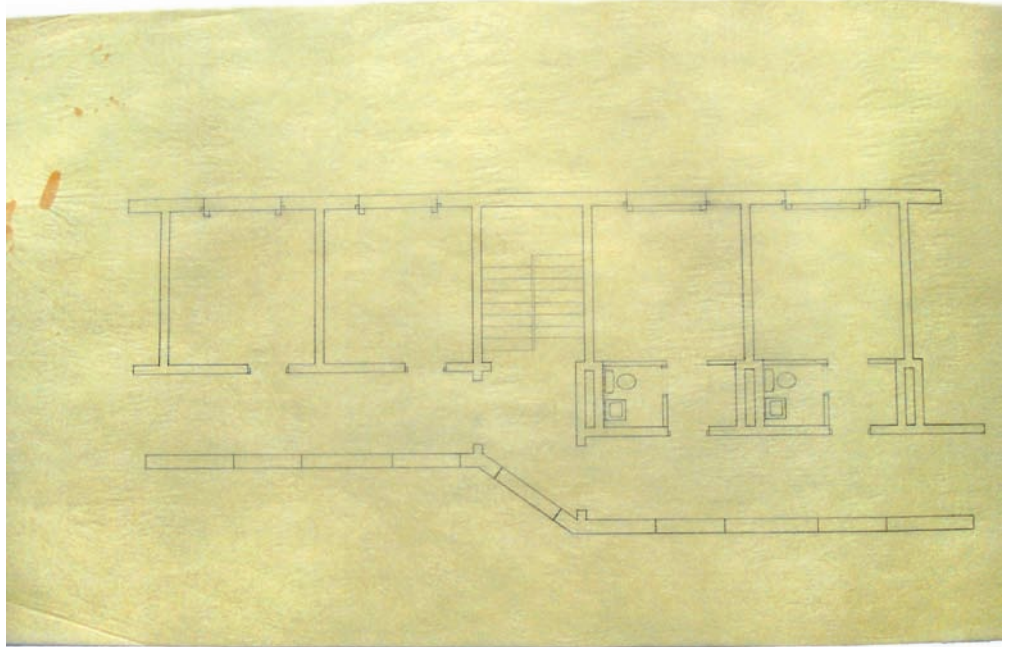
Fig. 6.4
Transition Between
Cell Depths
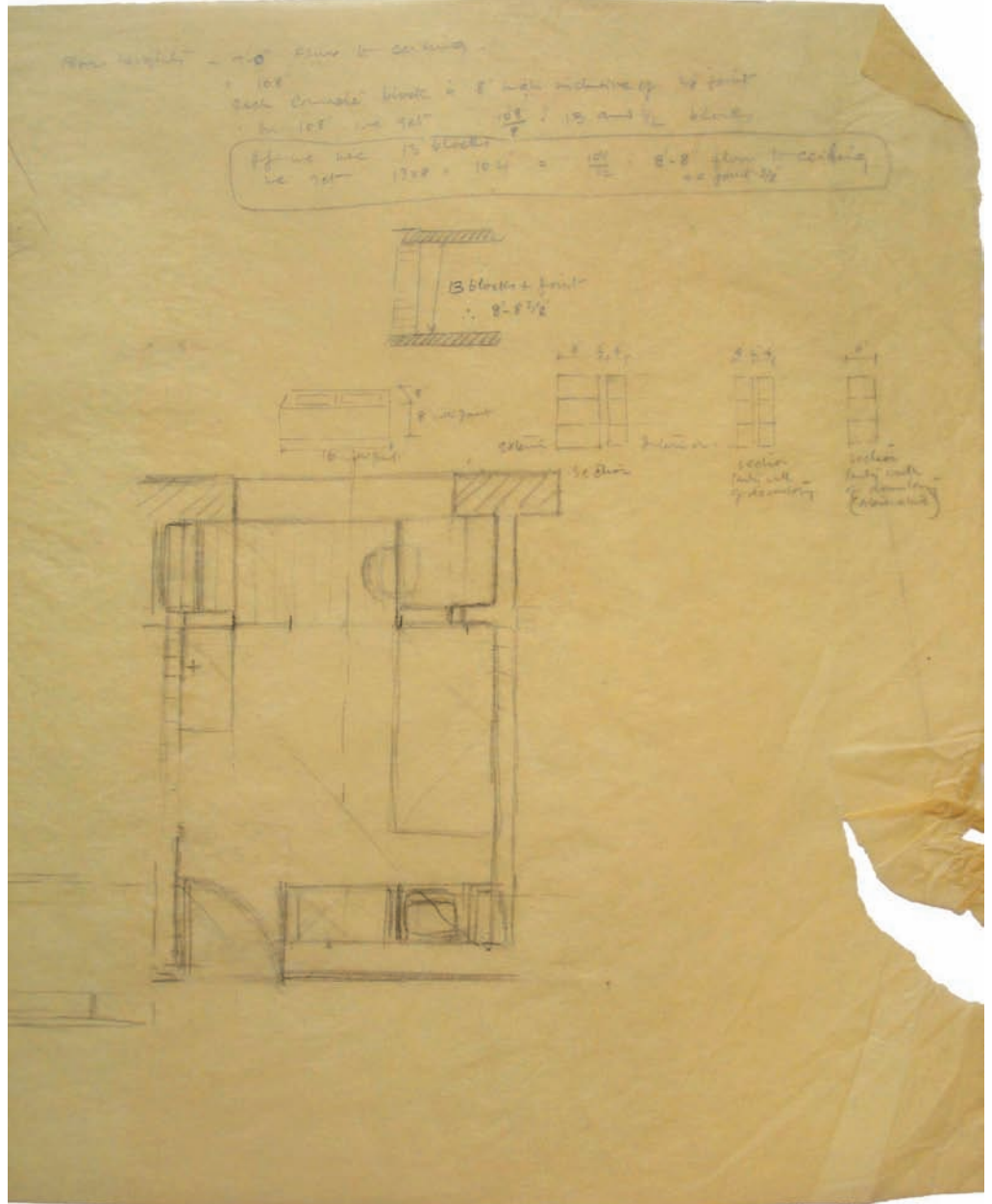
Fig. 6.5
LIK: Early Sketch of
Cell ca. 1966-67
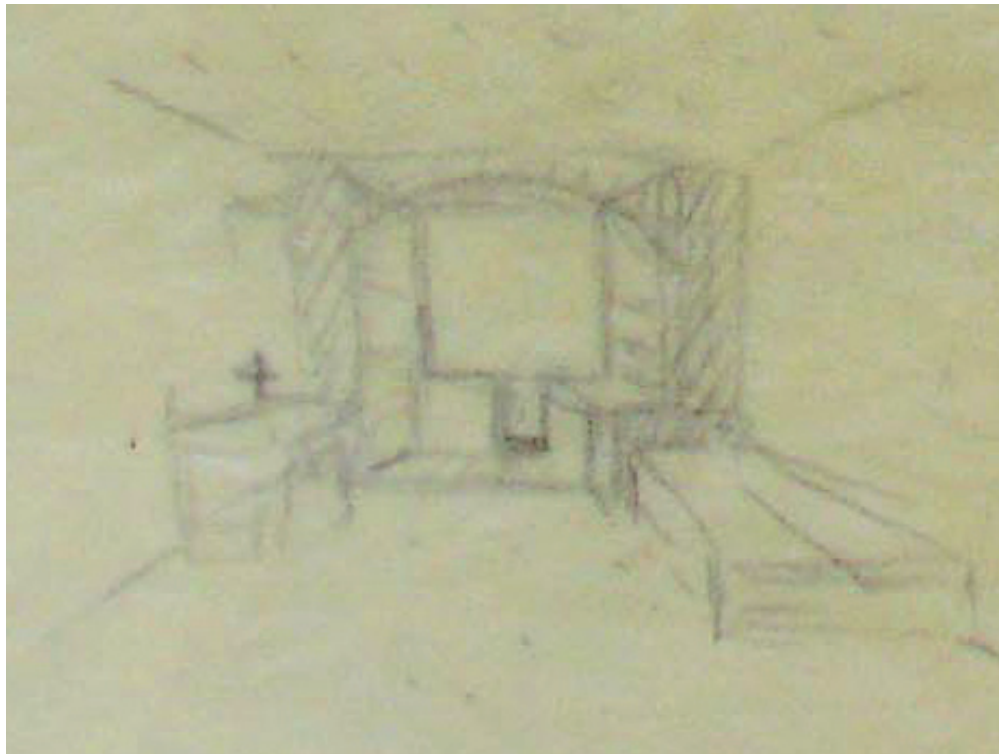
Fig. 6.6
Sketch Cell LIK
ca. October 1967 ?
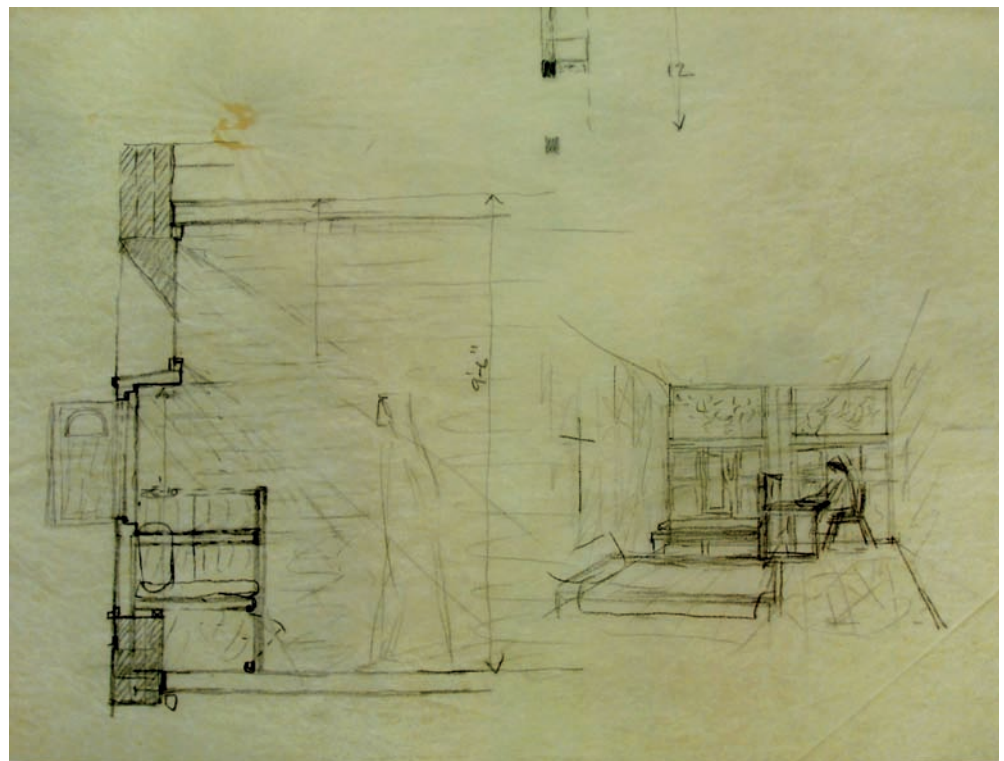
Fig. 6.7
Sketch Cell LIK
ca. 1967 ?
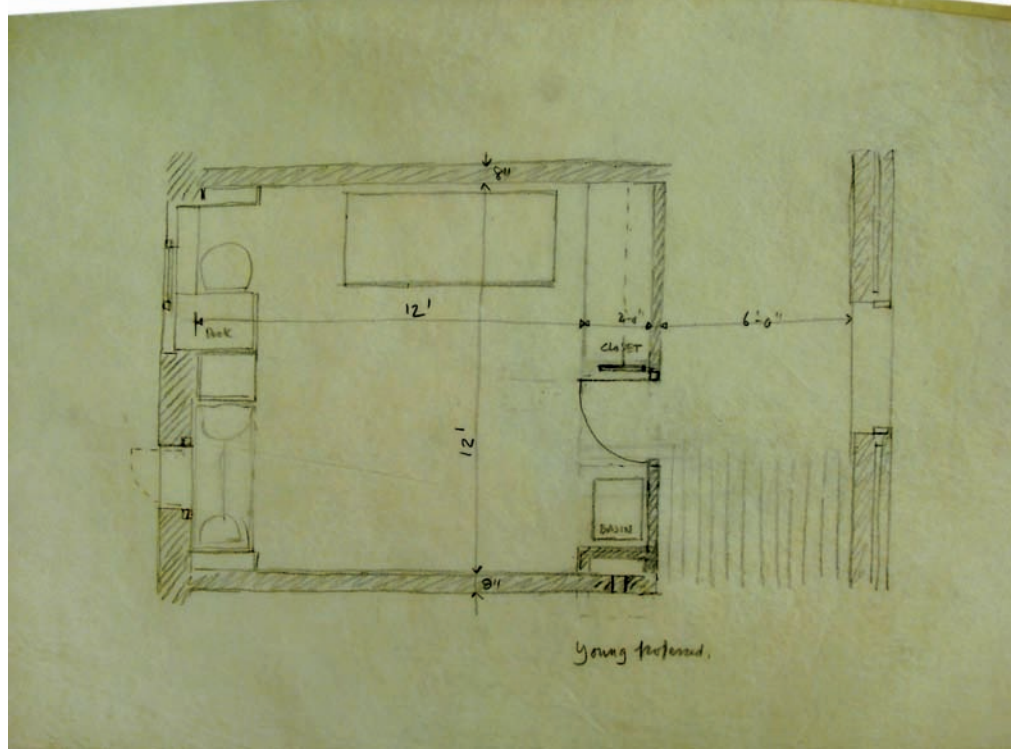
Fig. 6.8
LIK: Cell for
Postulants, Novices
Winter 1966 (?)
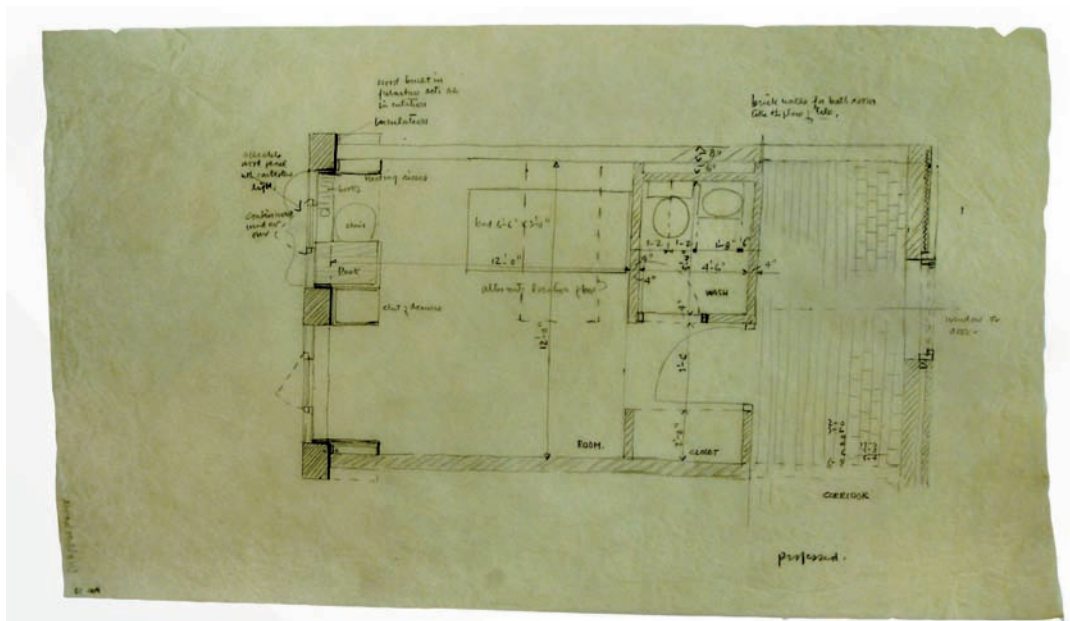
Fig. 6.9
LIK: Cell for
Professed Sisters
Winter 1966 (?)
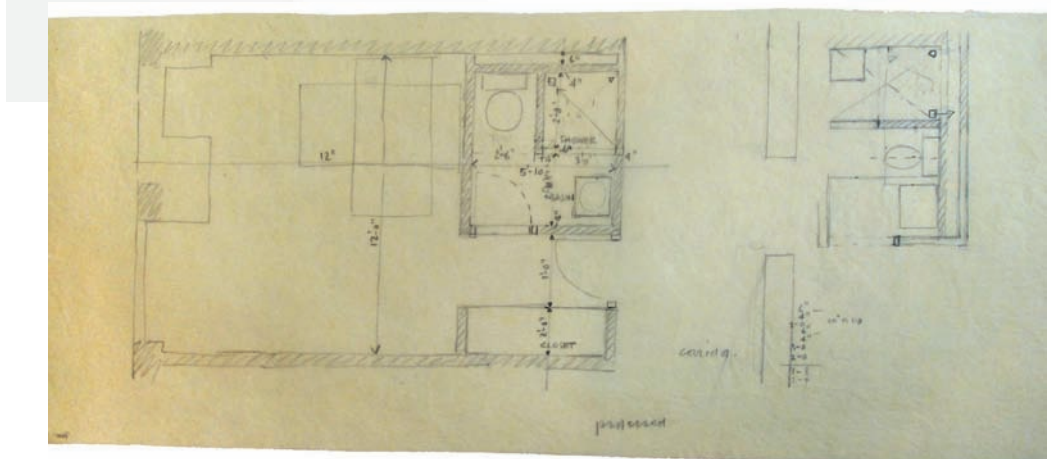
Fig. 6.10
LIK: Cell for
Professed Sisters
Winter 1966 (?)

Fig. 6.11
Exeter Library:
The Wall as
Habitable Space

Fig. 6.12
Cell for Postulants,
Novices
October 13 1968
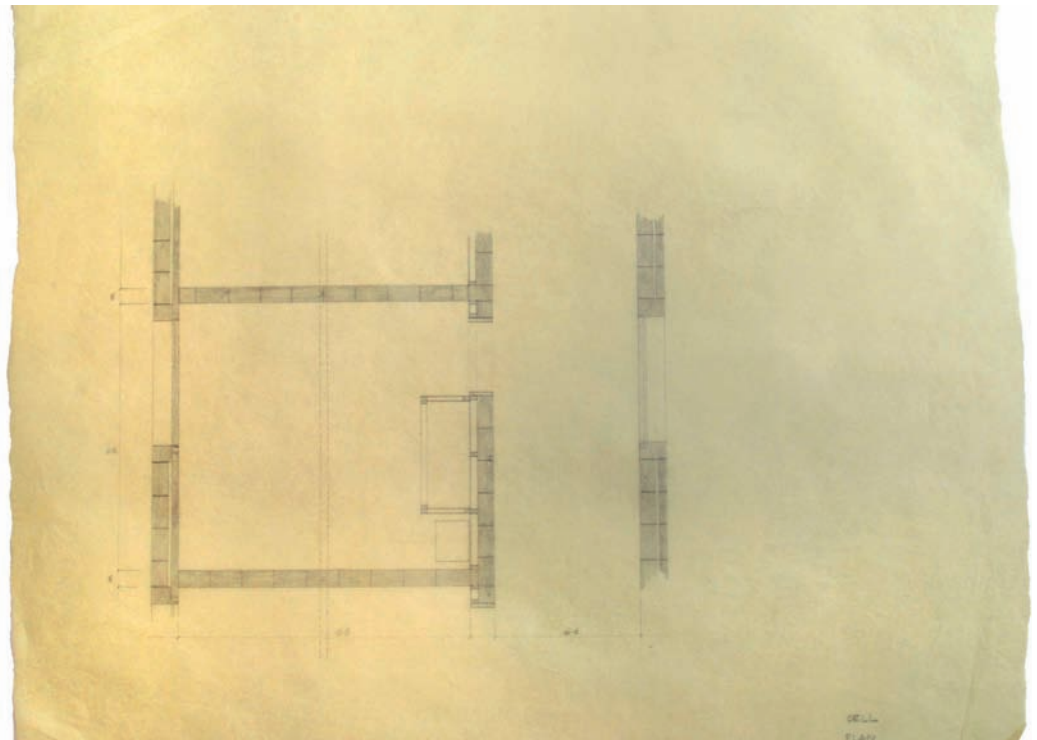
Fig. 6.13
Cell for Professed
Sisters
October 13 1968
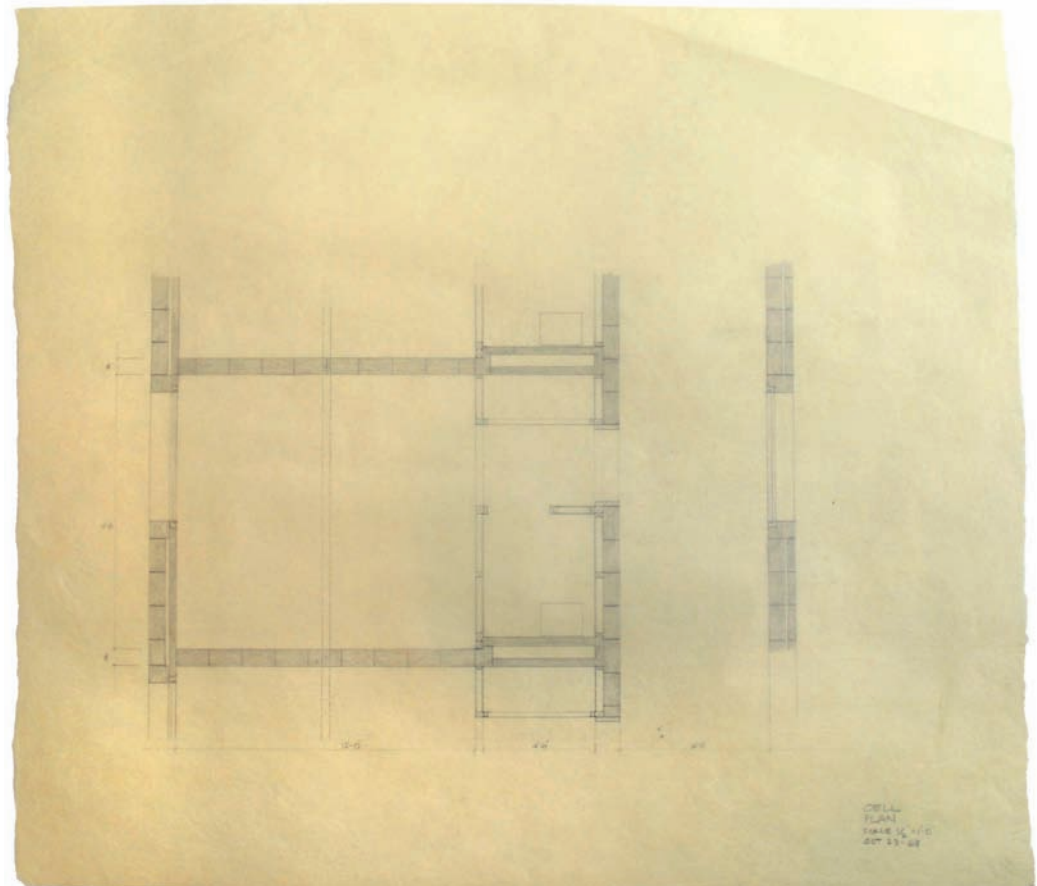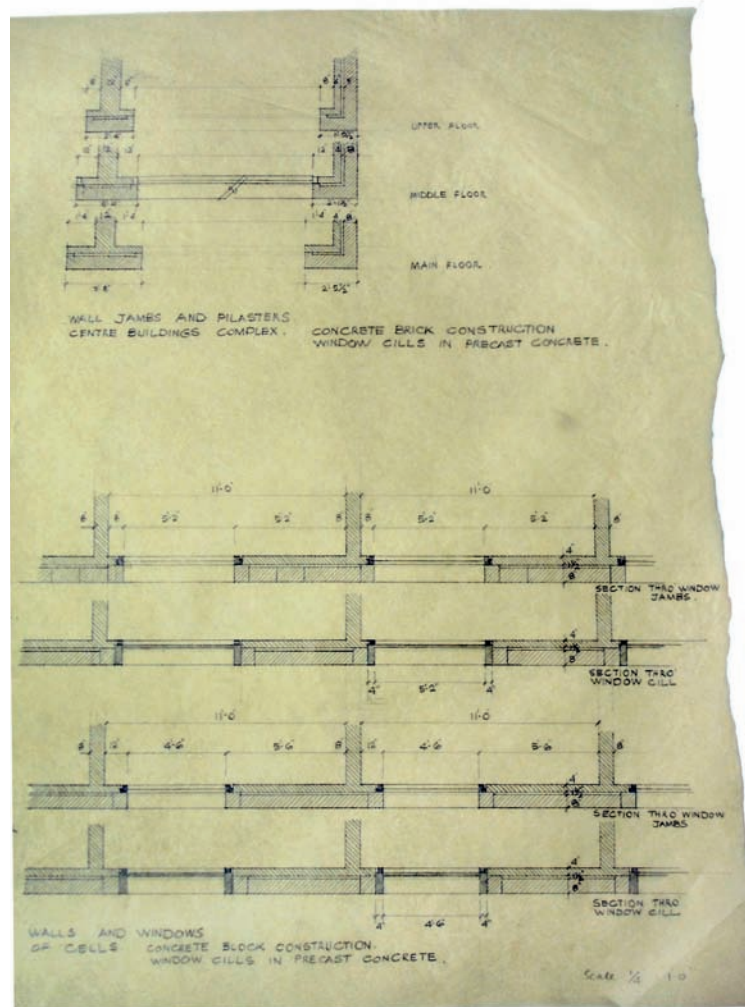
Fig. 6.14
Construction Details
Cells
Fall 1968
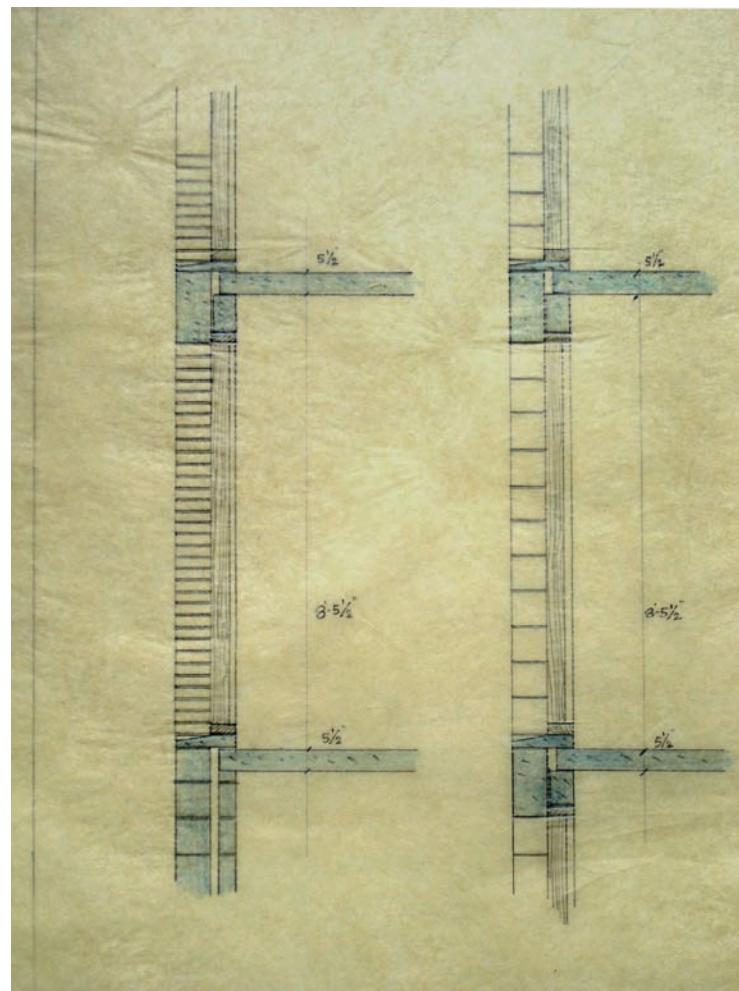
Fig. 6.15
Construction Details
Cells
Fall 1968

Fig. 6.16
LIK: Facade Study
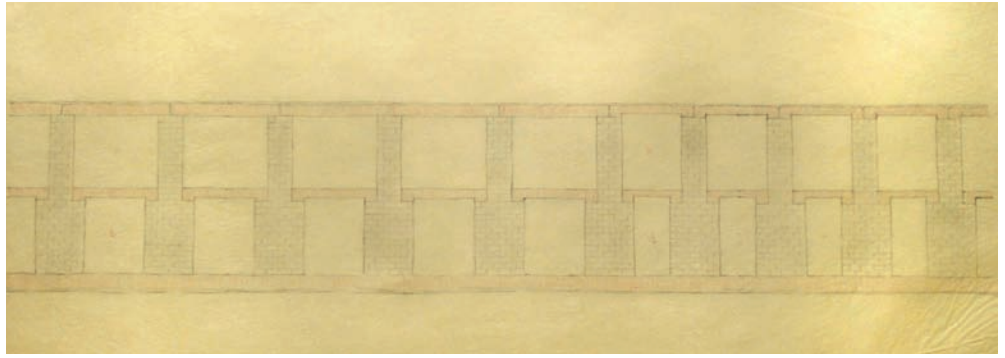
Fig. 6.17
Cell Elevation Study
1967
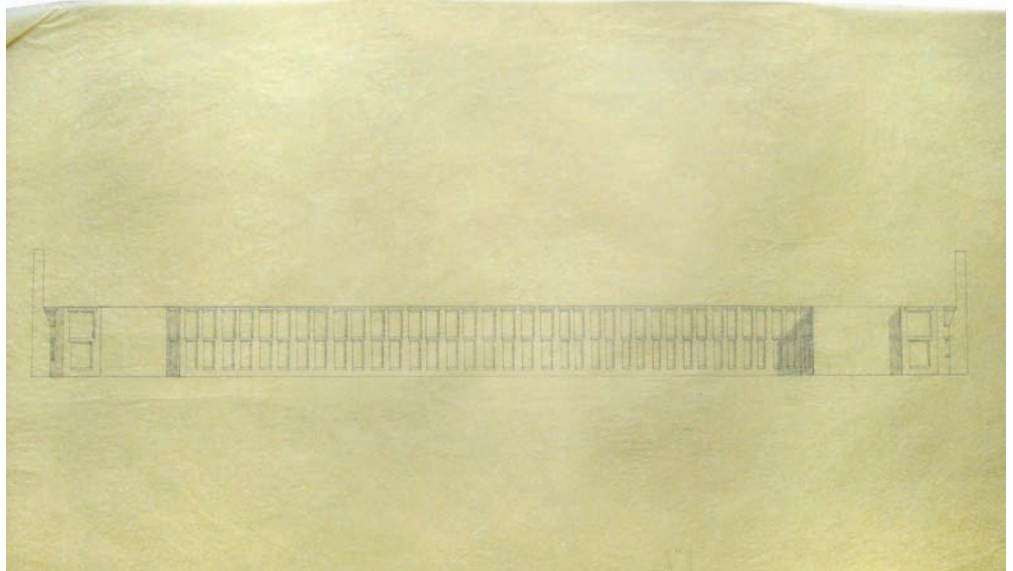
Fig. 6.18
Cell Elevation Study
1967-68
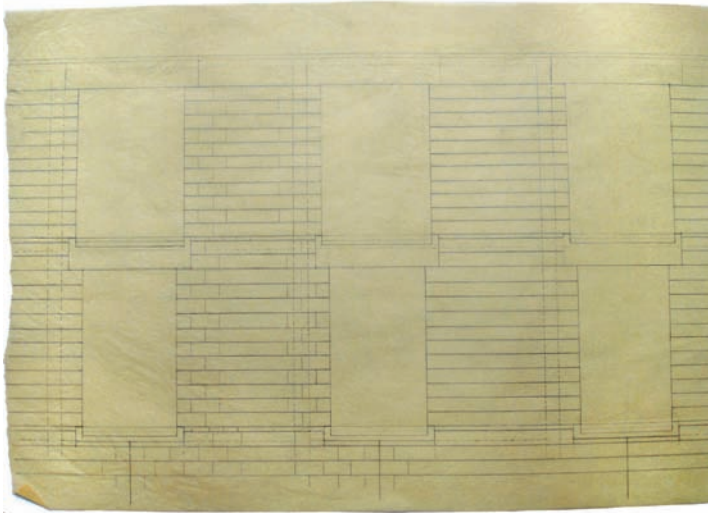
Fig. 6.19
Cell Elevation Study
1967-68
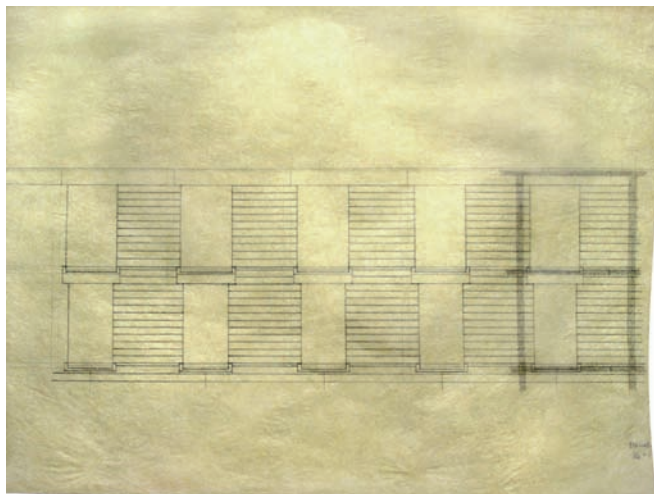
Fig. 6.20
Cell Construction:
Study
Summer/Fall 1968
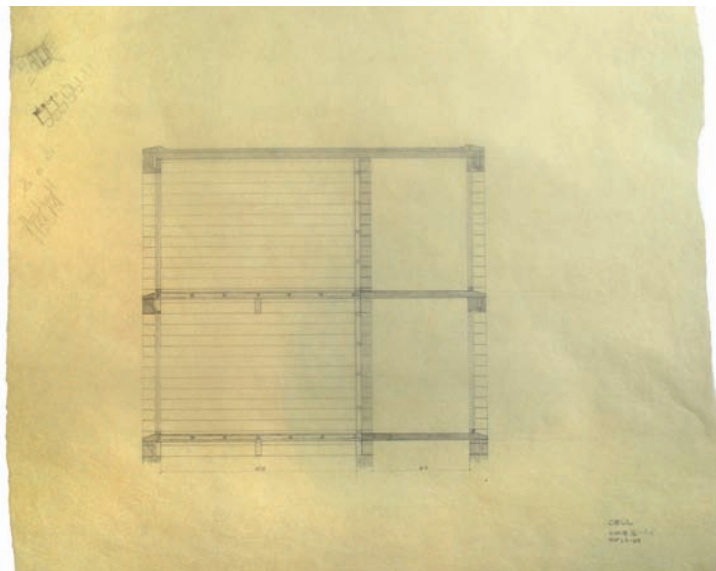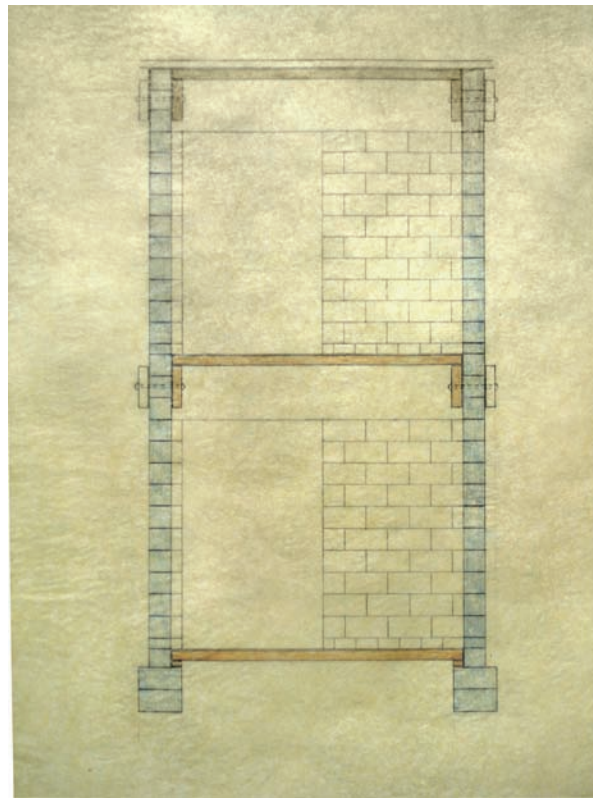
Fig. 6.21
Cell and Gallery
October 23 1968
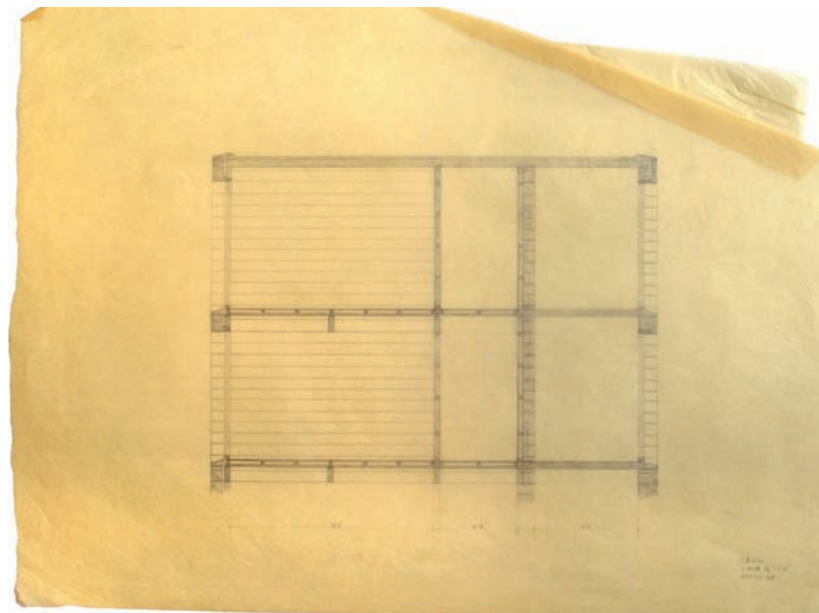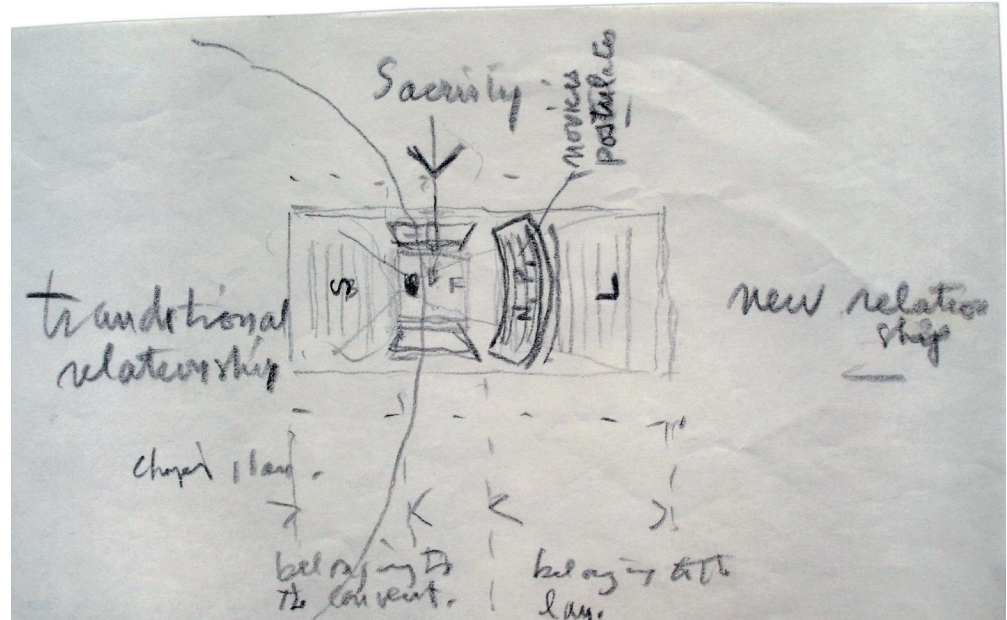
Fig. 6.22
LIK: Sketch Chapel
Spring 1966
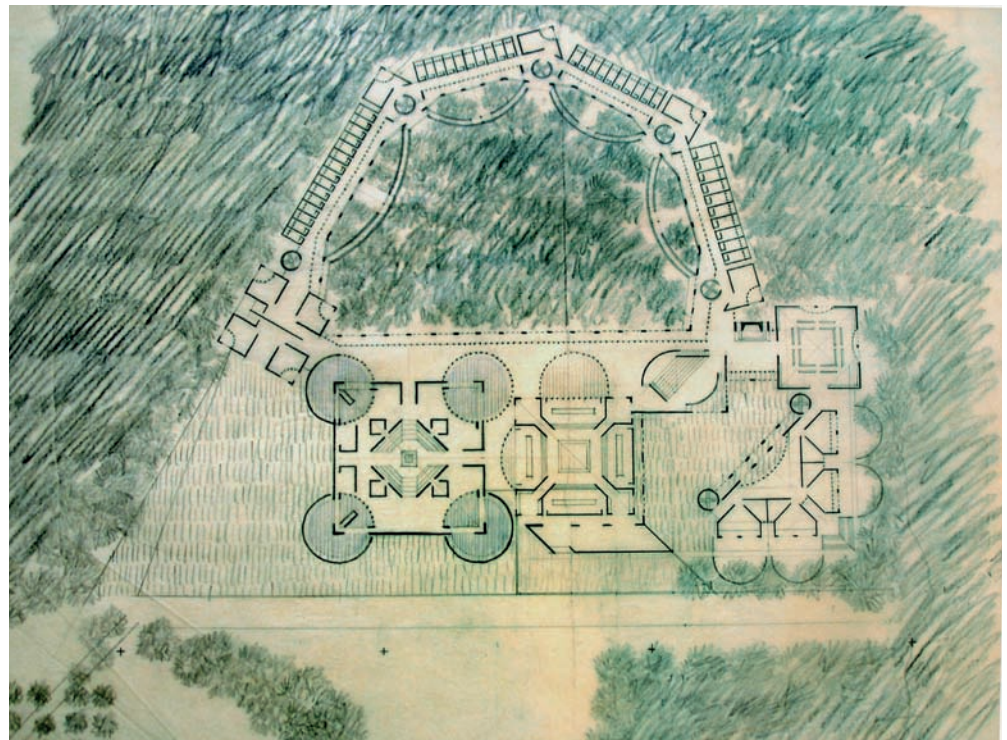
Fig. 6.23
Scheme 1
June 22 1966
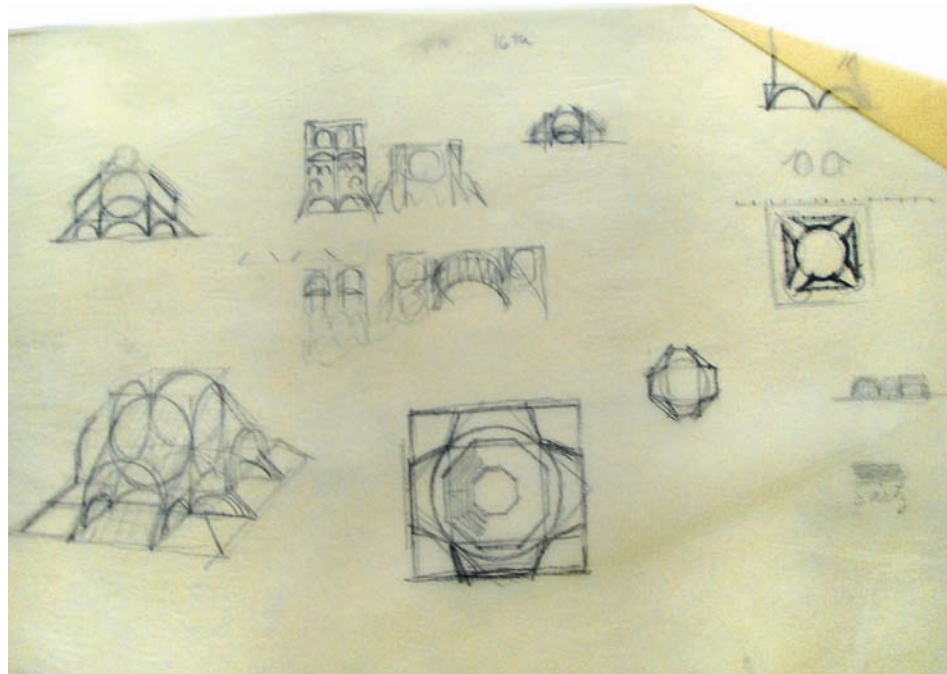
Fig. 6.24
Sketch (LIK?):
Chapel
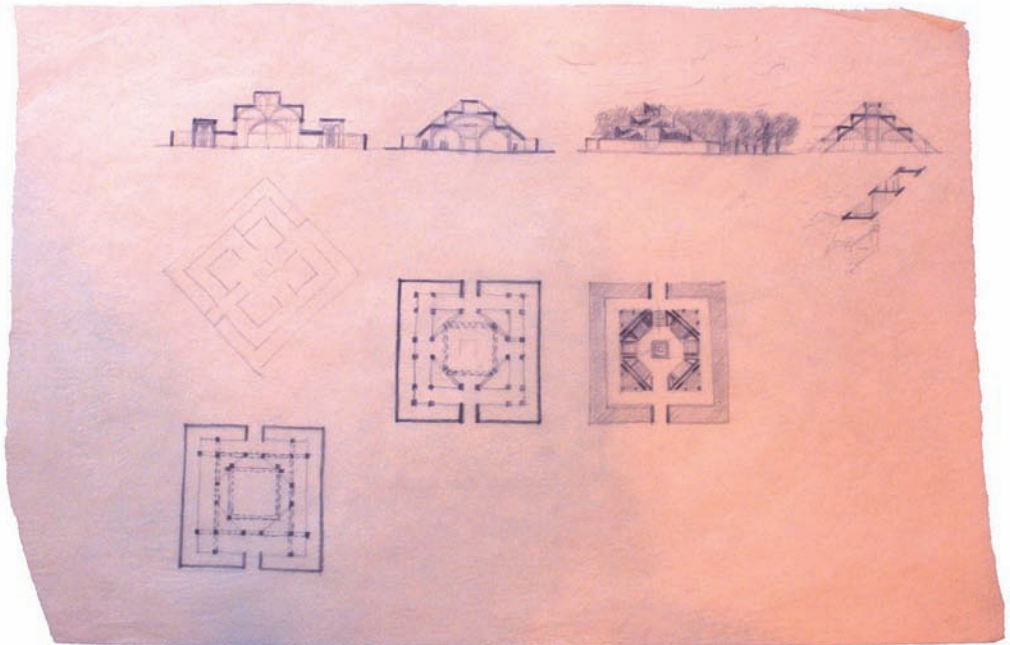
Fig. 6.25
Sketch (Associate):
Chapel
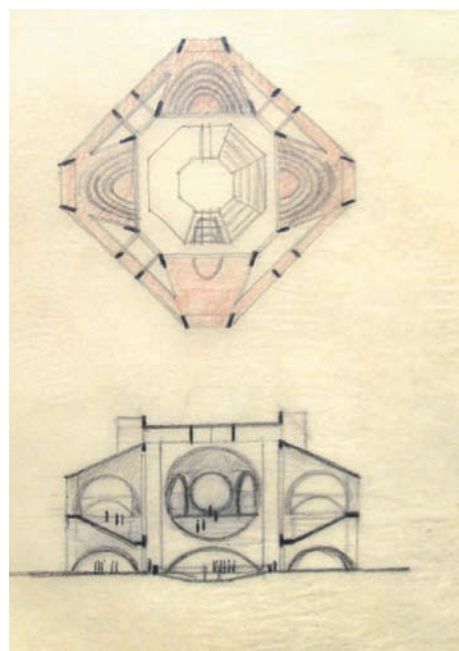
Fig. 6.26
Sketches (Associate)
Chapel

95
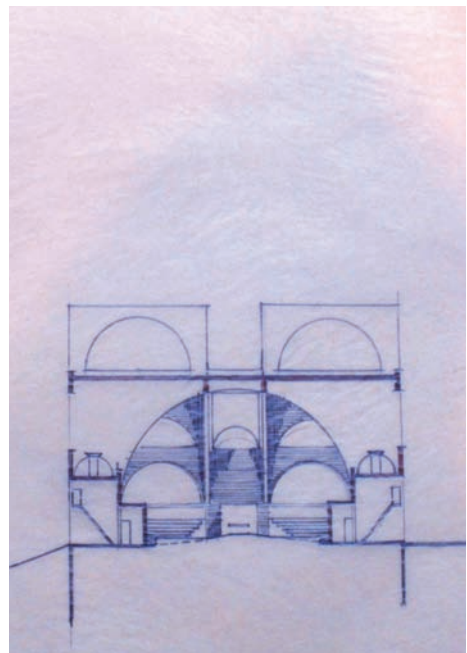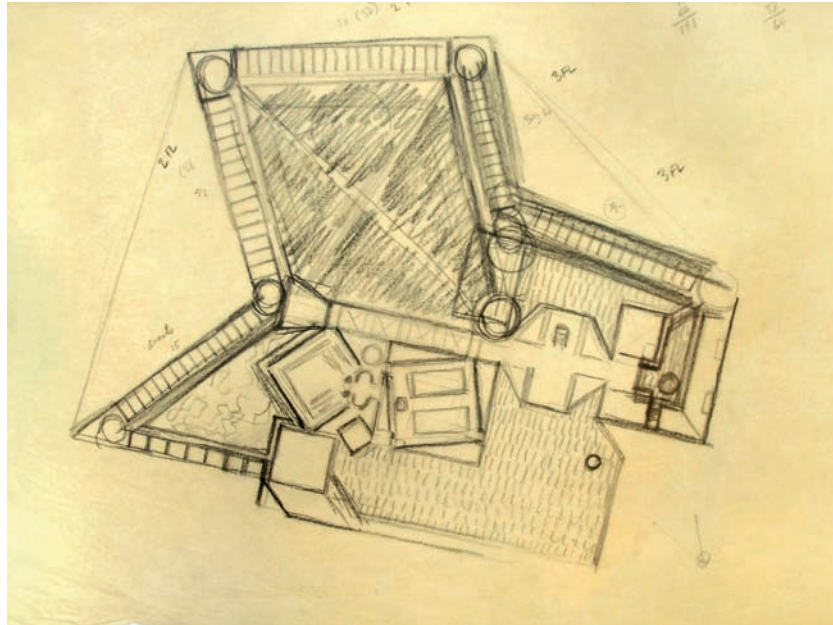
Fig. 6.27
Scheme 2
ca. August 1966
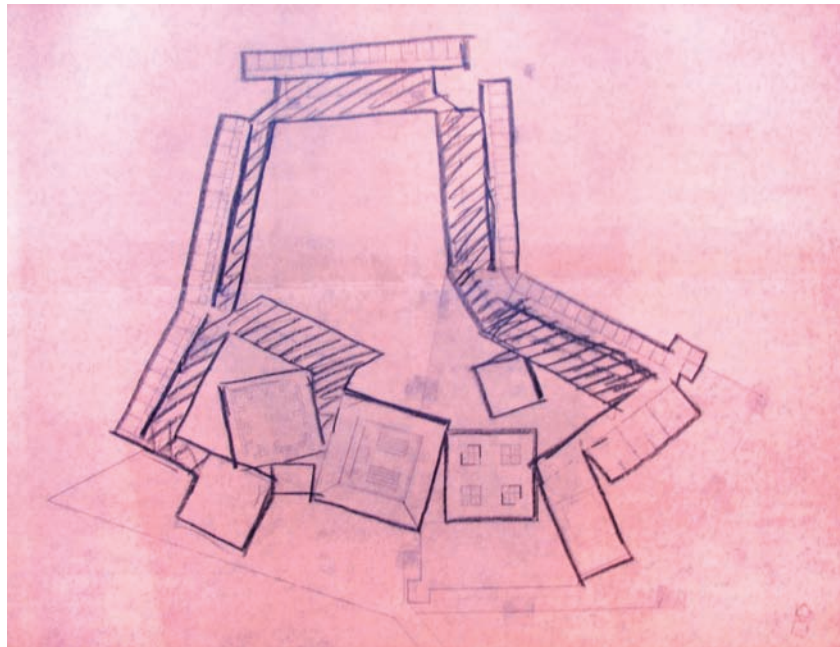
Fig. 6.28
Scheme 3
ca. Octobe 1966

Fig. 6.29
Scheme 3
Elevation Study (LIK)
ca. October 1966
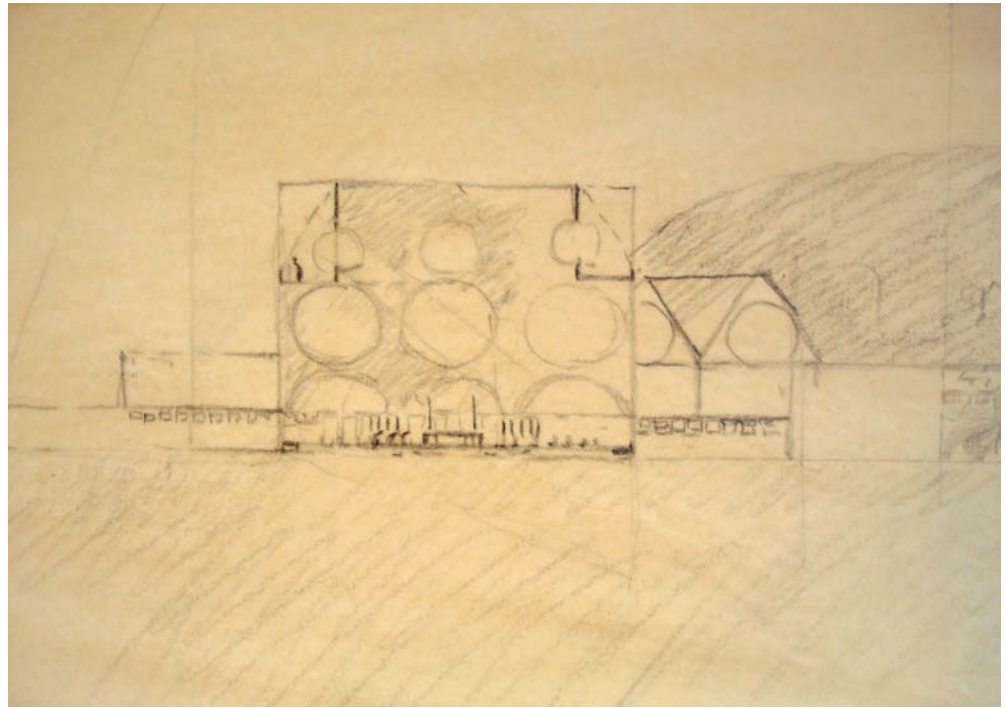
Fig. 6.30
Scheme 3
Secton at Chapel
ca. October 1966
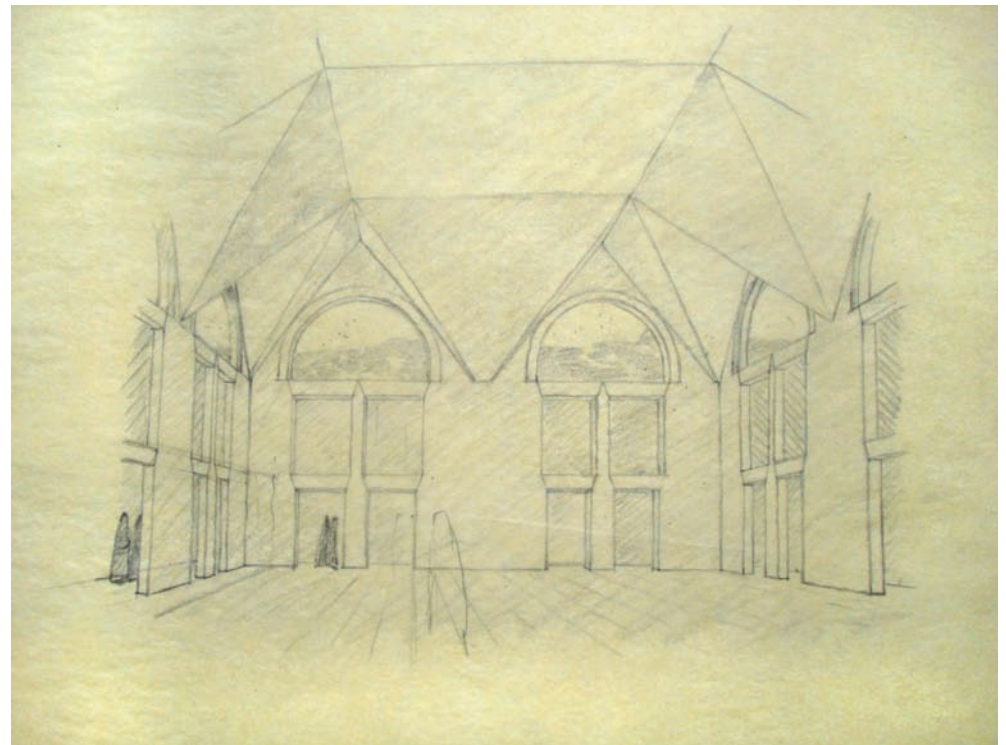
Fig. 6.31
Scheme 3 (ß)
Perspective: Chapel
ca. October 1966
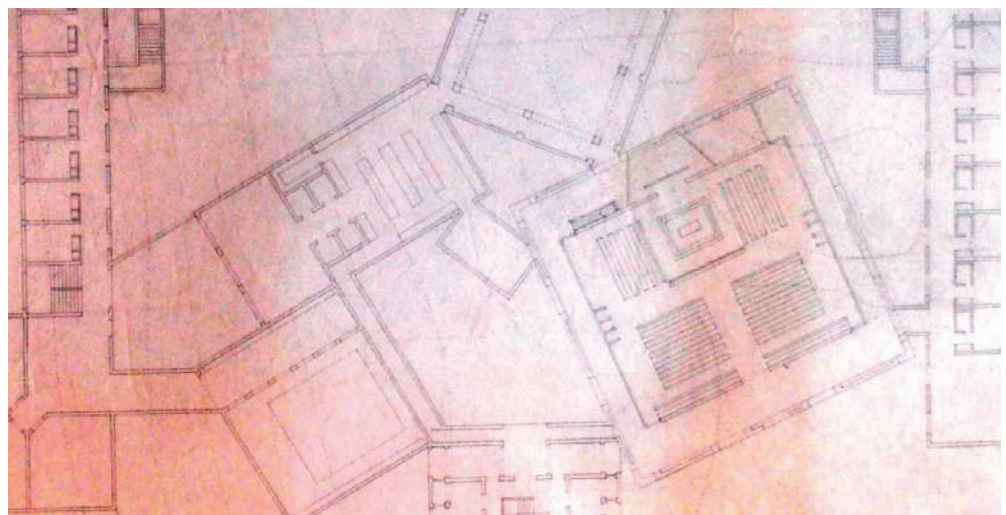
Fig. 6.32
Scheme 4
Movement in Chapel

Fig. 6.33
Section at Chapel
1967-68
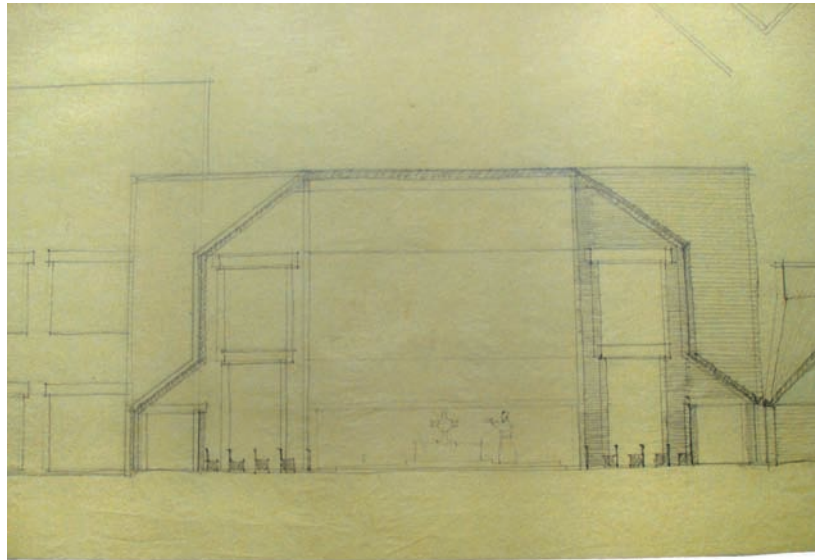
Fig. 6.34
Section at Chapel
1967-68
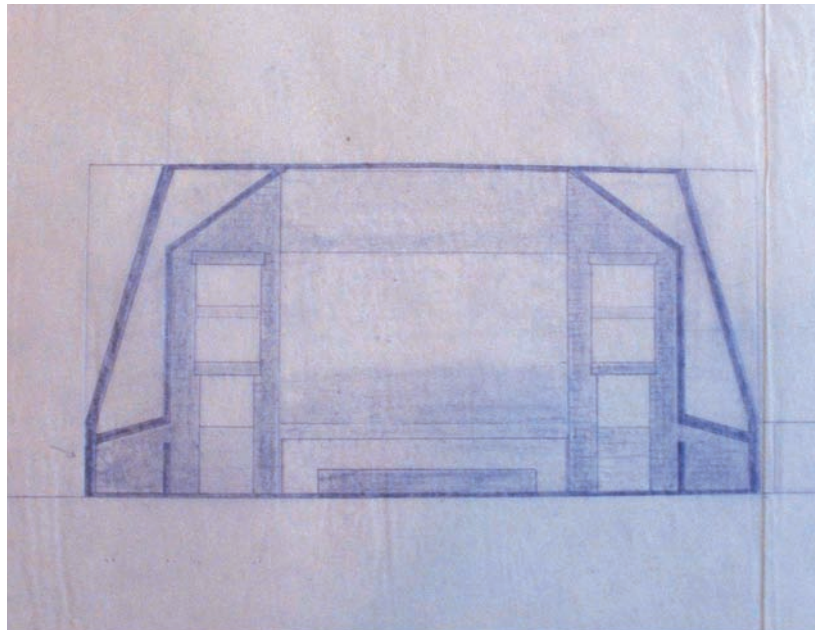
Fig. 6.35
Section at Chapel
Summer/Fall 1968
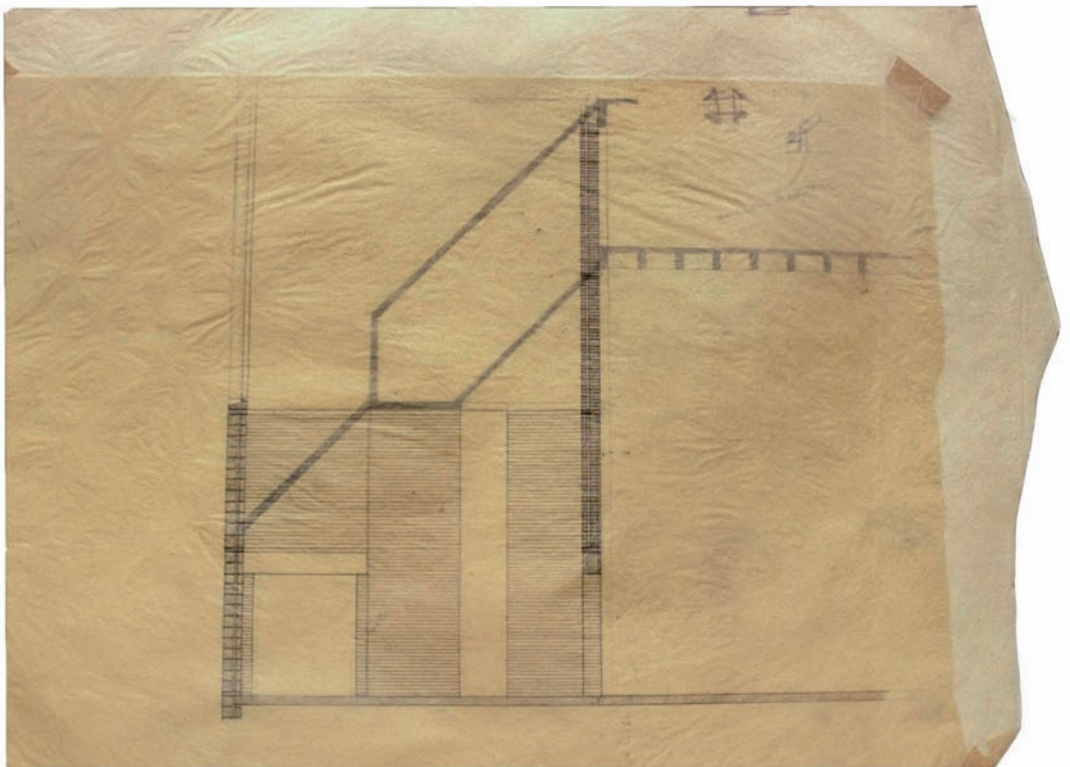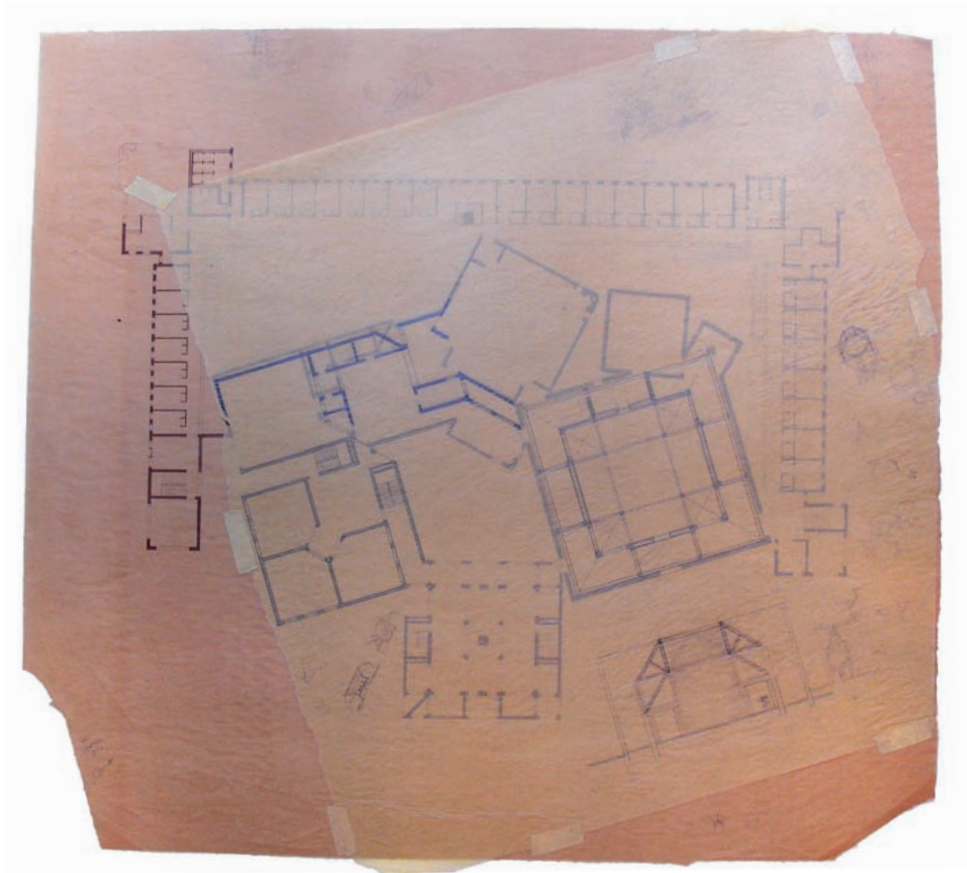
Fig. 6.36
Plan, ca. May 1968
(note Roof Truss)
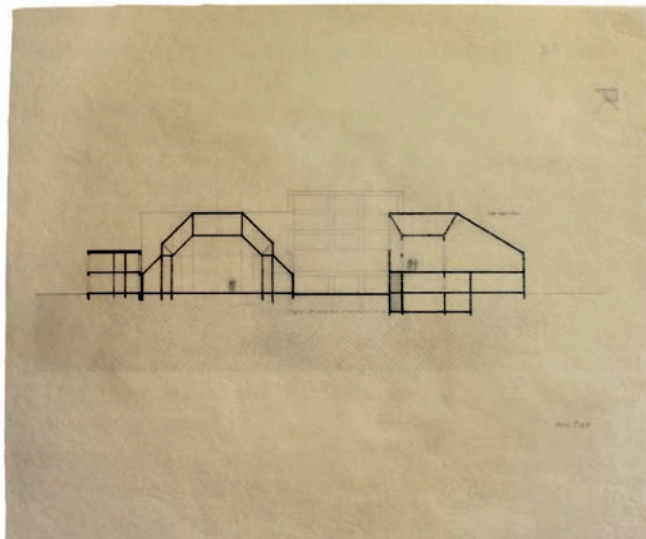
Fig. 6.37
Section (Low)
ca. August 1968
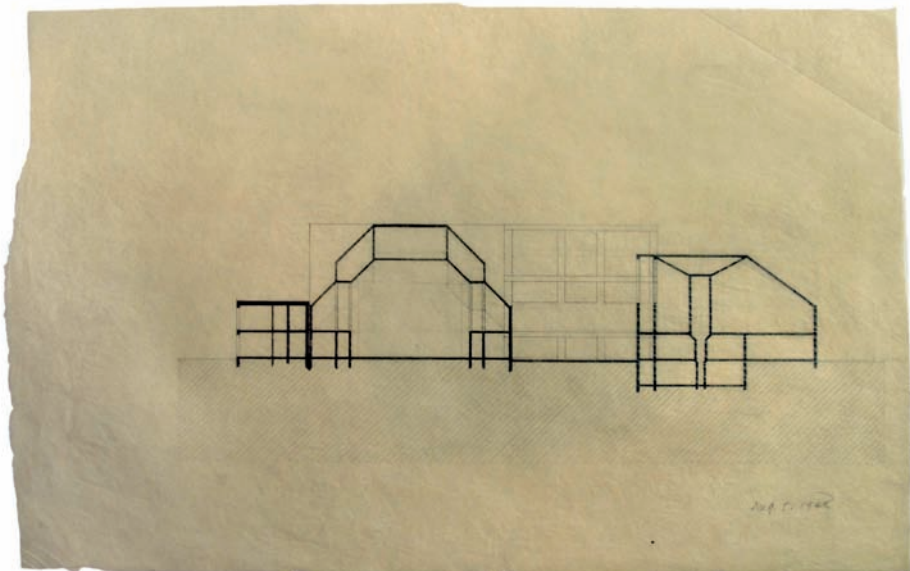
Fig. 6.38
Section (High)
ca. August 1968

Fig. 6.39
South Elevation
August 1967
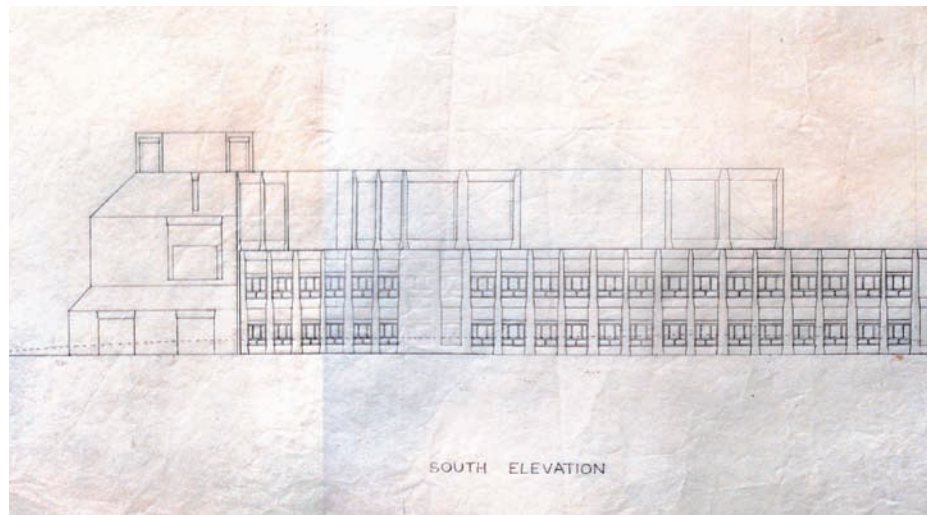
Fig. 6.40
Chapel Plan
October 1967
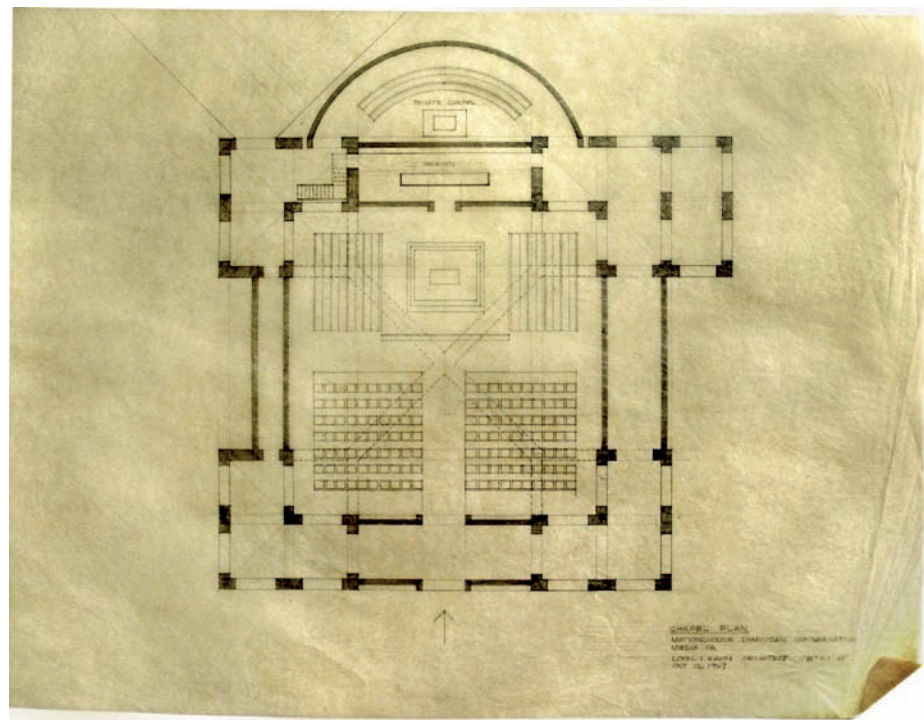
Fig. 6.41
Refectory Plan
October 1967
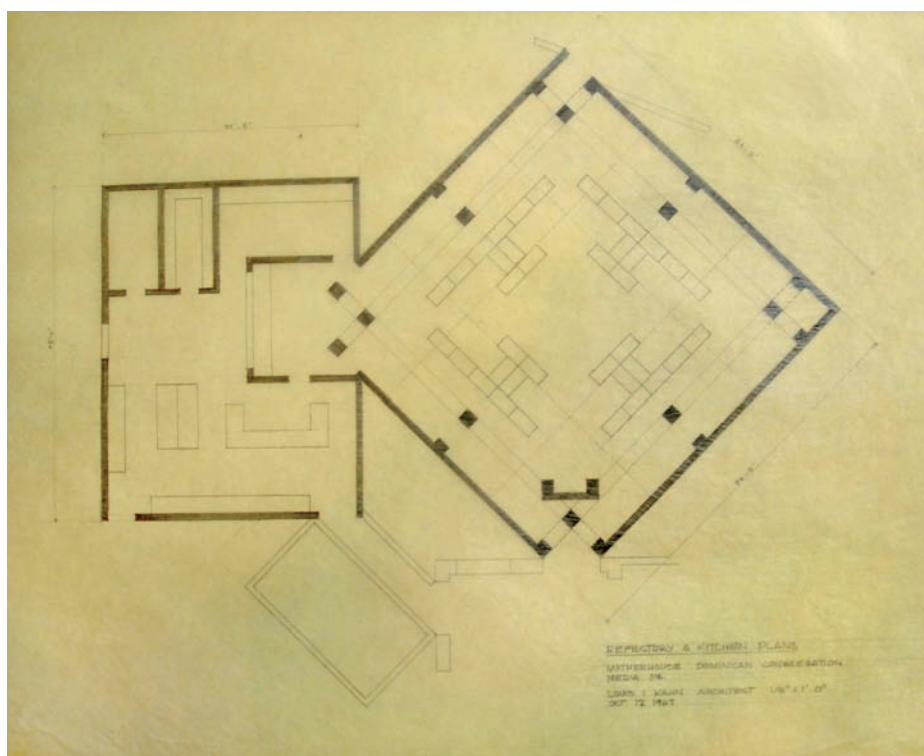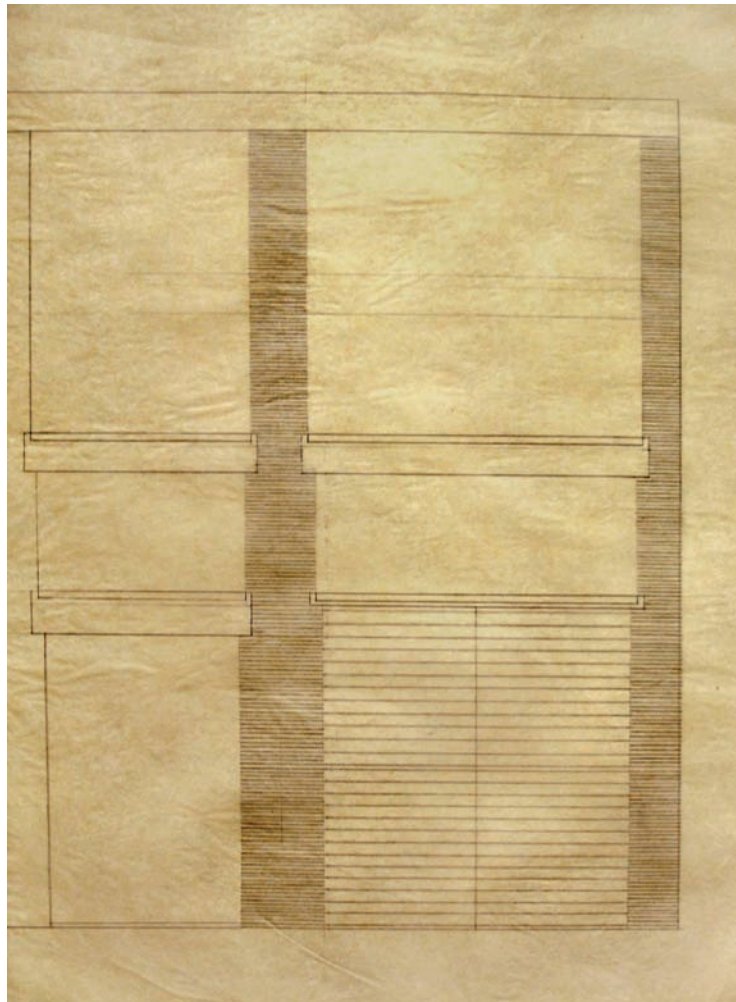
Fig. 6.42
Wall Construction
Tower
Fall 1968
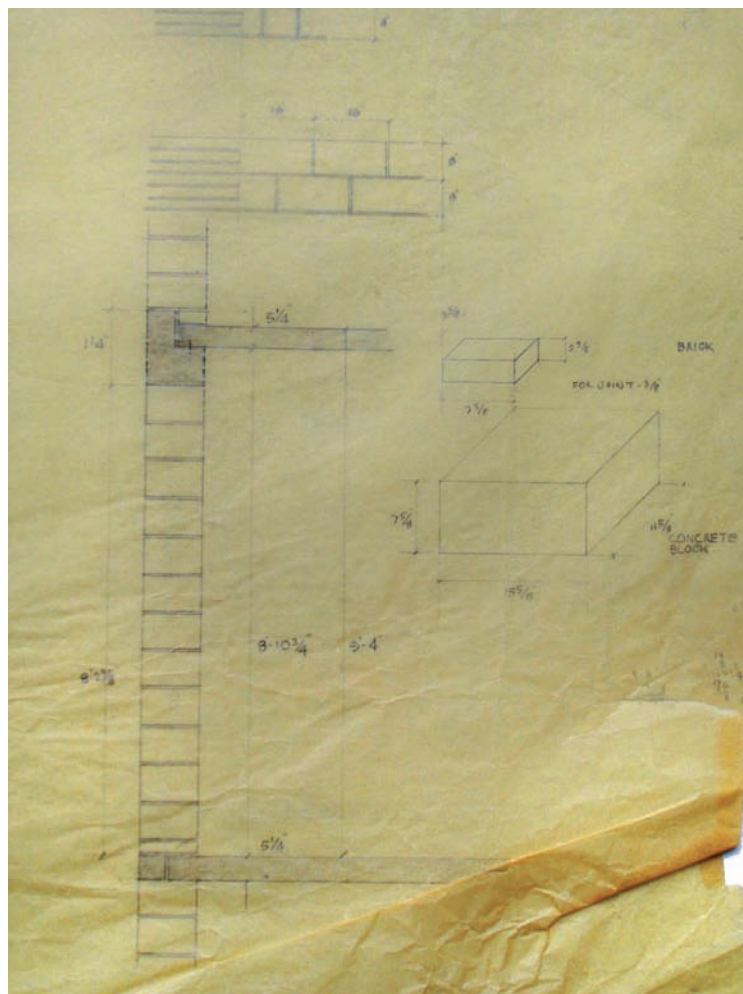
Fig. 6.43
Wall Construction
Core
Fall 1968
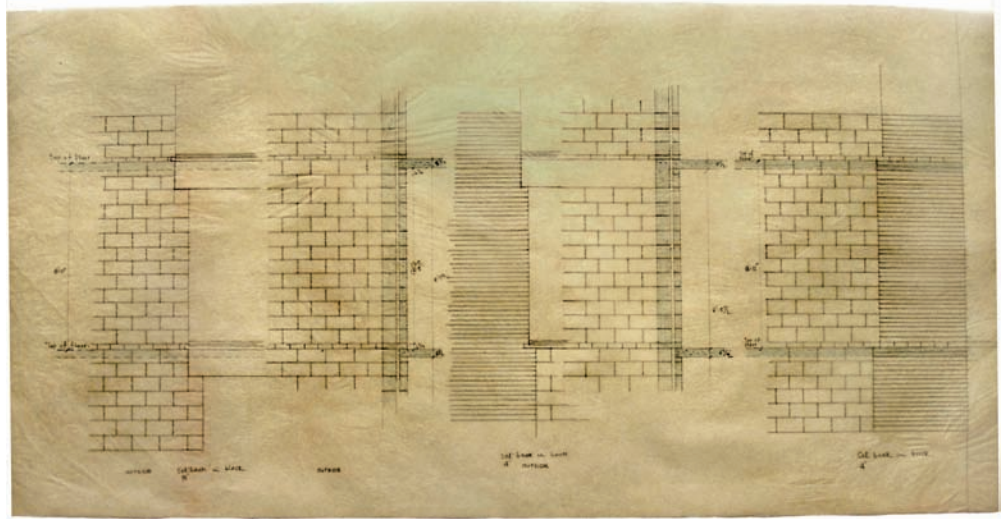
Fig. 6.44
Wall Construction
Core
Fall 1968
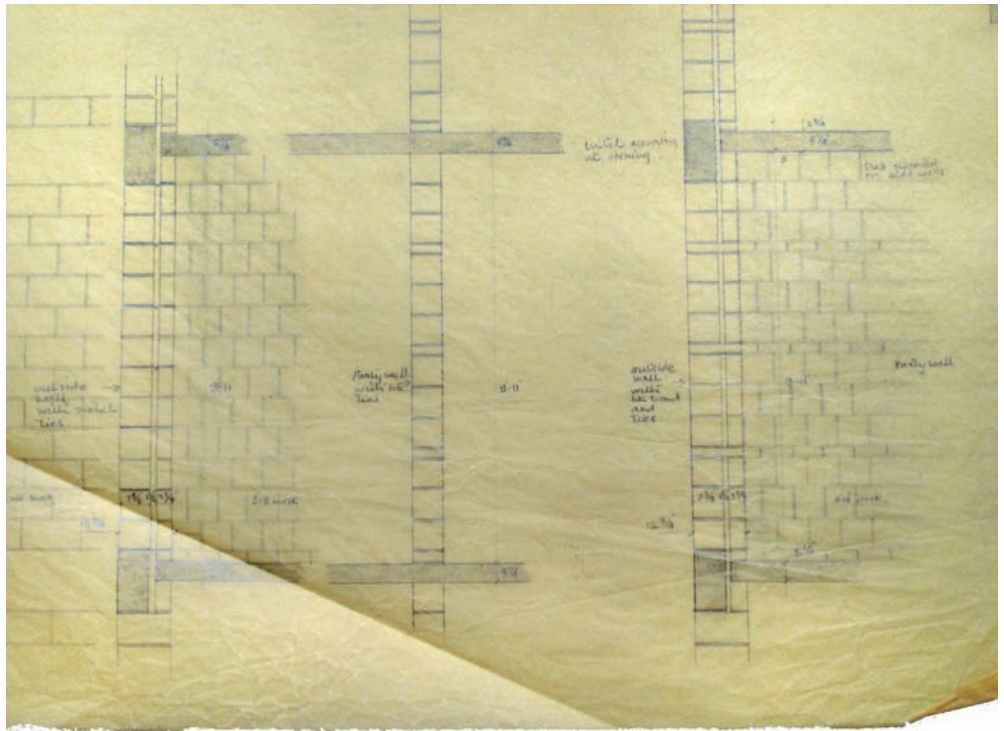
Fig. 6.45
Wall Construction
Core
Fall 1968
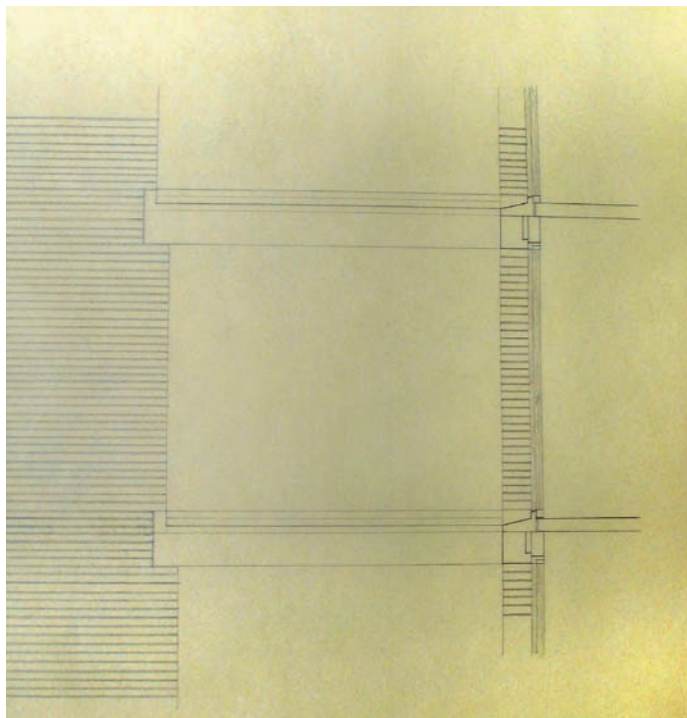
Fig. 6.46
West Elevation
August 1967
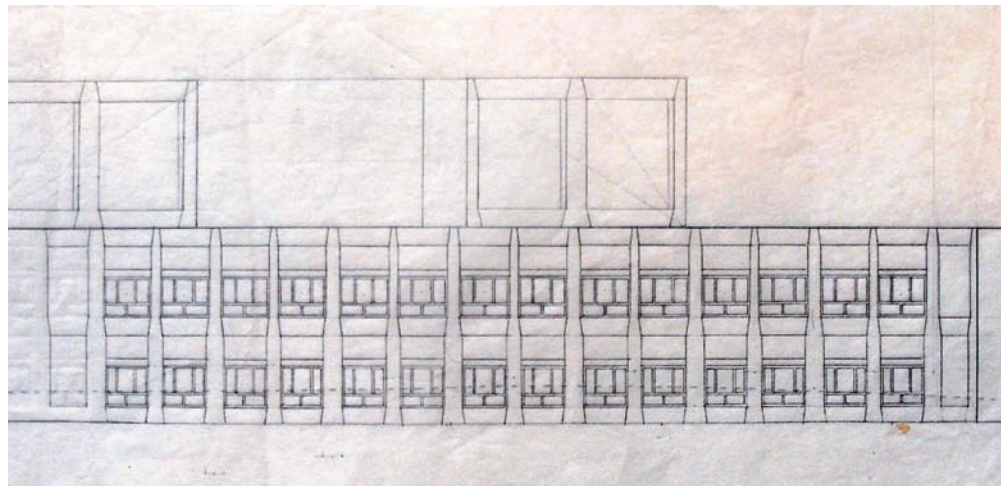
Fig. 6.47
South Elevation
1967-68
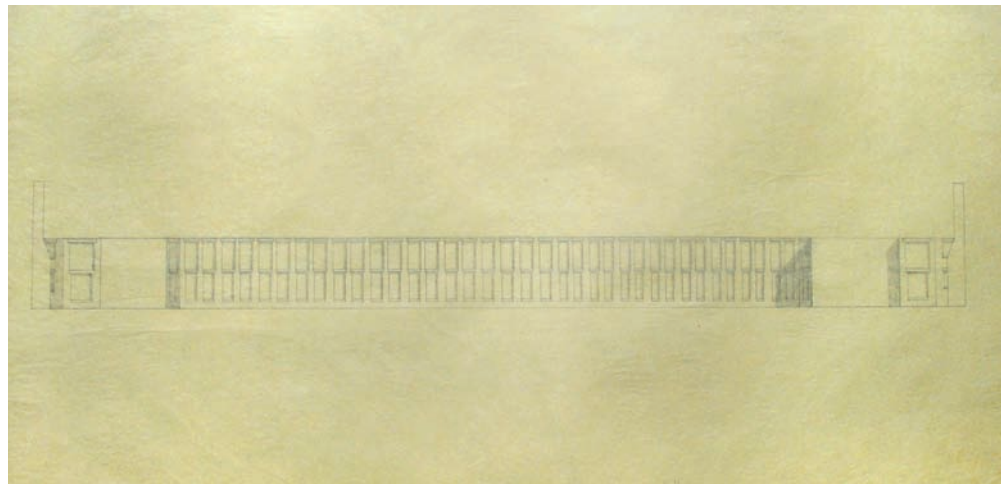
Fig. 6.48
South Elevation
1968
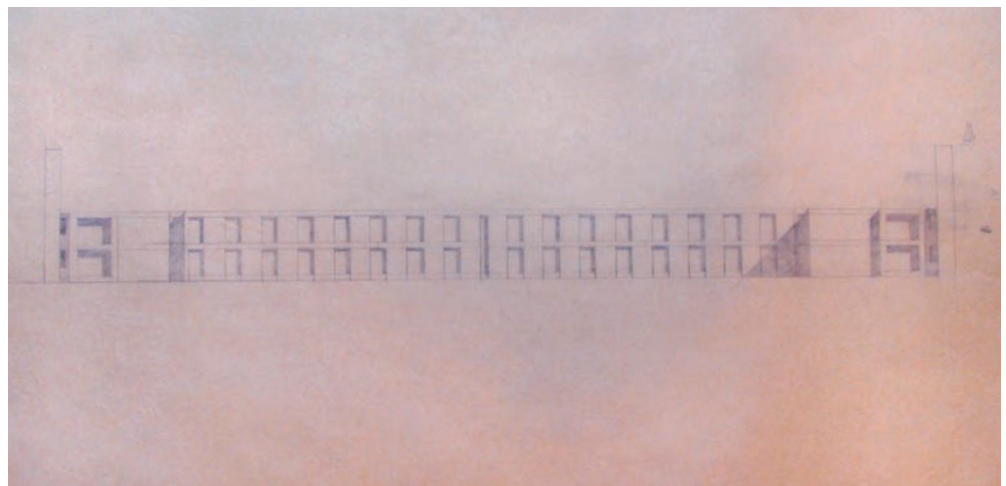
Fig. 6.49
South Elevation
August 1968
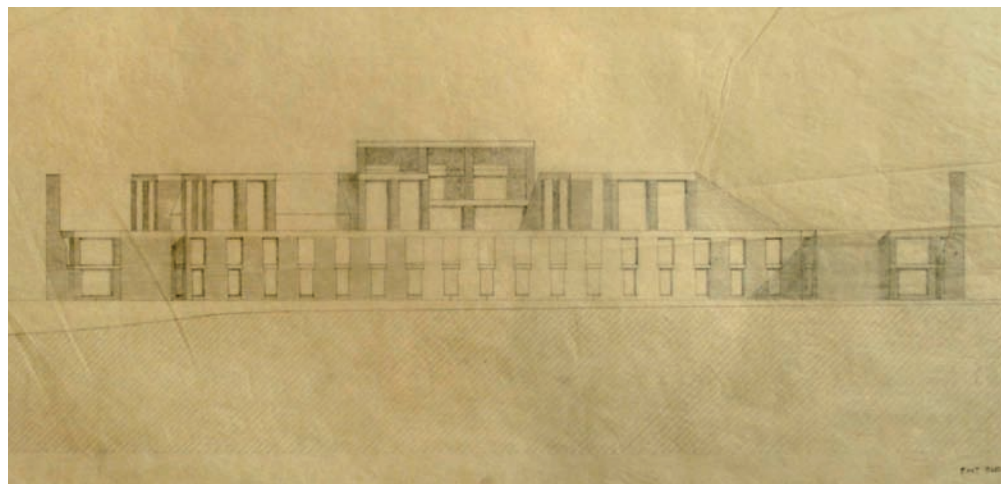
Fig. 6.50
Cell Elevation Study
1967-68
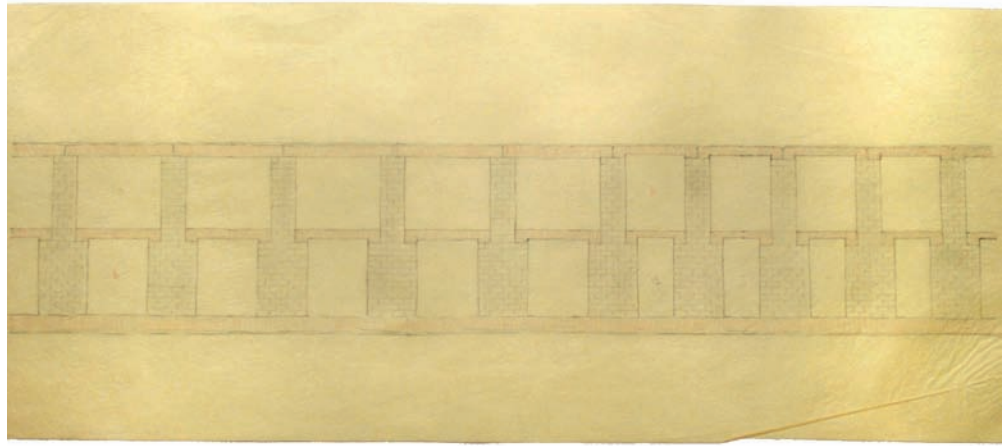
Fig. 6.51
Cell Elevation Study
1968
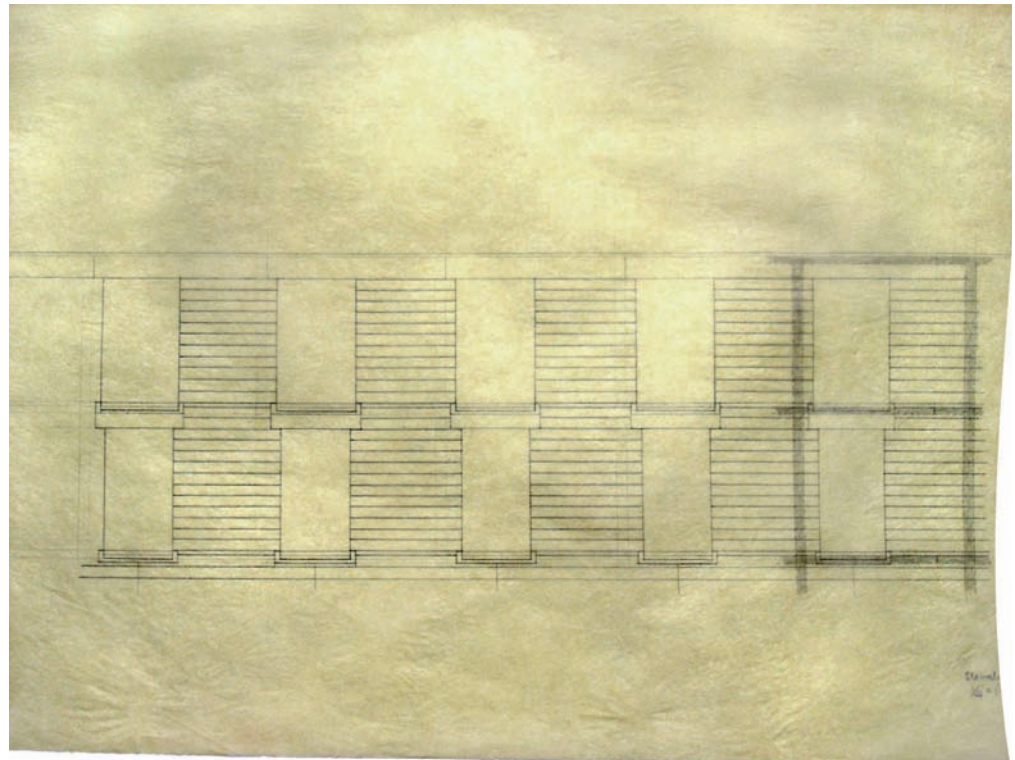
Fig. 6.52
Cell Elevation Study
1968
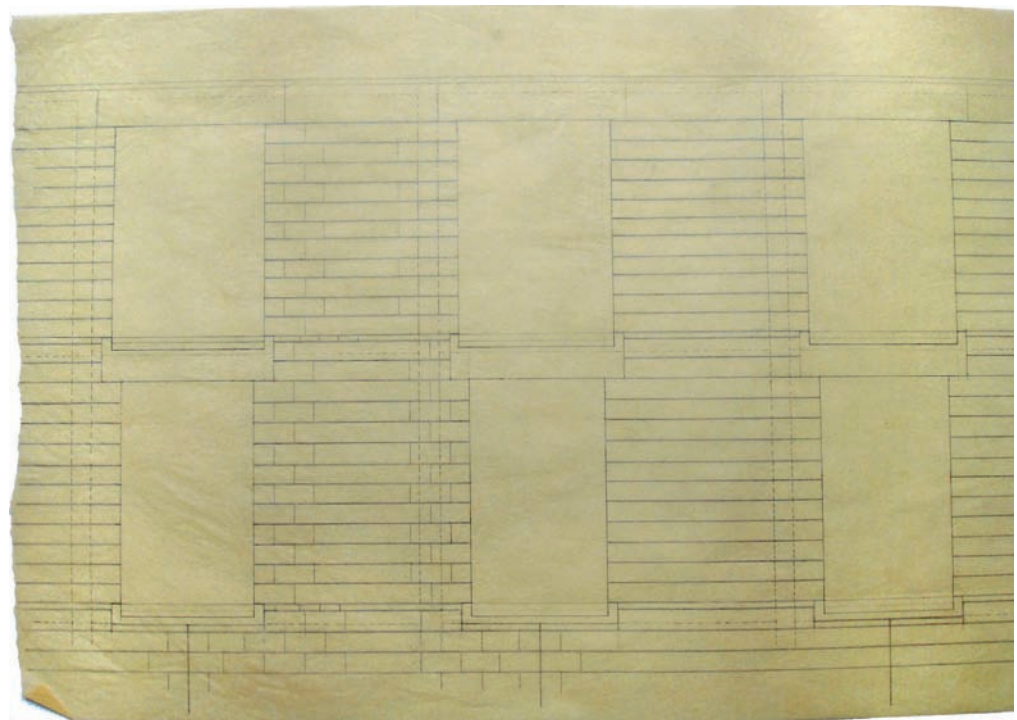
Fig. 6.53
Diagram:
Additive/Subtractive,
Plastic/Tectonic
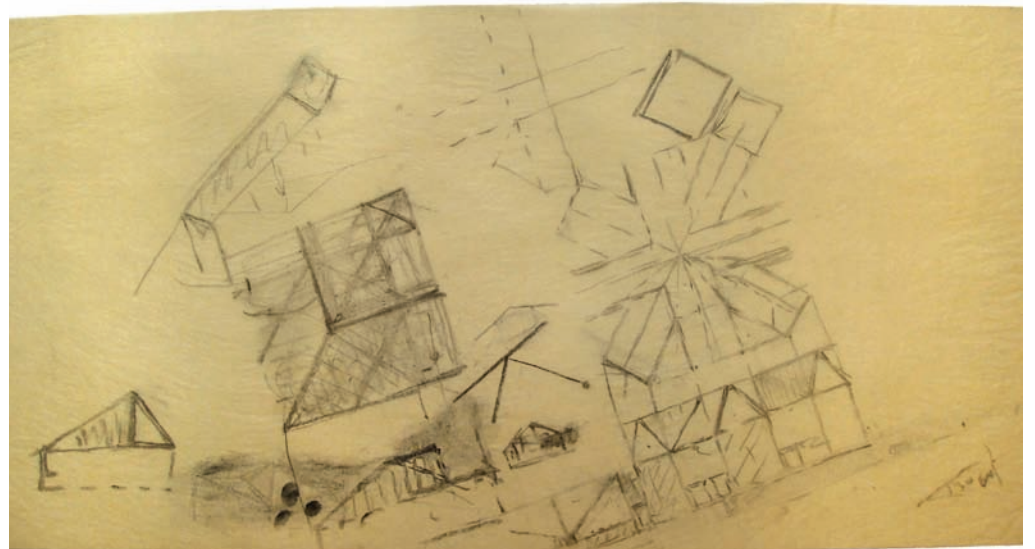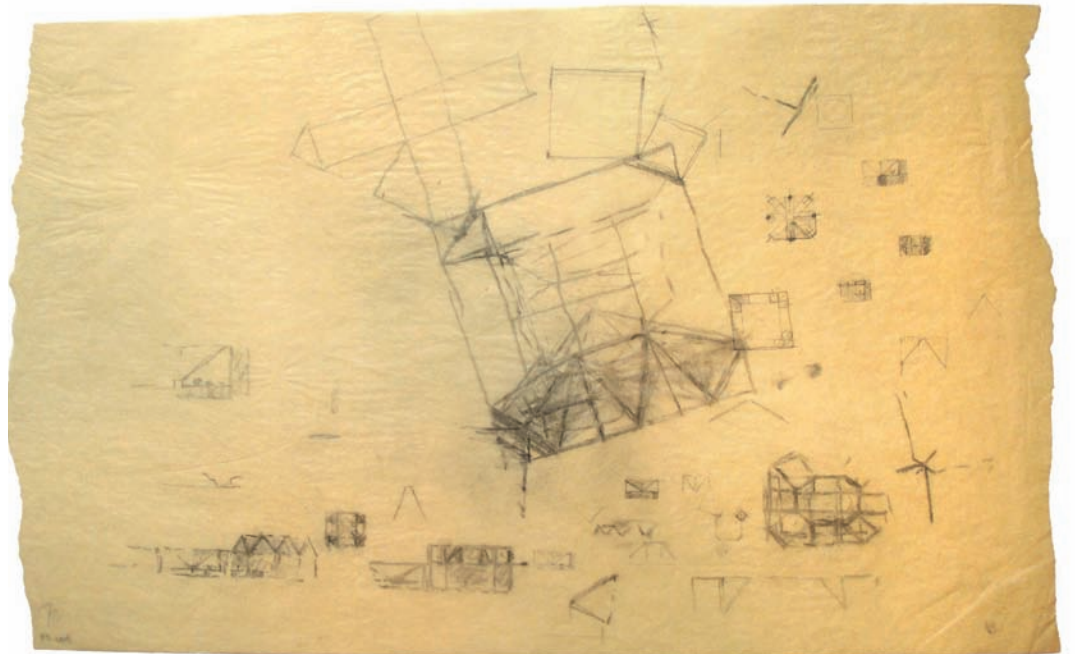
Fig. 6.54
LIK: Sketches
for Chapel
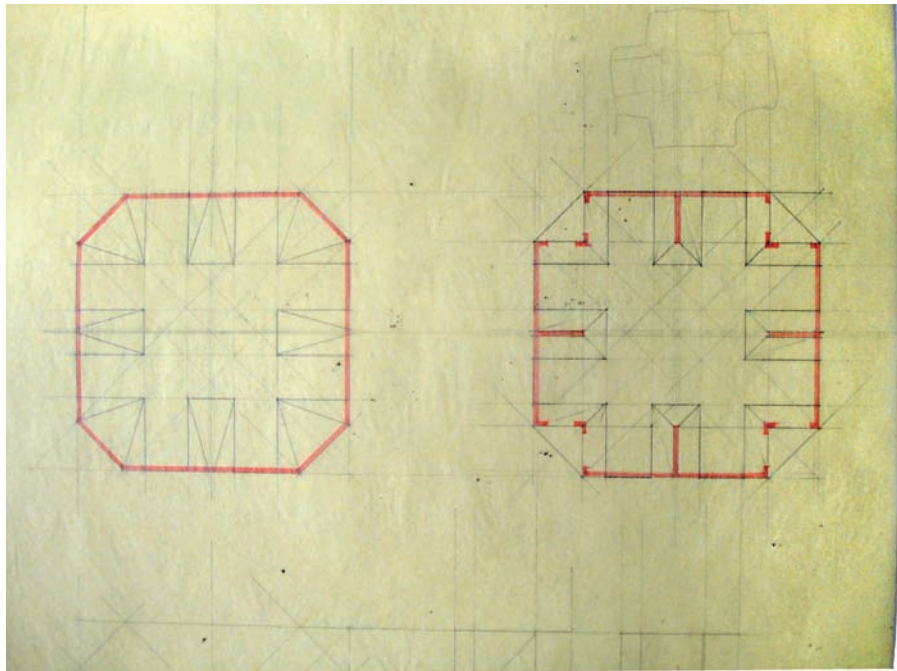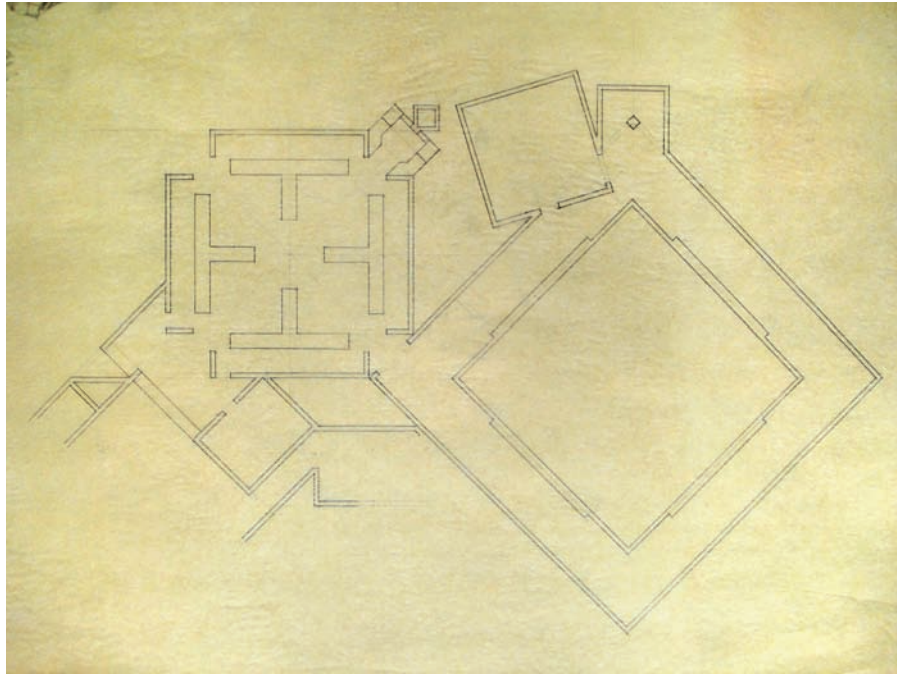
Fig. 6.55
Core Spaces:
Articulation Studies
Spring/Summer
1968
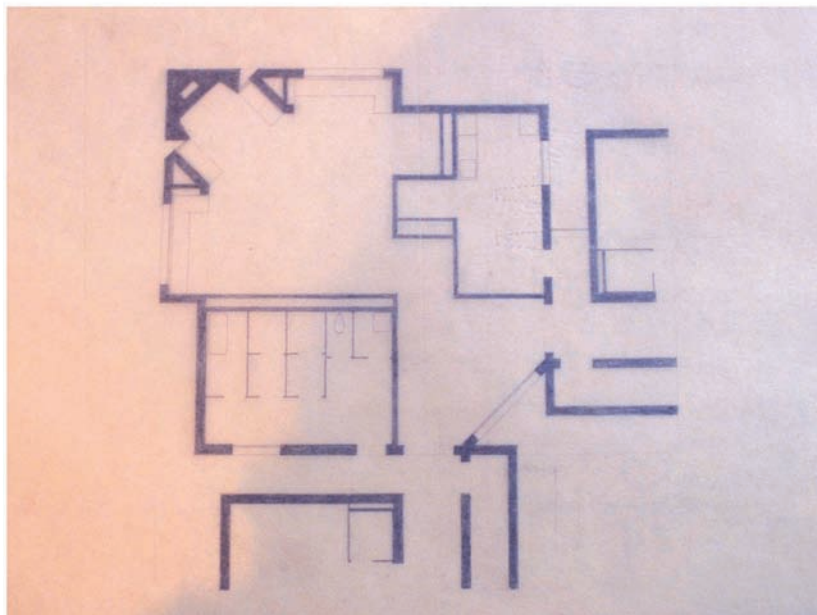
Fig. 6.56
Study: Refectory,
Roof + Structure
1968
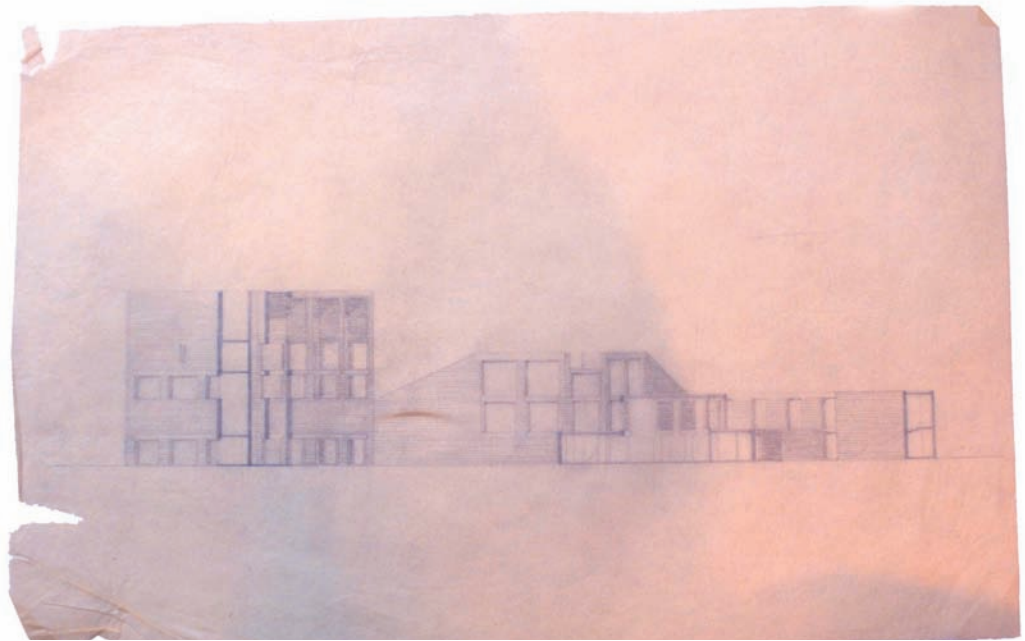
Fig. 6.57
Section Study
1968
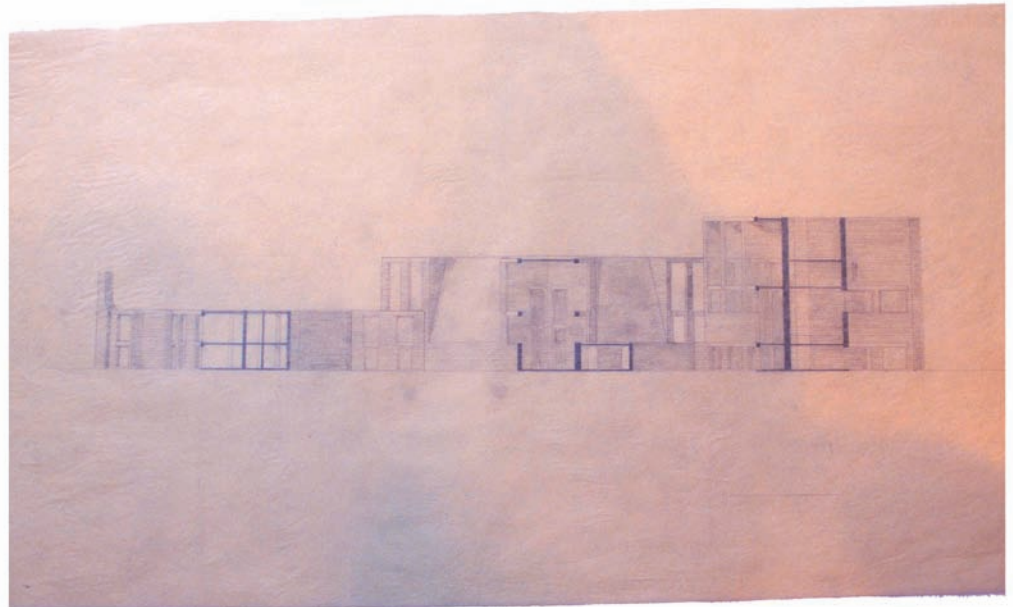
Fig. 6.58
Section Study
1968
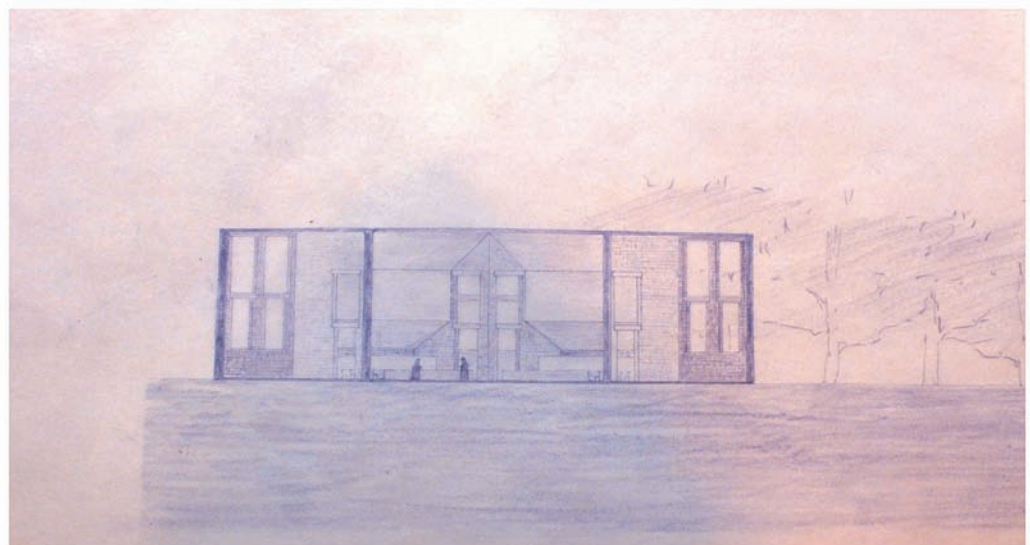
Fig. 6.59
Section Study
Chapel 1968
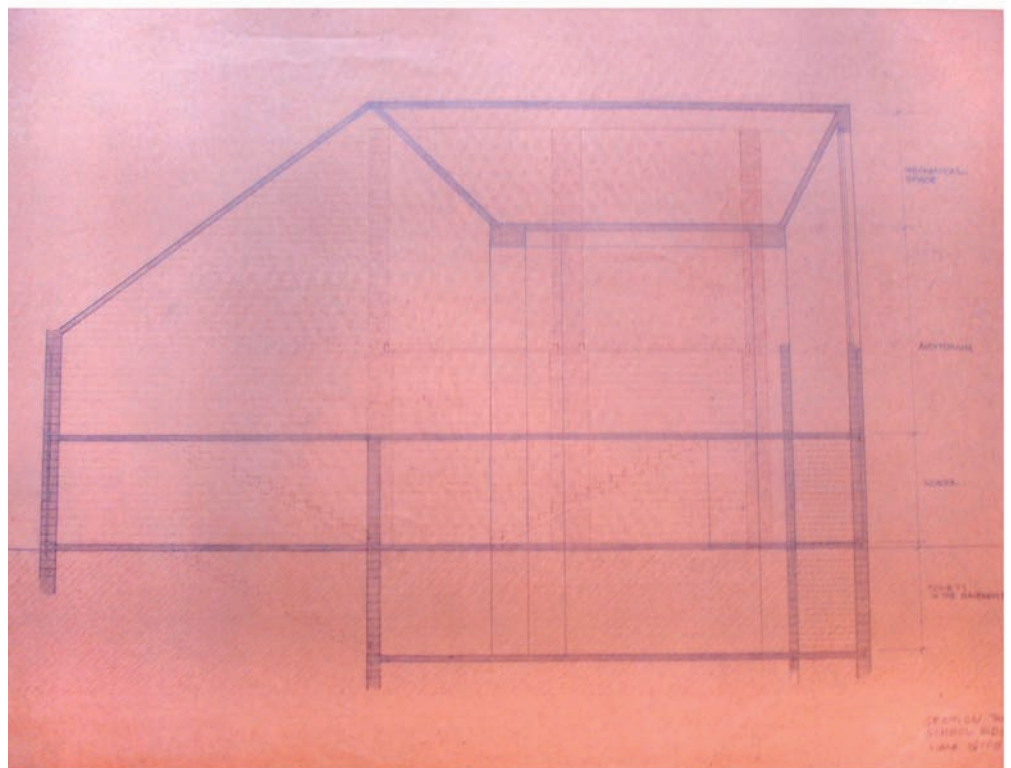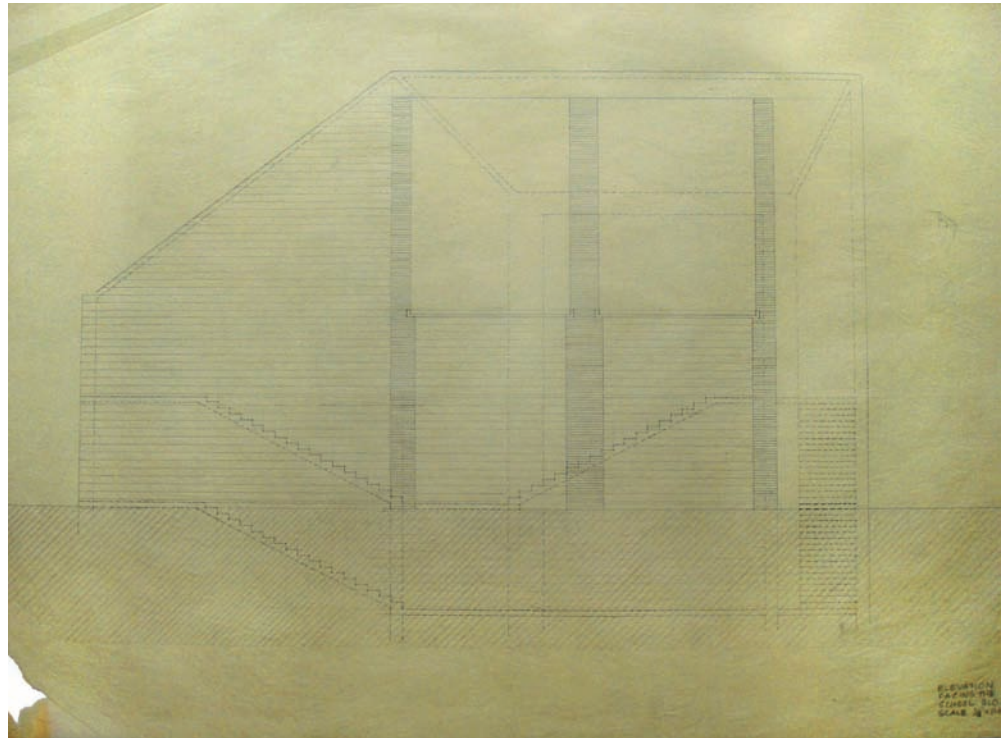
Fig. 6.60
School/Auditorium:
Elevation + Section
Summer/Fall 1968

Chapter 7. Excursus: Themes and Variations on a Monastery
The Project for the Saint Andrew´s Priory, Valyermo, California, 1961-1967

Figs. 7.1, 7.2
Architects´ Photos of
Site at Valyermo
Spring 1966

111

Fig. 7.3
LIK: **Parti** Sketches
Spring/Summer
1966
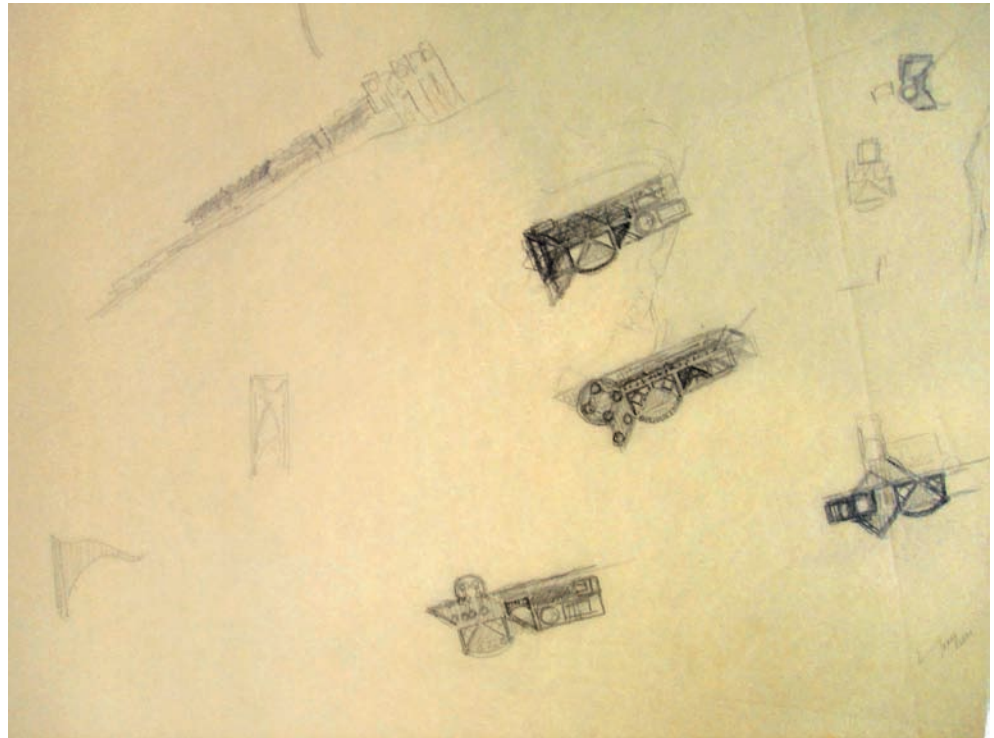
Fig. 7.4
Site Plan
First Scheme
Spring/Summer
1966

Fig. 7.5
Floor Plan
First Scheme
Spring/Summer
1966
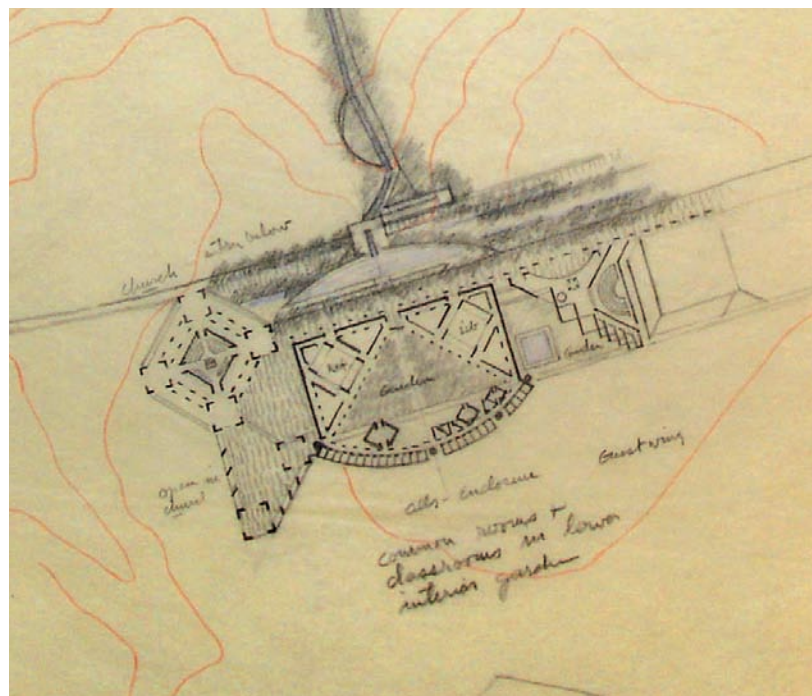
Fig. 7.6
Fragment
Final Scheme
Spring/Summer
1966

114
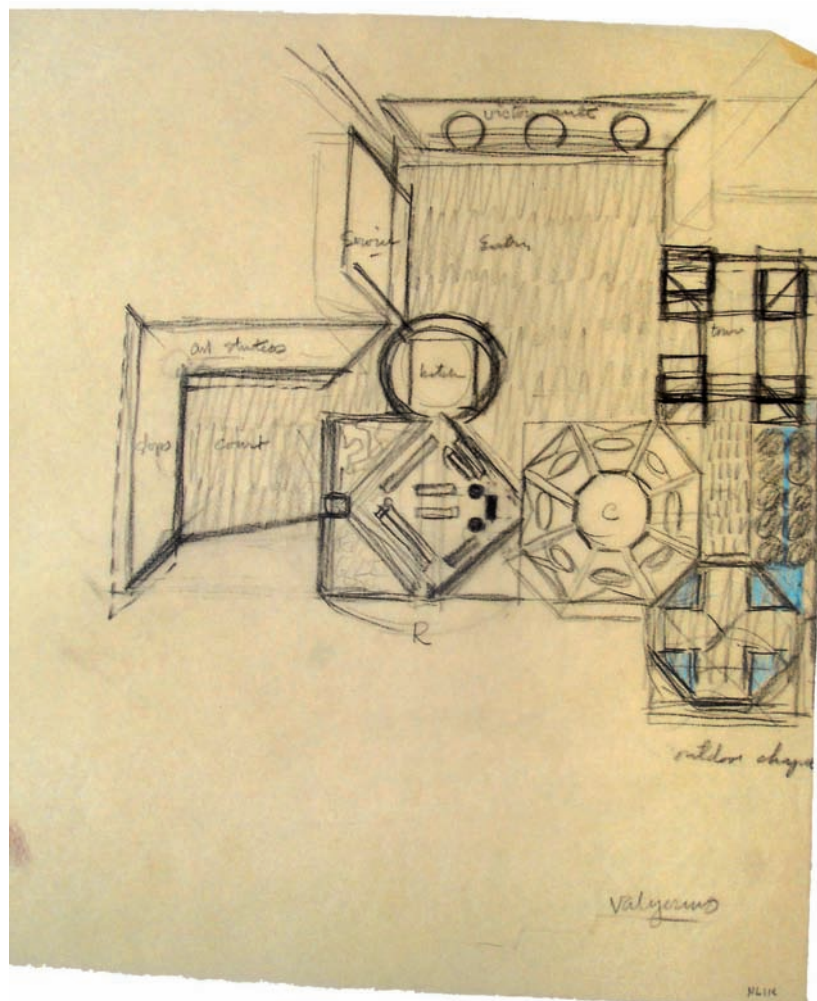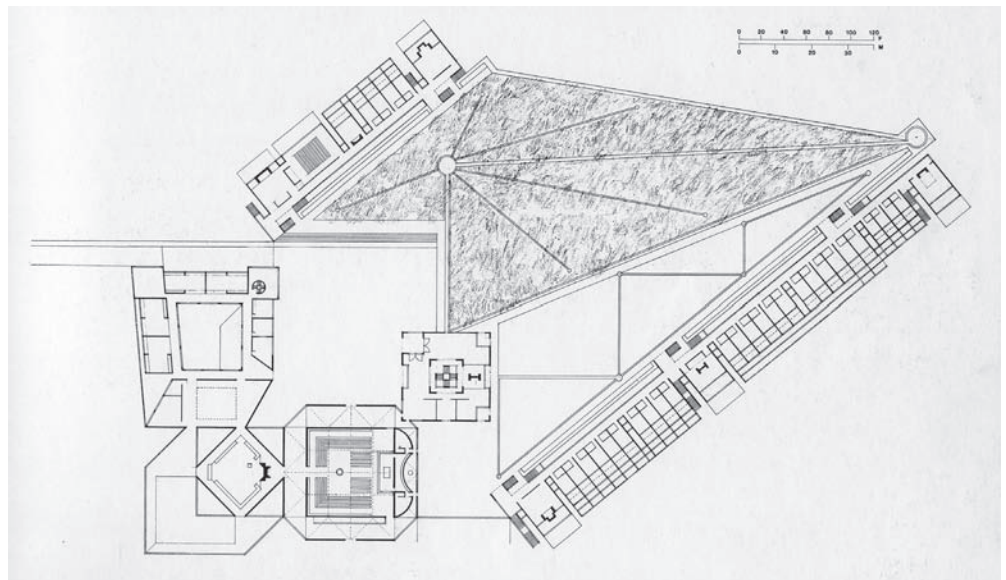
Fig. 7.9
Model
September 1966
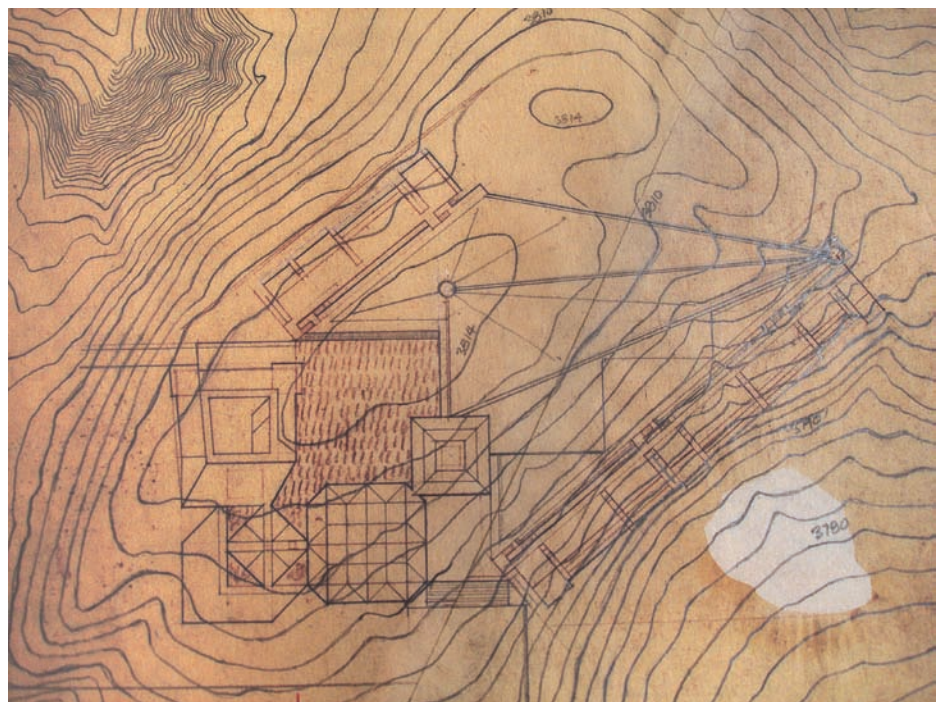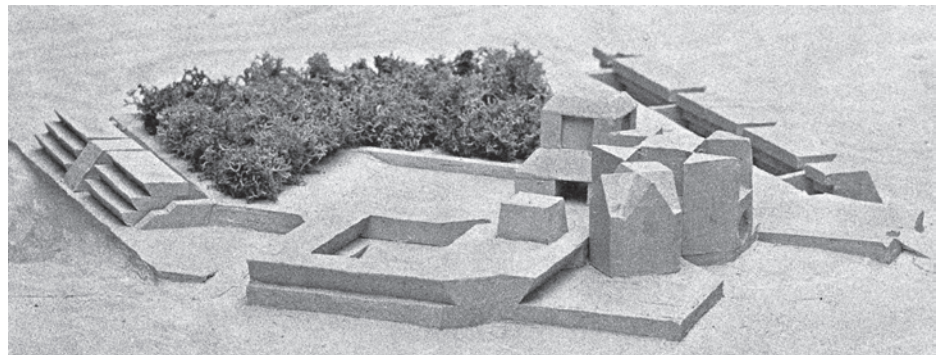
Fig. 7.10
Topographic Plan
September 1966
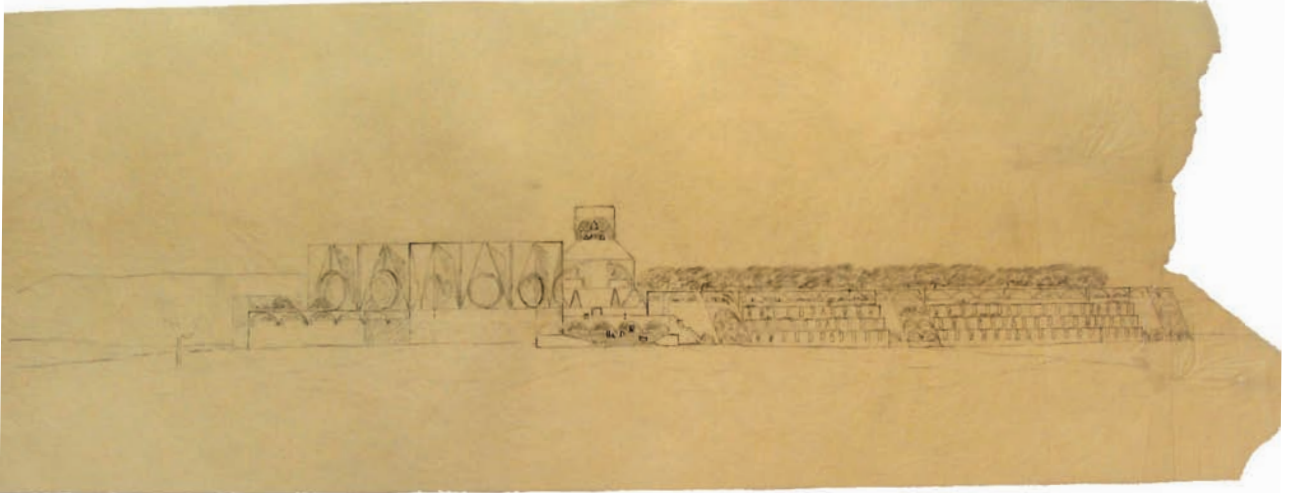
Fig. 7.11
South Elevation
(Kahn)
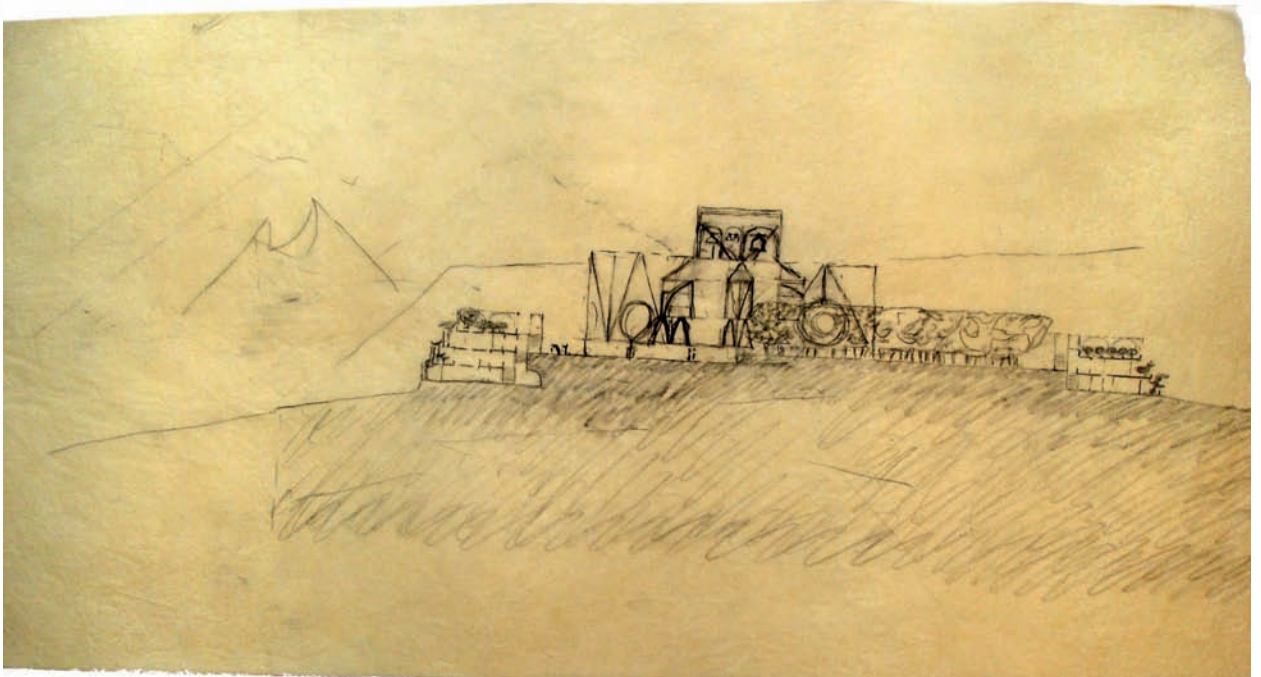
Fig. 7.12
Section Through
Grove and Cells
(Kahn)

Fig. 7.13
Section Through
Grove and Cells
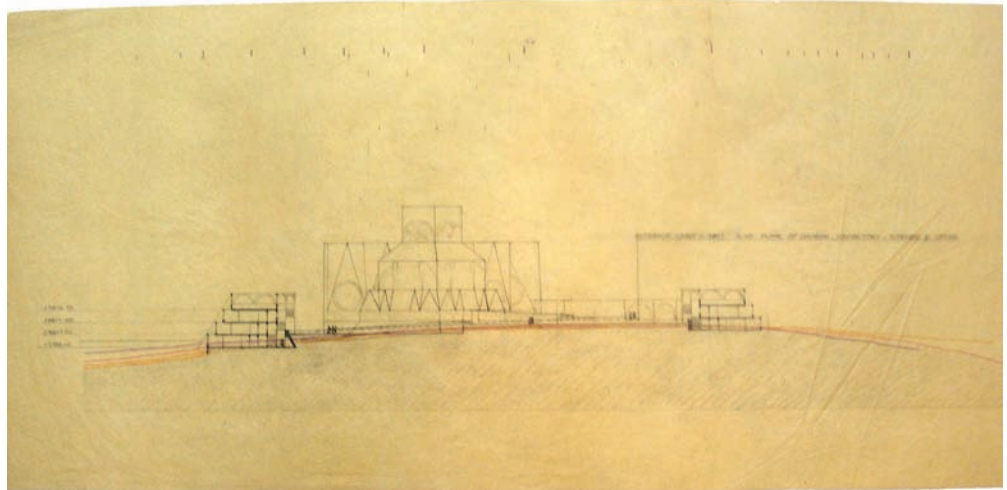
Fig. 7.14
Axonometric
of Tower
(Kahn)
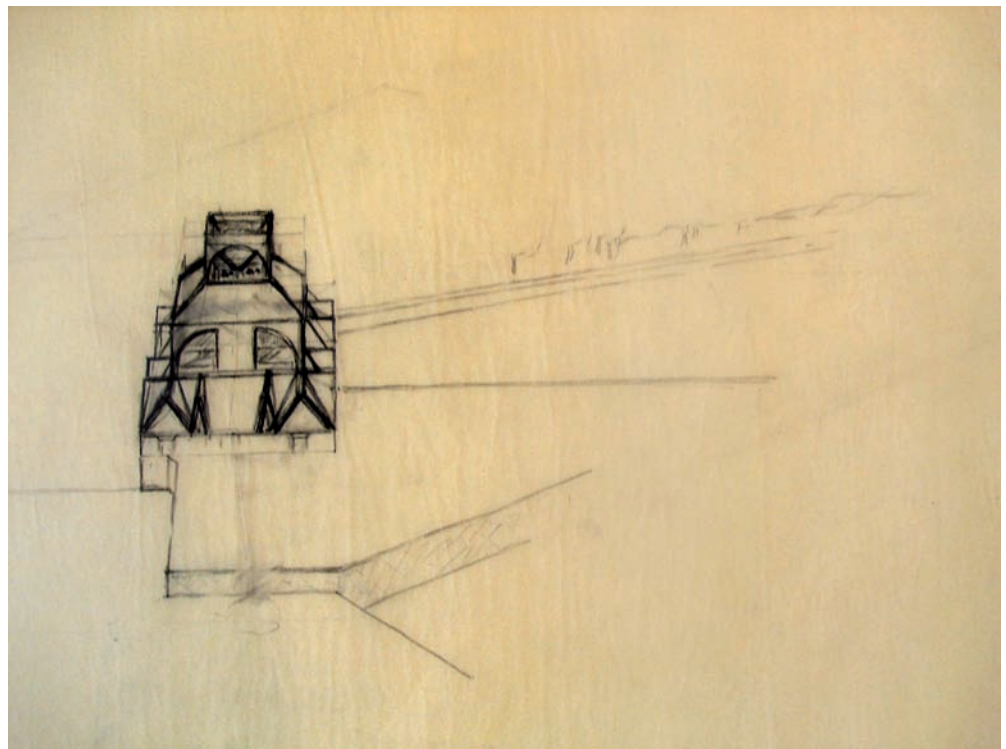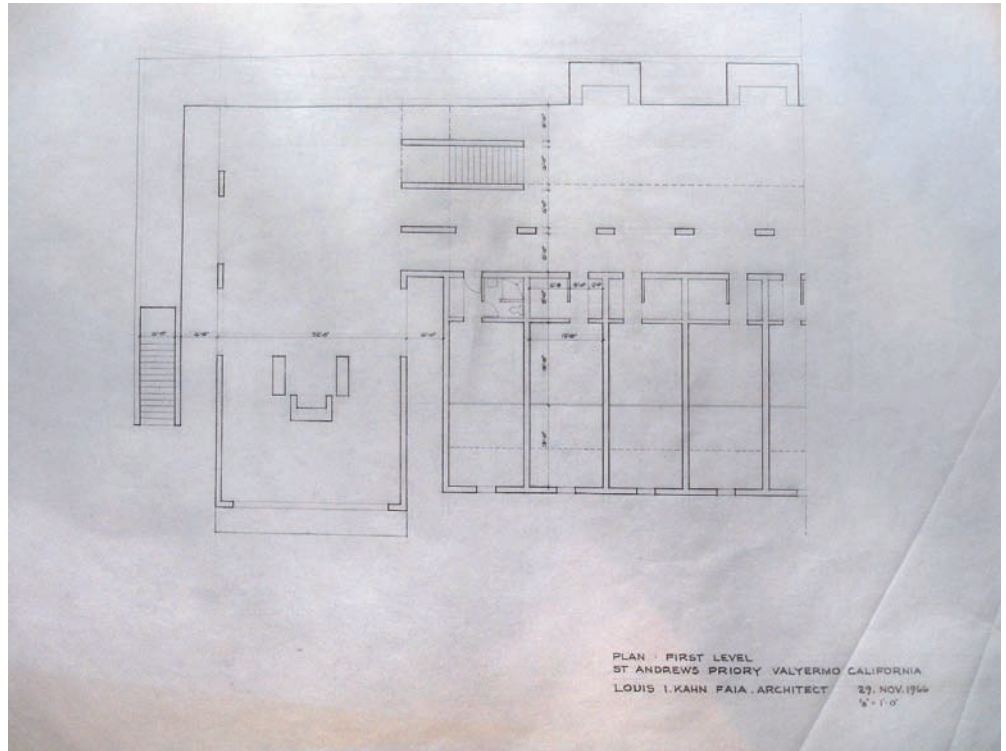
Fig. 7.15
Detail Plan: Cells
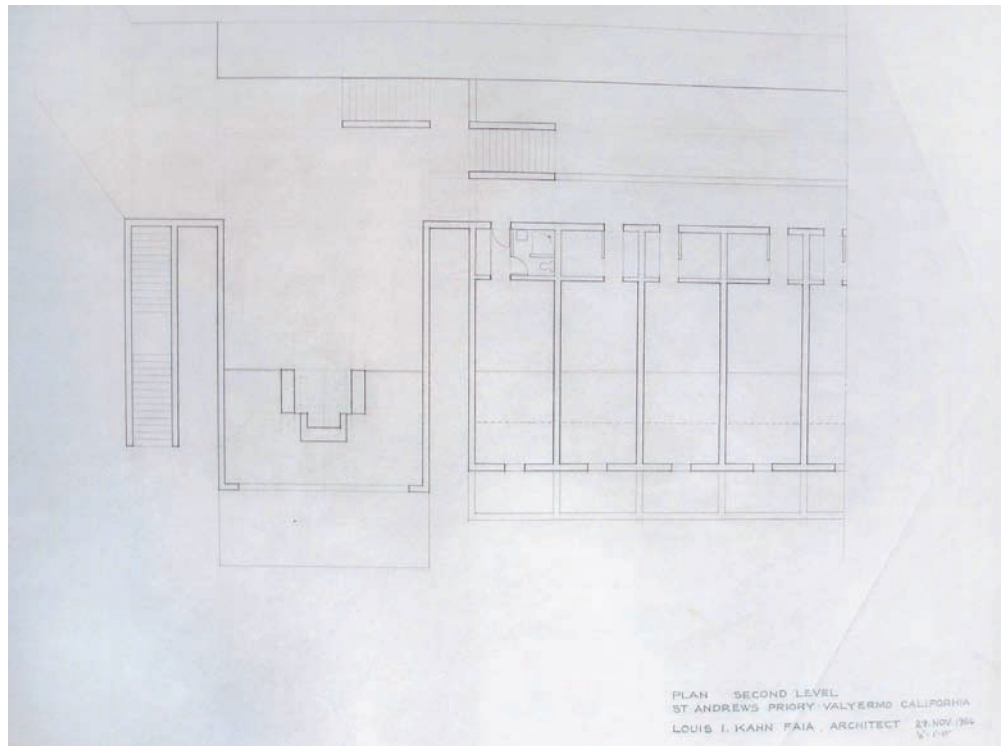
Fig. 7.16
Detail Plan: Cells

Fig. 7.17, 7.22
Diagram
„Architecture of
connection"
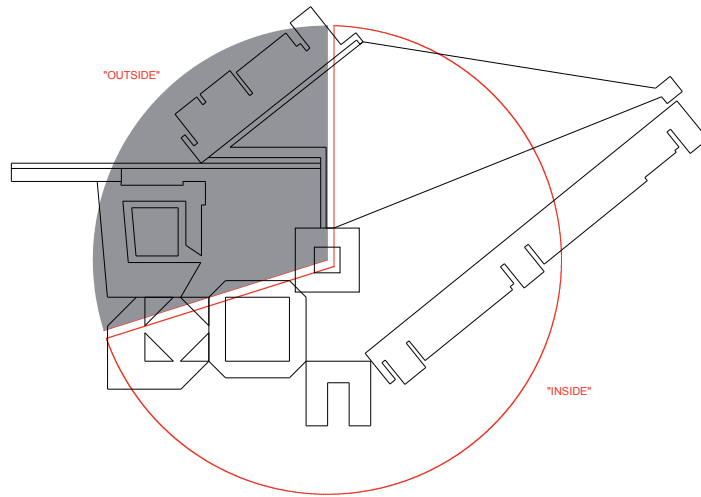
Fig. 7.18
Diagram
Elevation
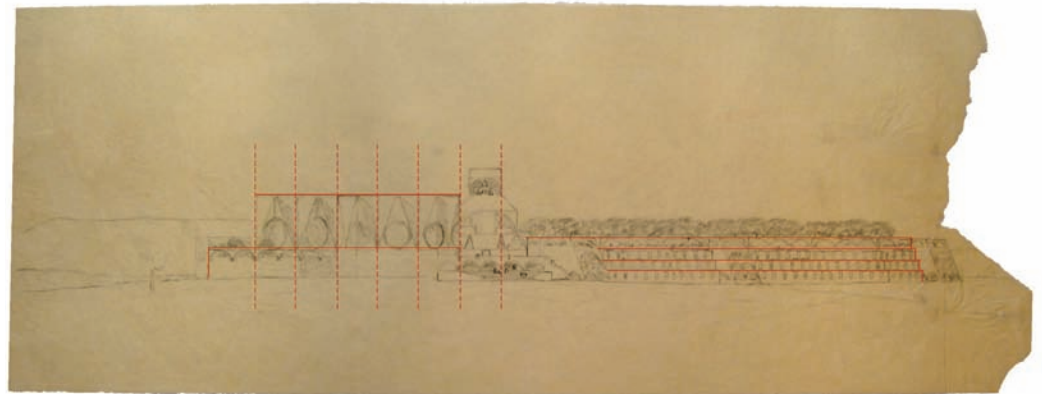
Fig. 7.19
Diagram
Plan/Inflection

119
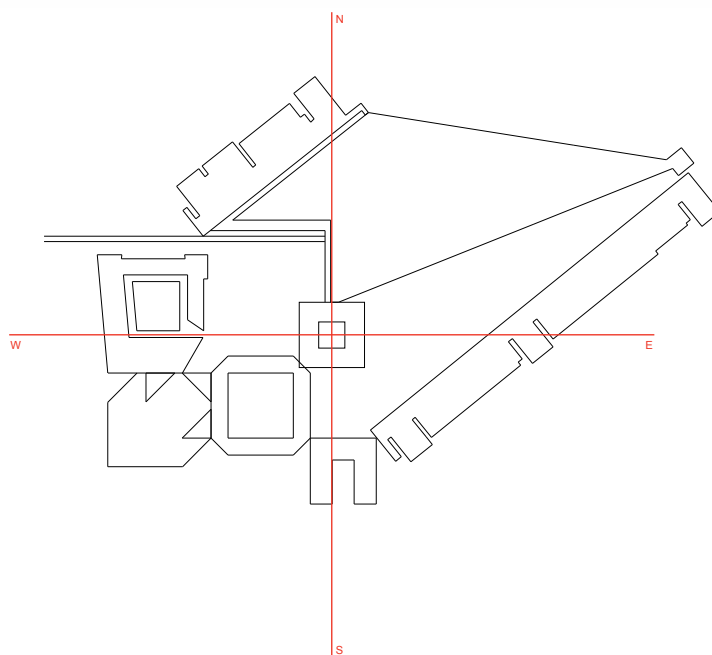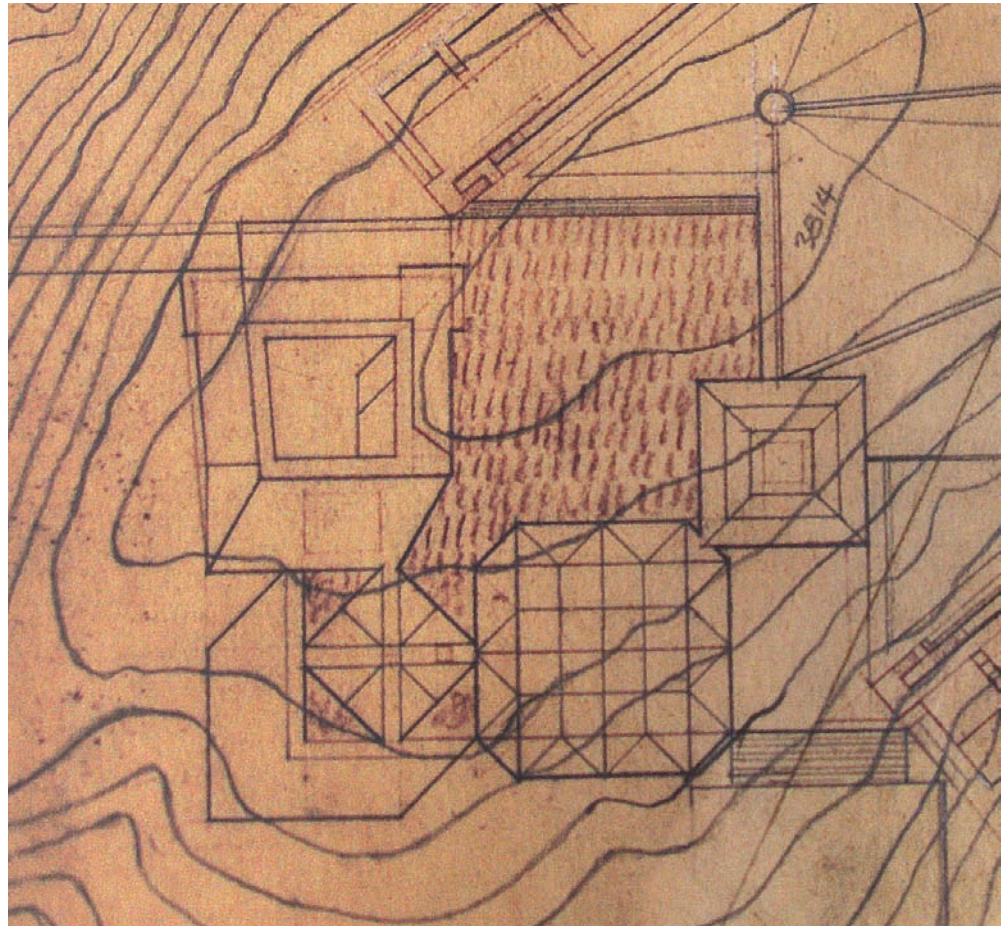
Fig. 7.20
Topography /
Geometry
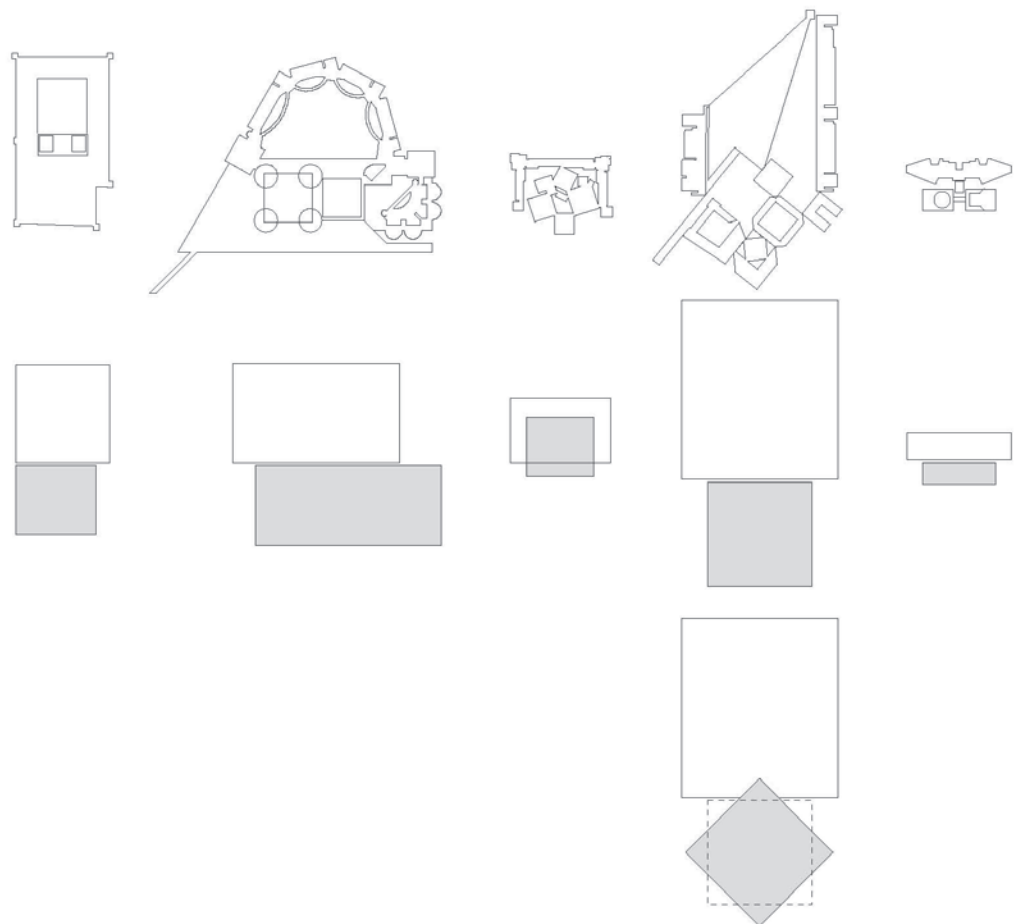
Fig. 7.21
Diagram

Fig. 7.23
Diagram
Enclosure
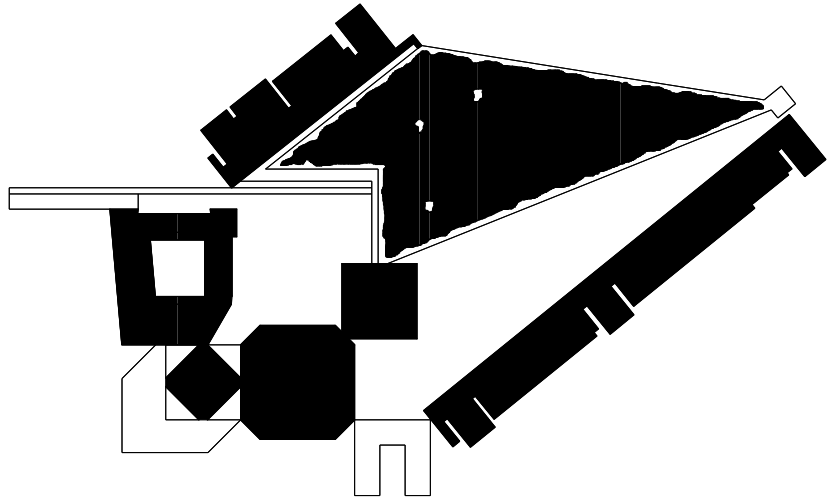
Fig. 7.24
Diagram
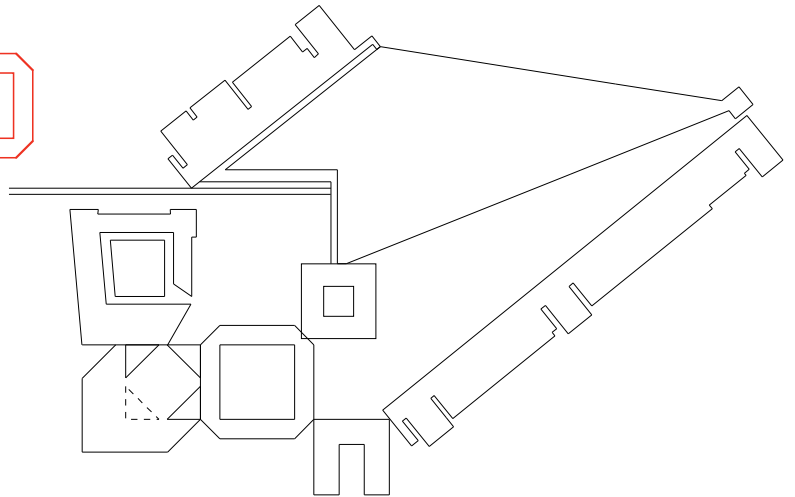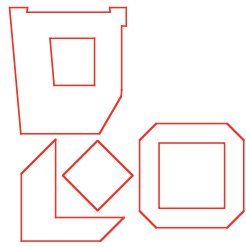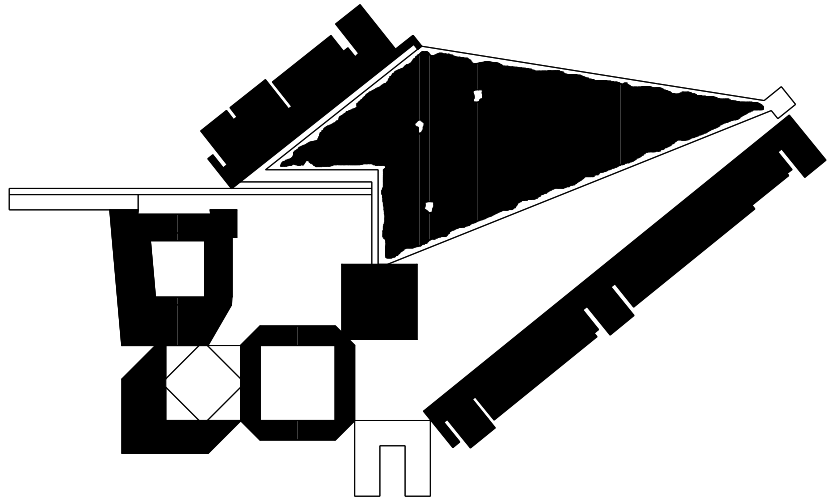
Fig. 7.25
Diagram
Readings
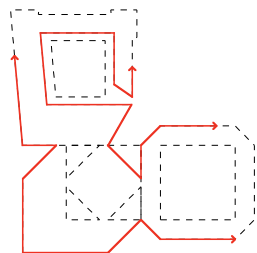
Chapter 9. Problems of Space I:
Configuration, Movement and Space:
From „Circulation" to „an Architecture of Connection"
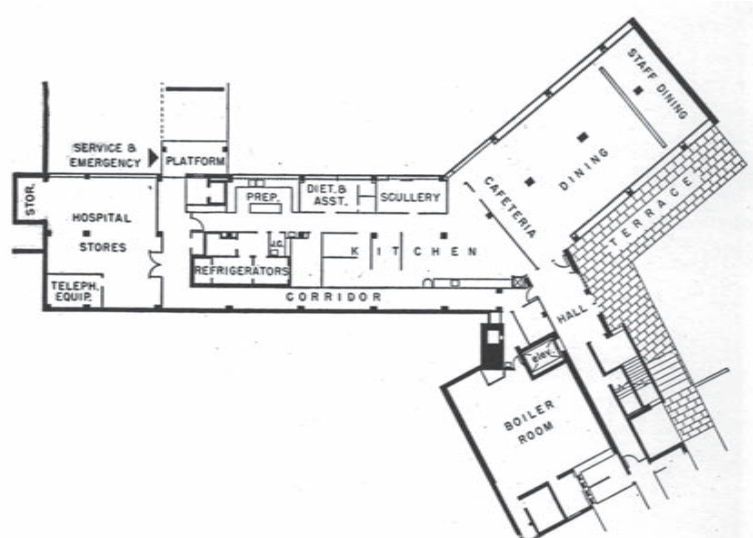
Fig. 9.1
Philadephia
Psychiatric Clinic
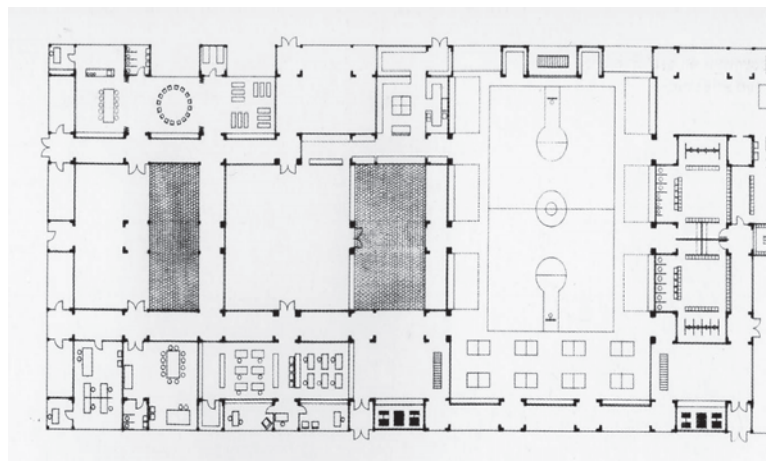
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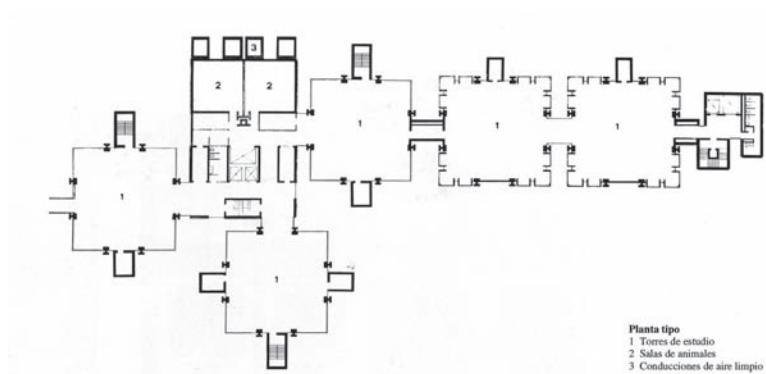
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2 Salas de animales
3 Conducciones de aire limpio
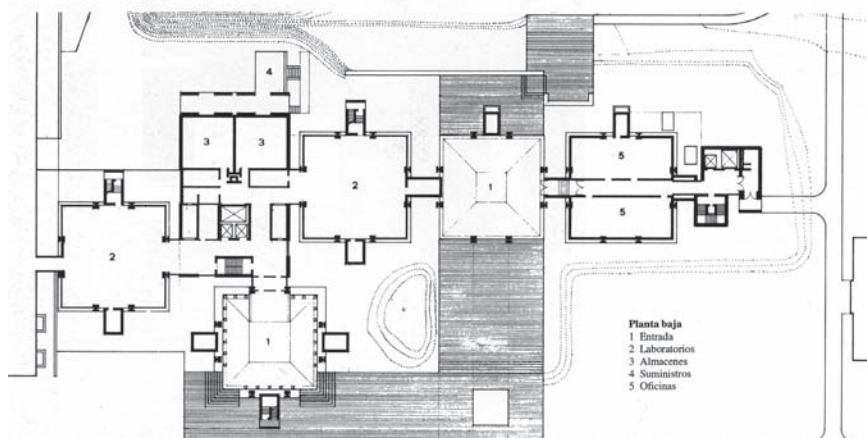
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1 Entrada
2 Laboratorios
3 Almacenes
4 Suministros
5 Oficinas

Fig. 9.3
Richards Medical
Research
Laboratories

Fig.9.4
Weiss House
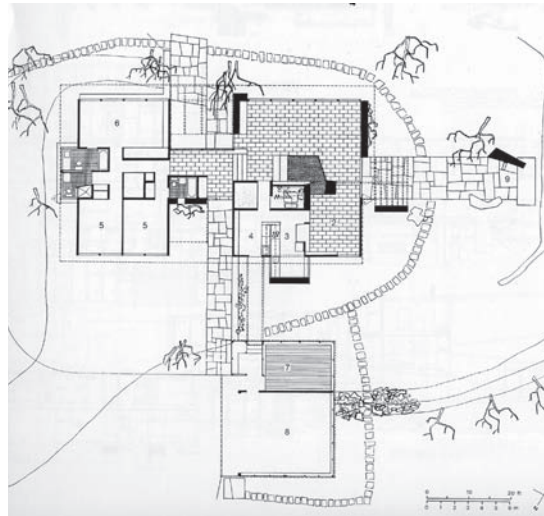
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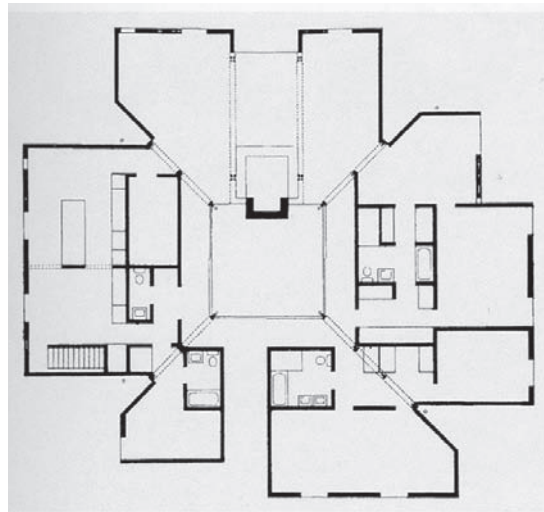
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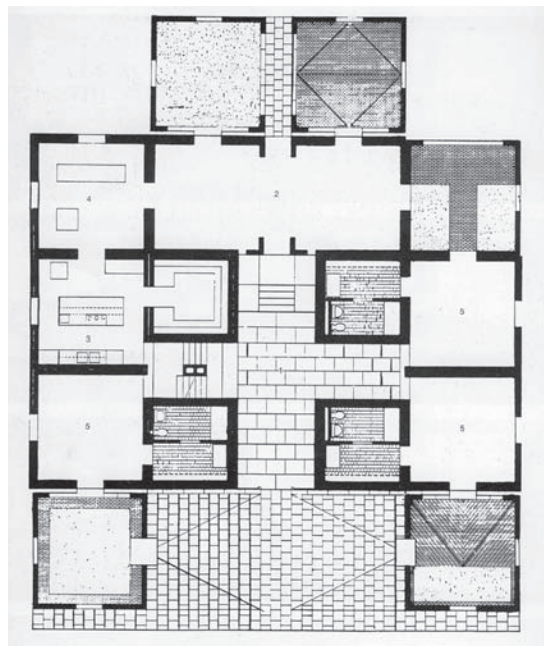
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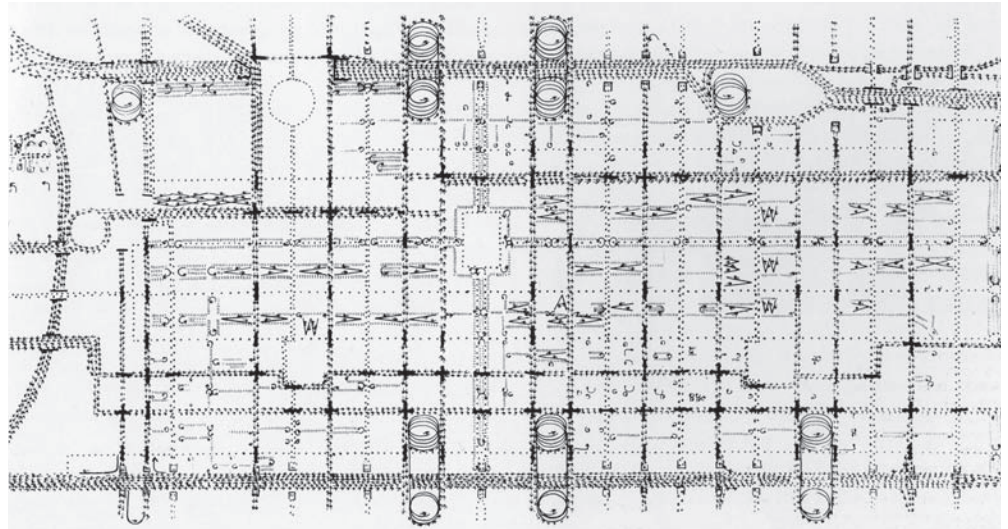
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Bicentennial
Exposition,
Philadelphia
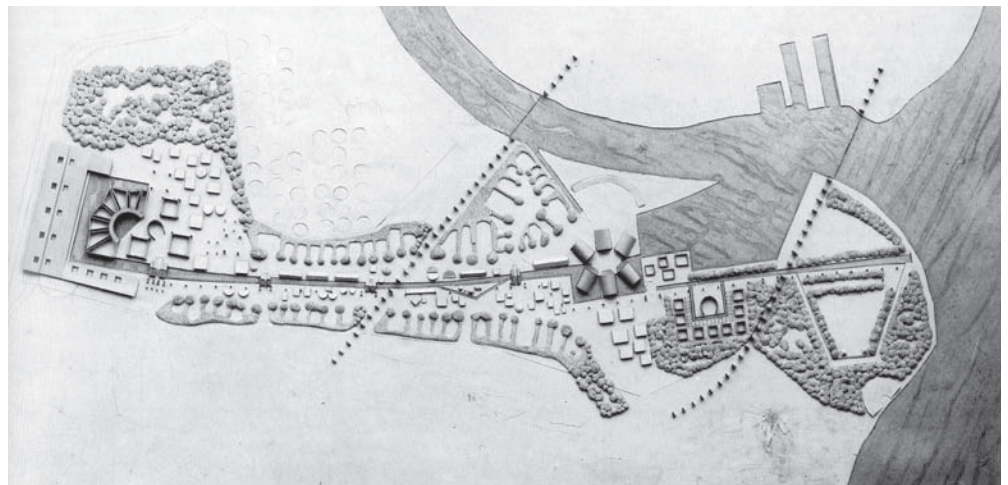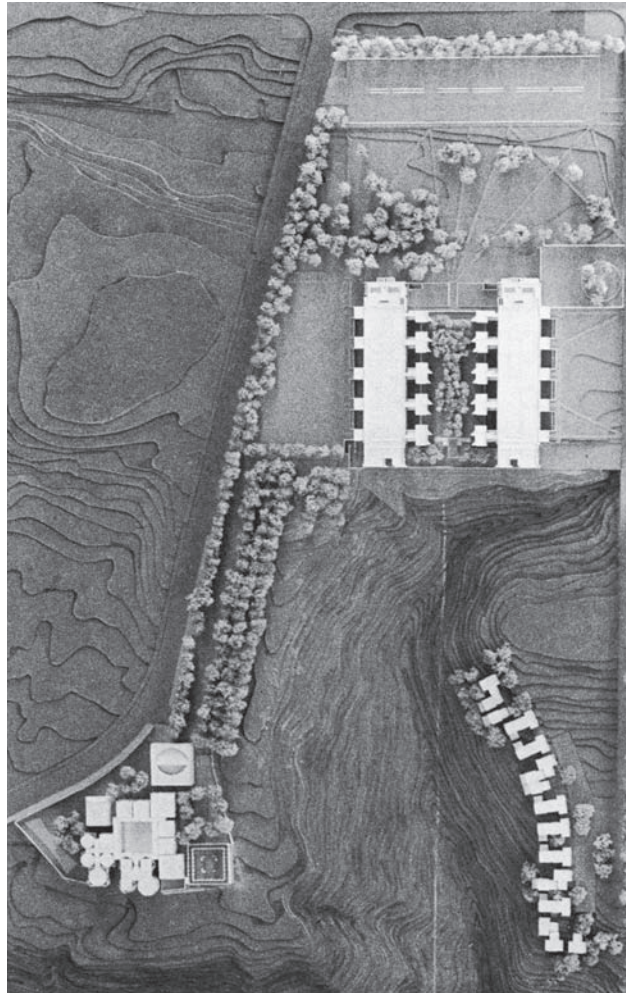
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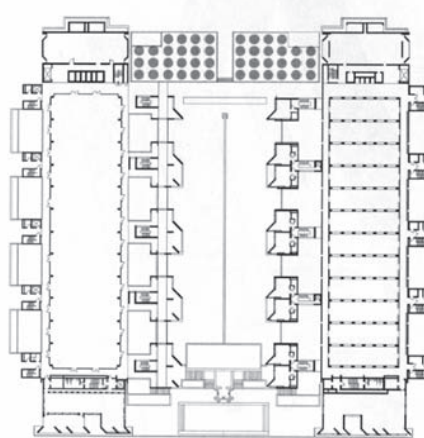
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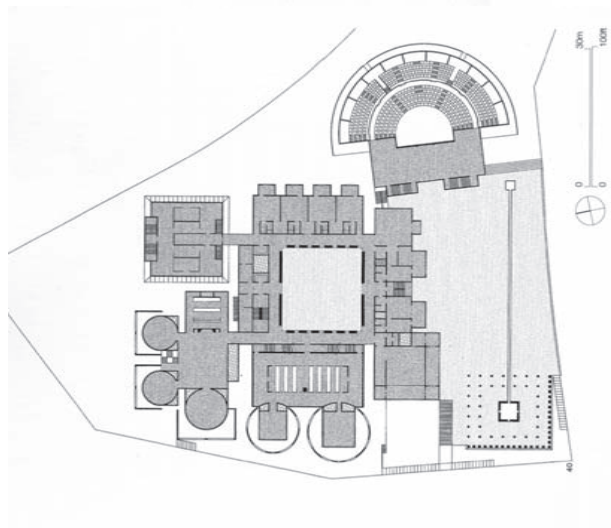
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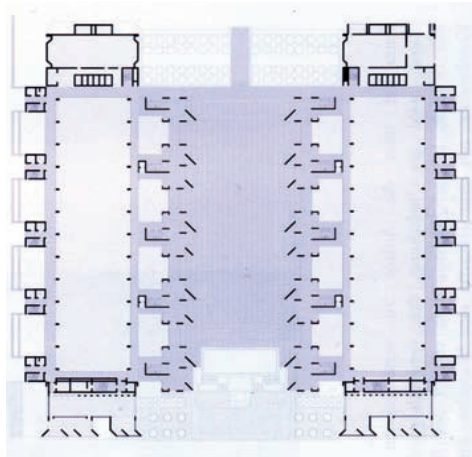
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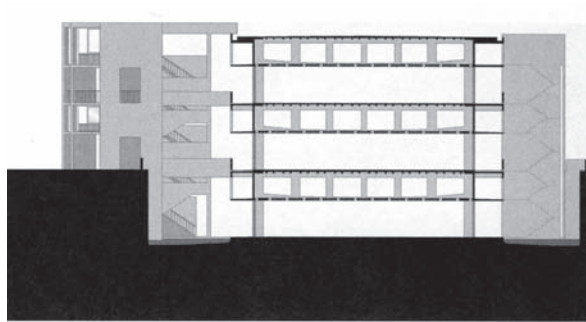
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Salk Institute

Fig. 9.14
Erdman Hall
Final Plan
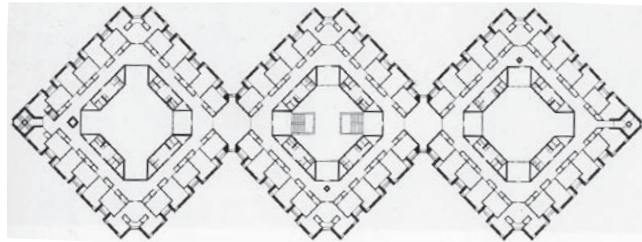
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Erdman Hall
„Bipolar"
Intermediate
Scheme
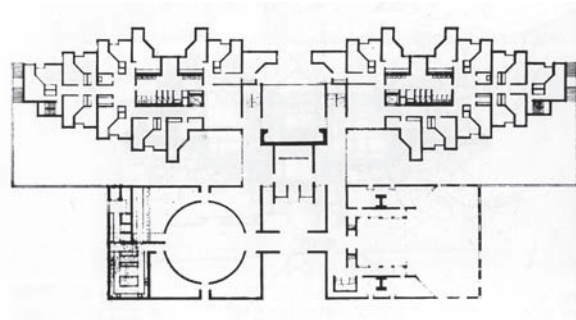
Fig. 9.16
Erdman Hall:
Connections
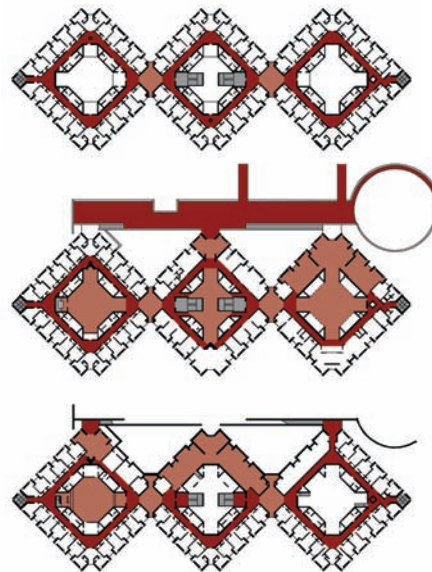
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Connections
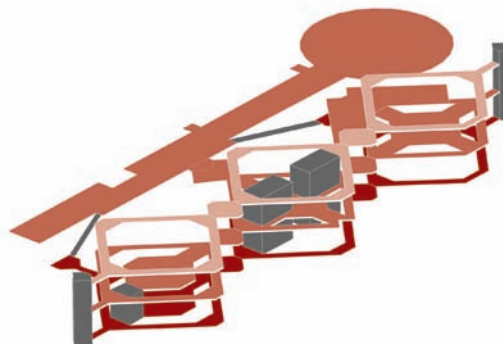
9.18
Dominican
Motherhouse
Architecture of
Connections
Scheme 1
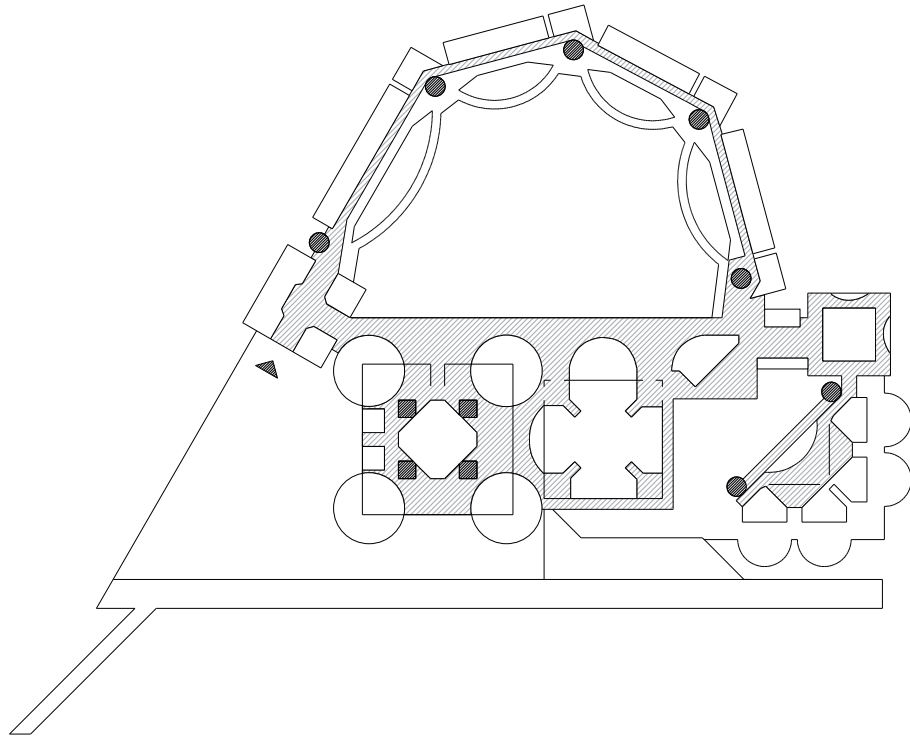
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Dominican
Motherhouse
Architecture of
Connections
Scheme 4
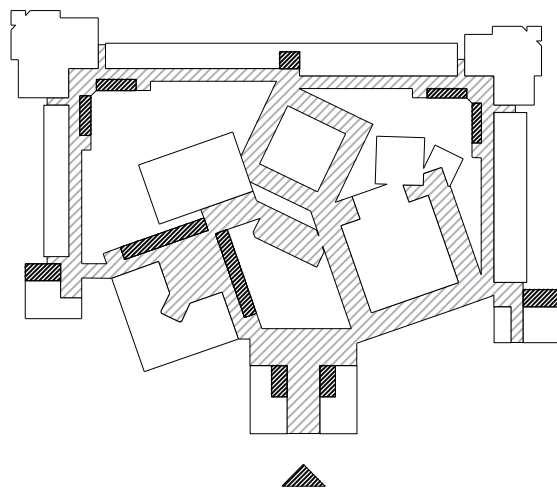
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Dominican
Motherhouse:
„Circulation"
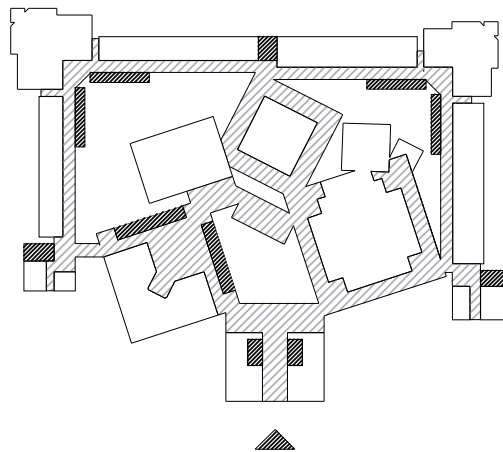
Fig. 9.21
Dominican
Motherhouse
as „Nolli Plan"

June 1966   August - September 1966   October - December 1966

May 1967   August 1967   April 1968   May 1968   July 1968   August 1968
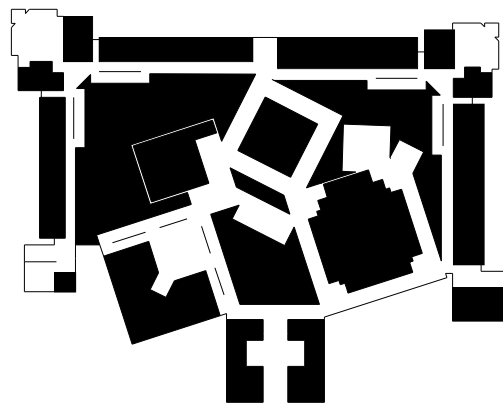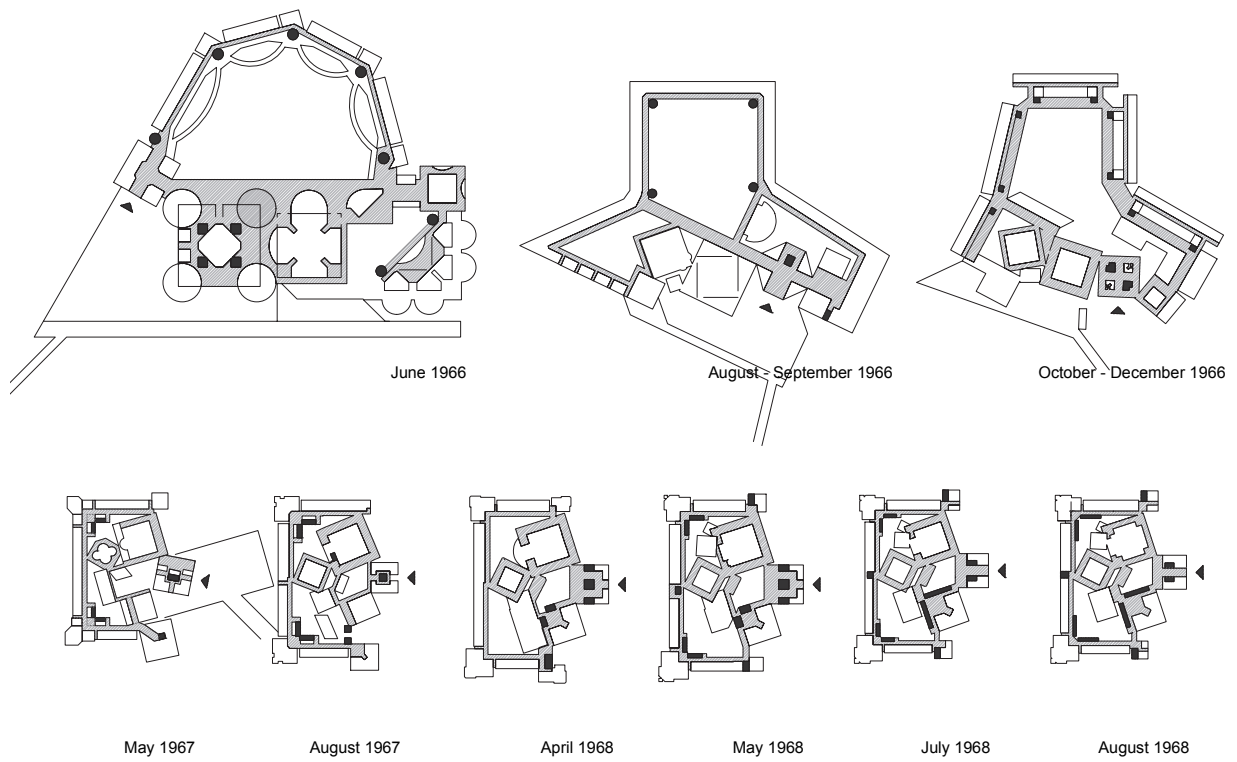
Fig. 9.22a
Dominican
Motherhouse:
„Architecture of
Connection":
1966-68
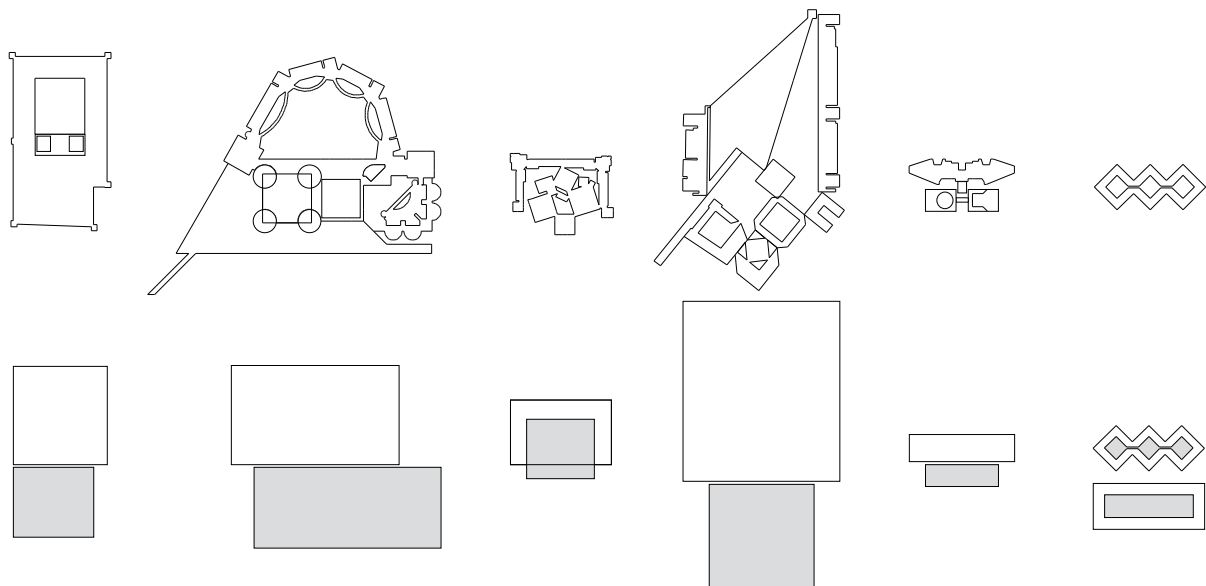
Fig. 9.22b
Type and Conection:
Domincan
Motherhouse,
St. Andrews Priory,
Erdman Hall

9.23
Unity Temple,
F-LI.Wright
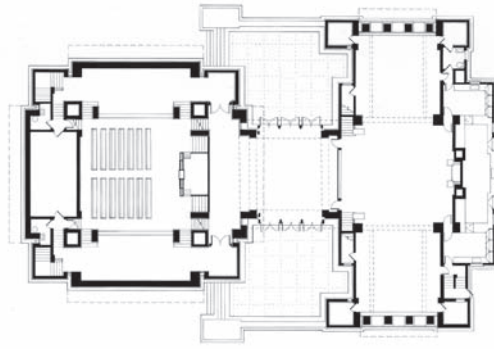
9.24
Trenton Bath House
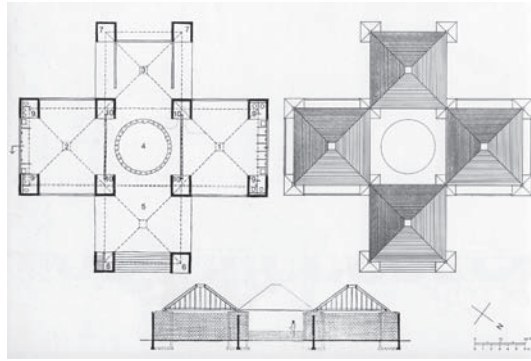
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Indian Institute of
Management
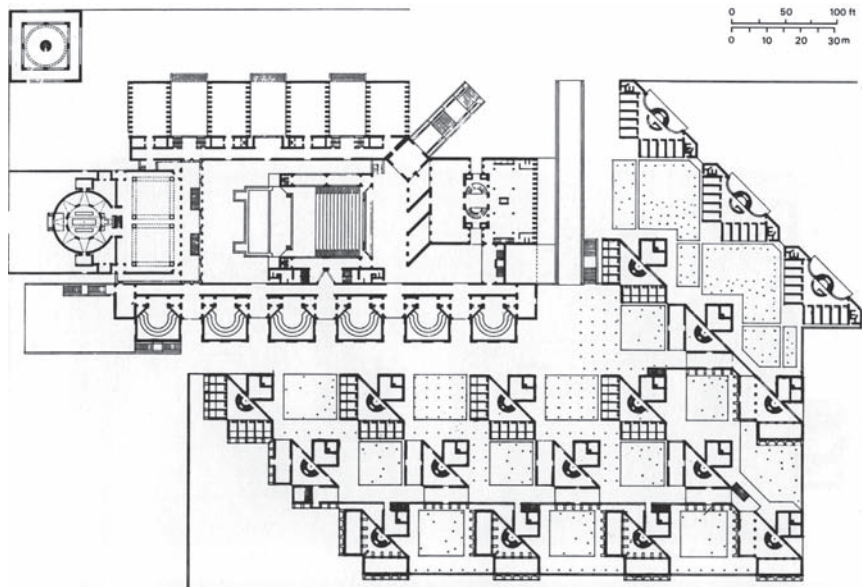
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Indian Institute of
Management
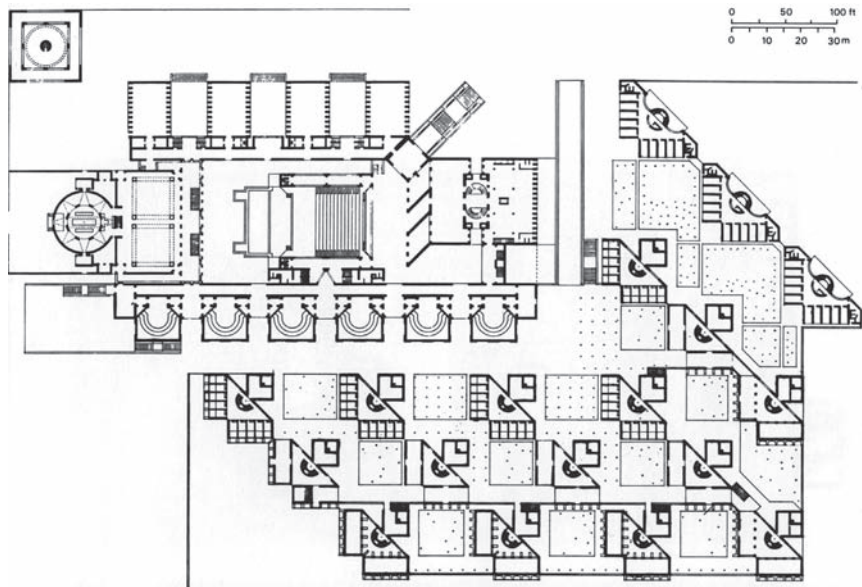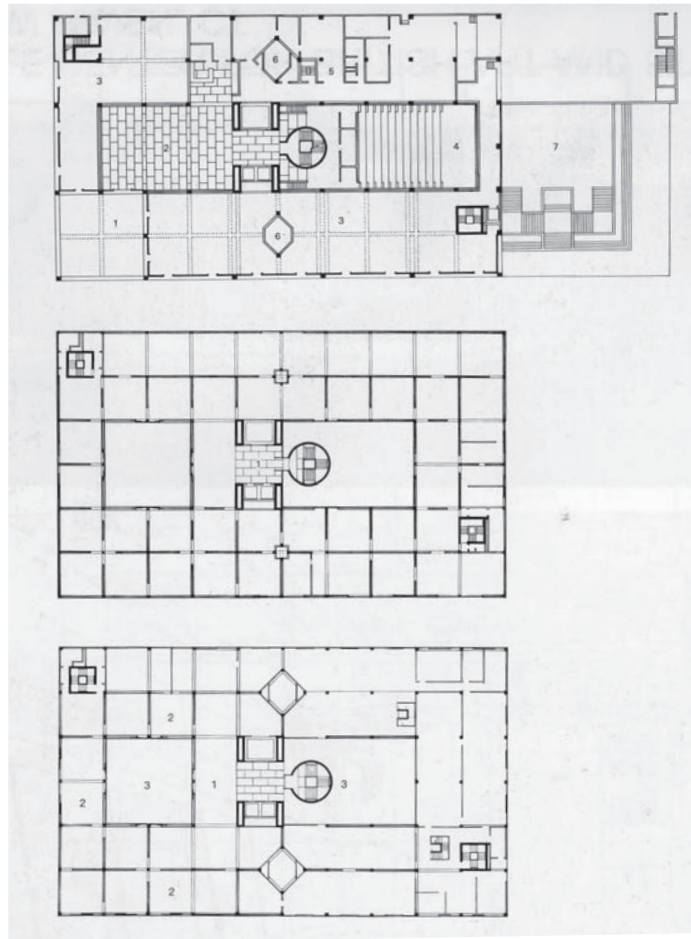
Fig. 9.27
Yale Center for
British Art

Fig. 9.28
Yale Center for
British Art
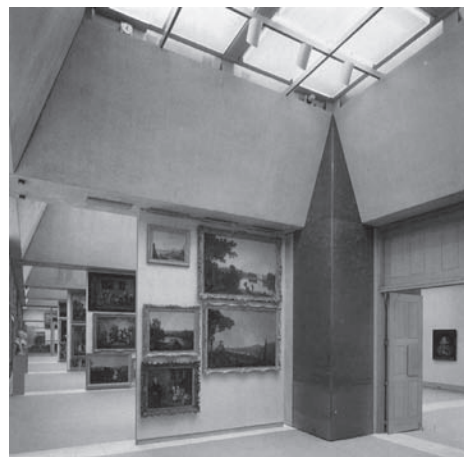
Fig. 9.29
Yale Center for
British Art

Fig. 9.30
Exeter Library

Fig. 9.31
Exeter Library

Fig. 9.32
FDR Memorial
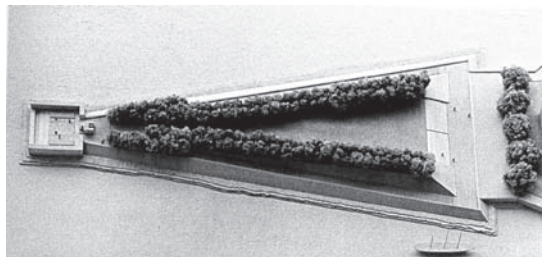
Chapter 10. Problems of Space III: Between Inside and Outside,
Between Object and Embeddedness:
„Dichotomous Things" or the Theme of Reciprocity

Fig. 10.1
Detail:
Giambattista Nolli,
Plan of Rome
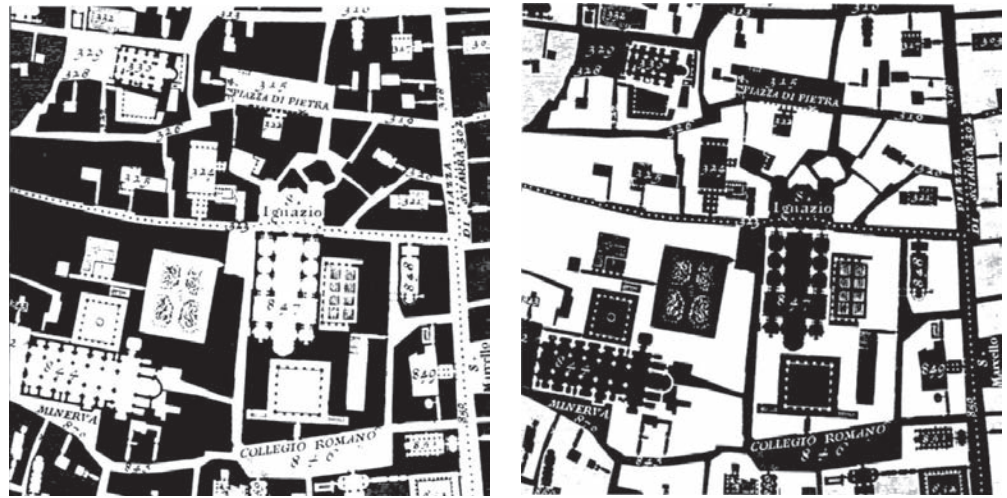
Fig. 10.2
Wolfgang Metzler:
Figure-Ground
Illustration

Fig. 10.3
Wiesbaden:
from
Rowe & Koetter´s
Collage City
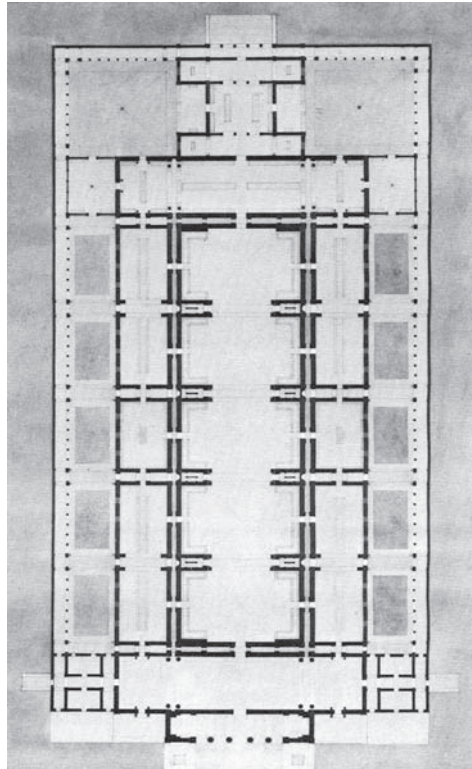
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Beaux-Arts Plan
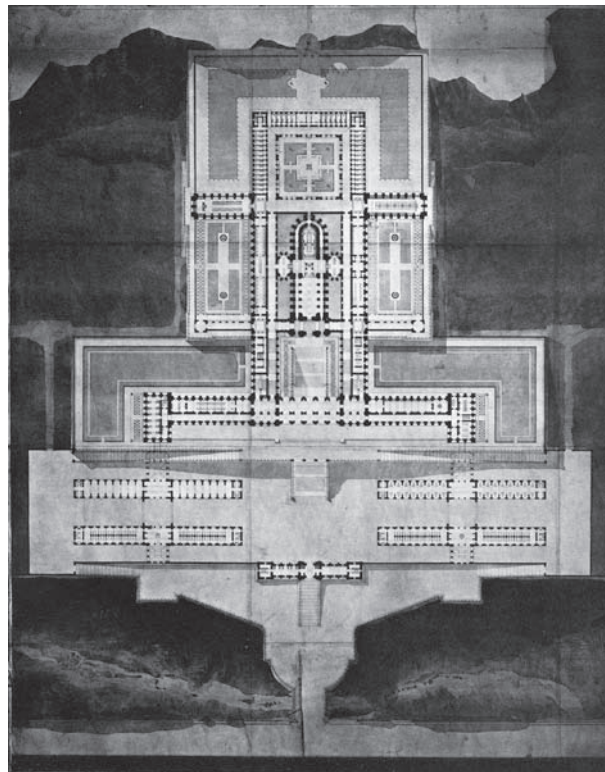
Fig. 10.5
Beaux-Arts Plan

Fig.10.6
DeVore House
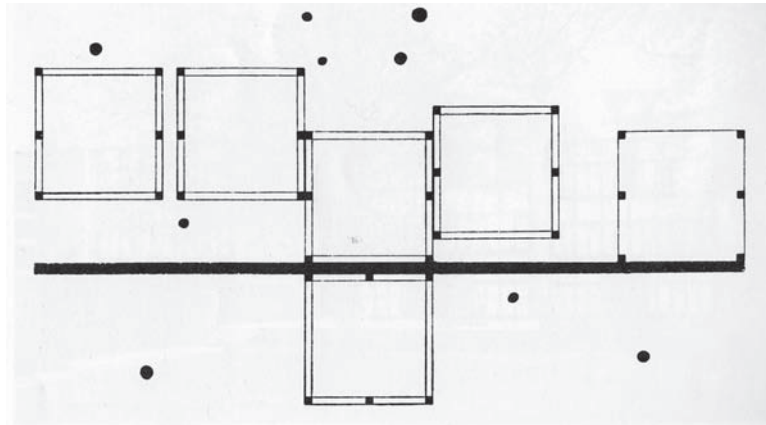
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Adler House
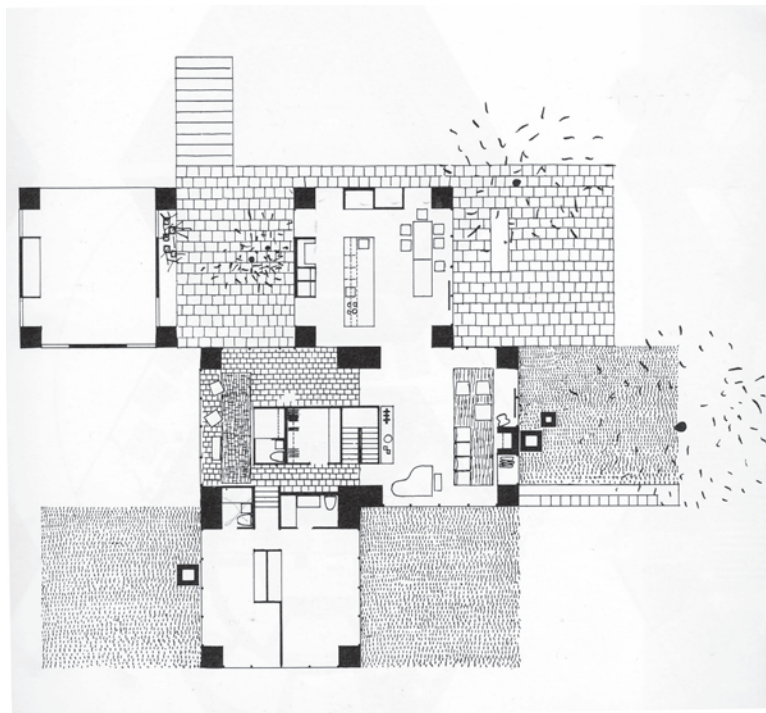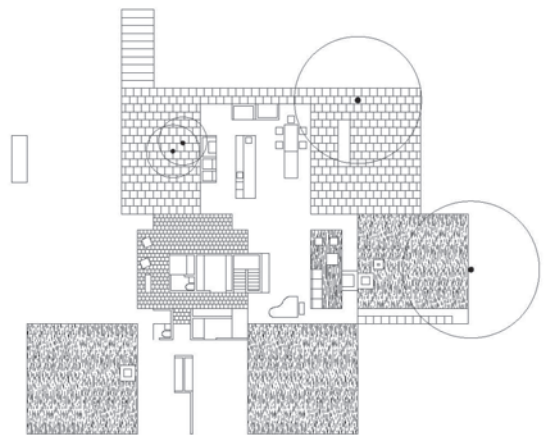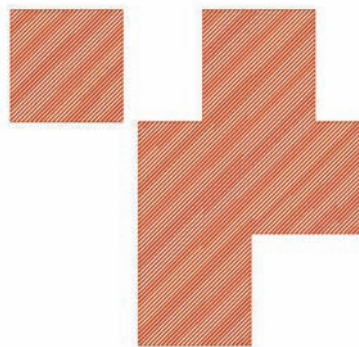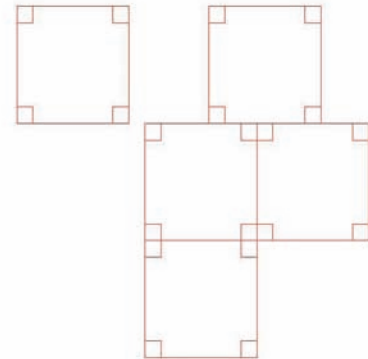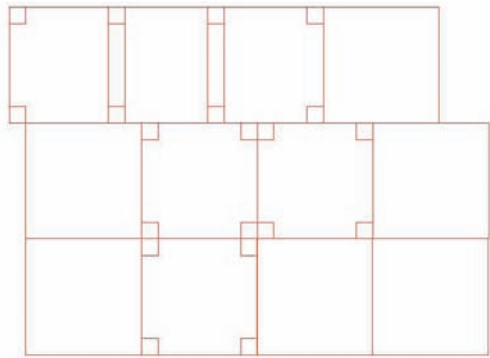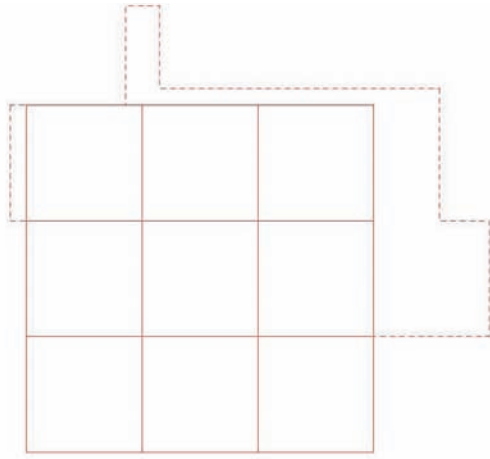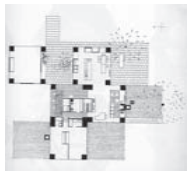
Fig. 10.8
Adler House:
Geometry,
Structure,
Enclosure,
Texture
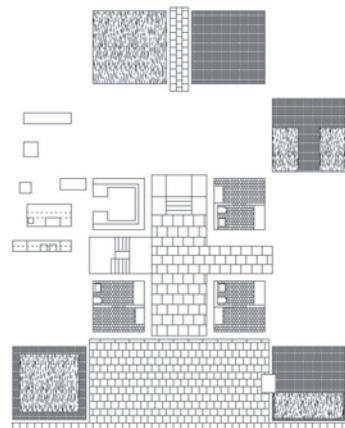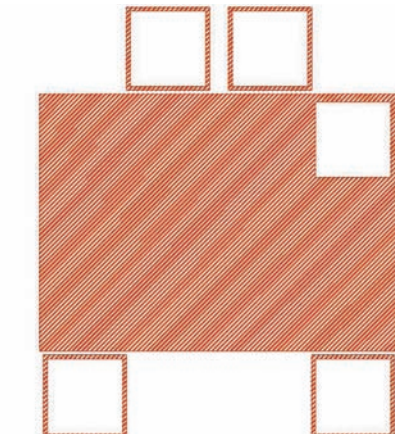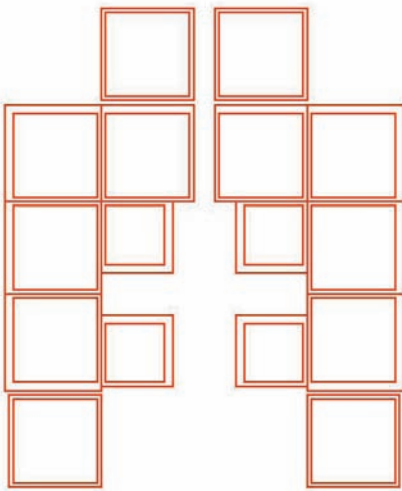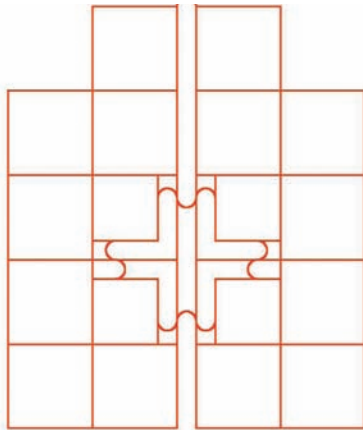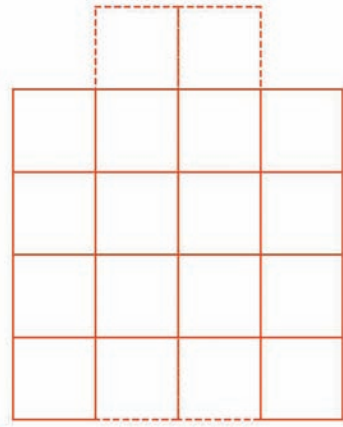
Fig. 10.9
Fleisher House
Geometry,
Structure,
Enclosure,
Texture

Fig. 10.10
Trenton Jewish
Communty Center
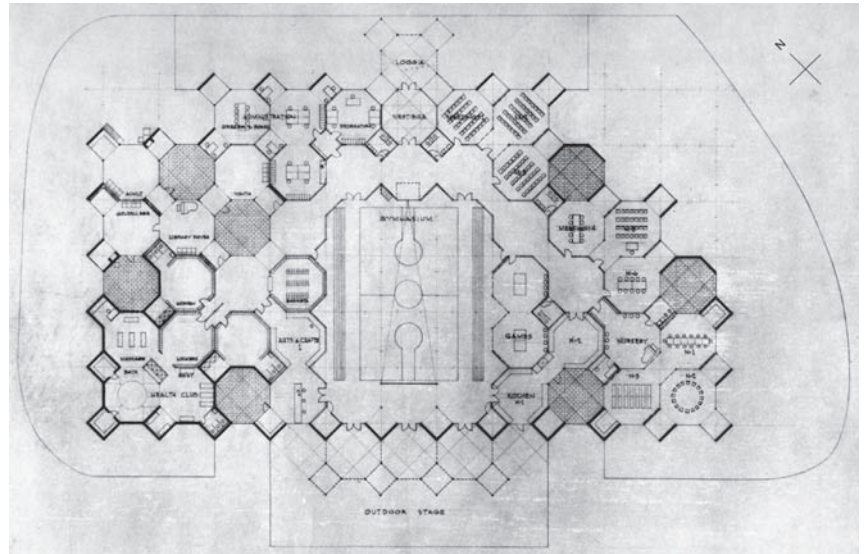
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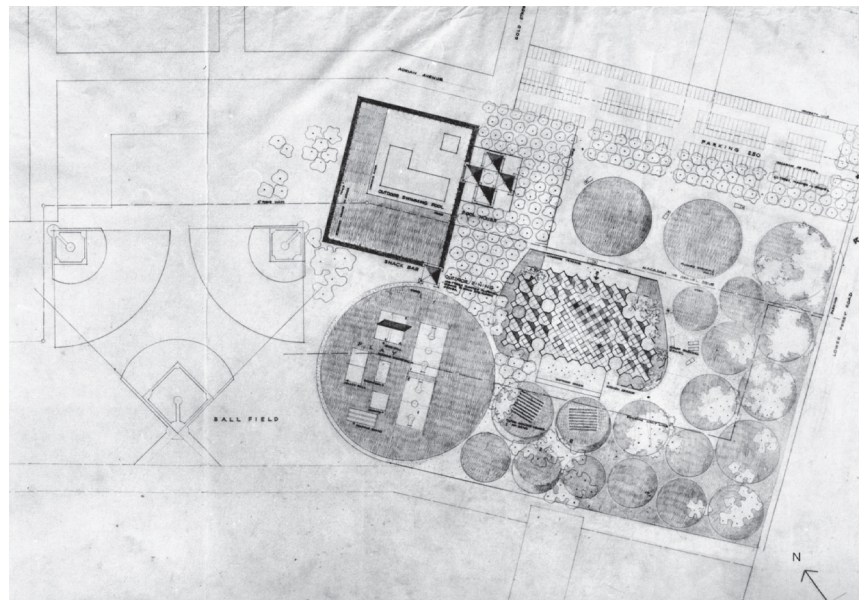
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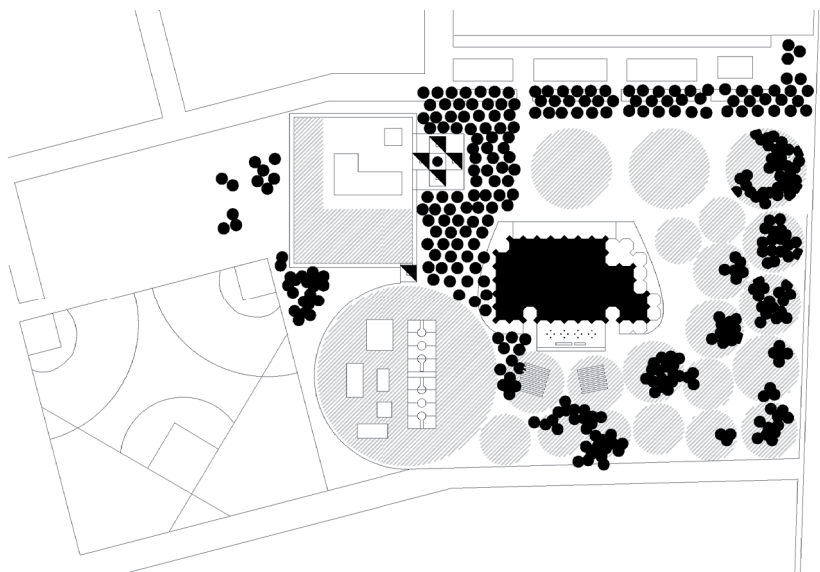
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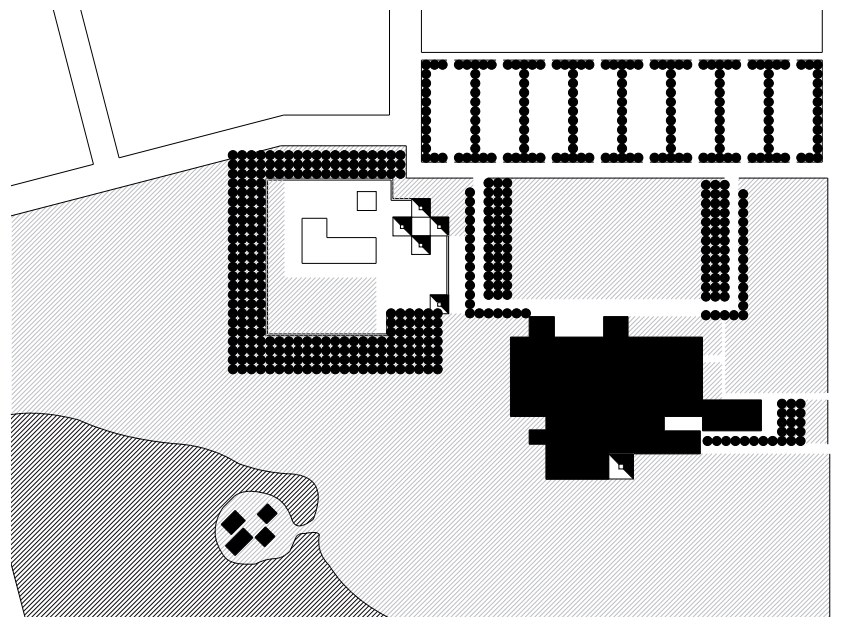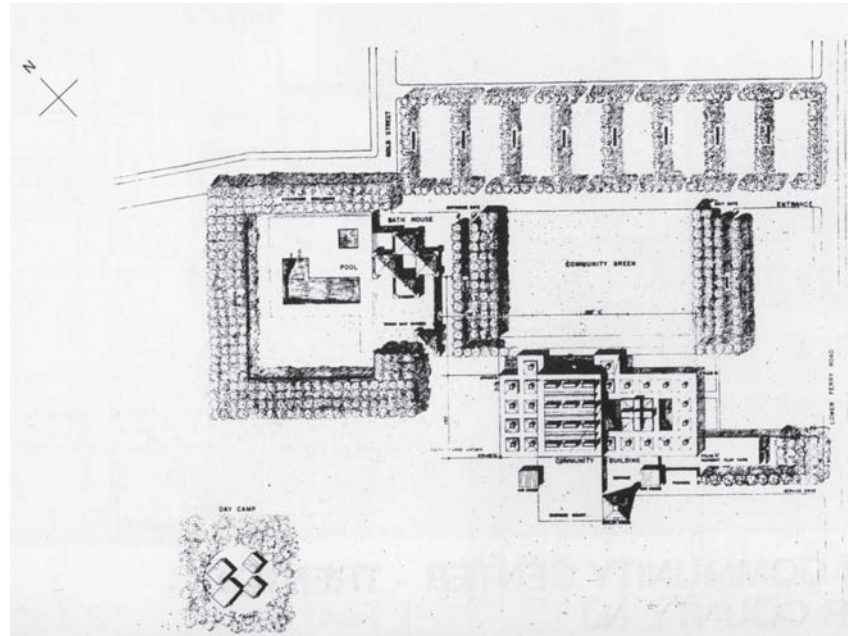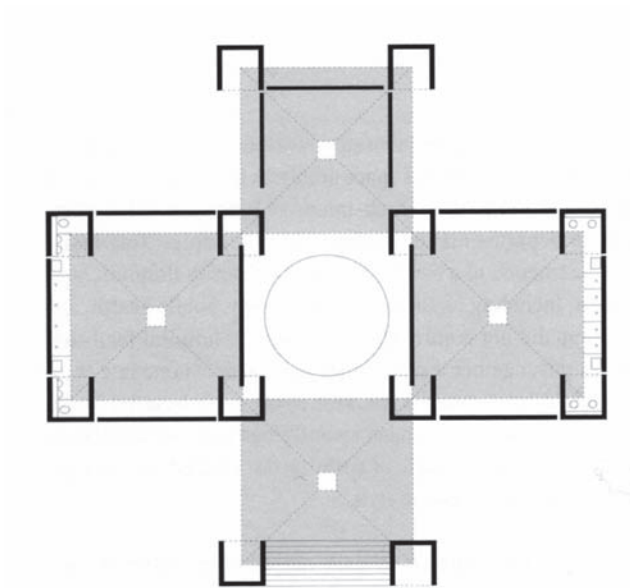
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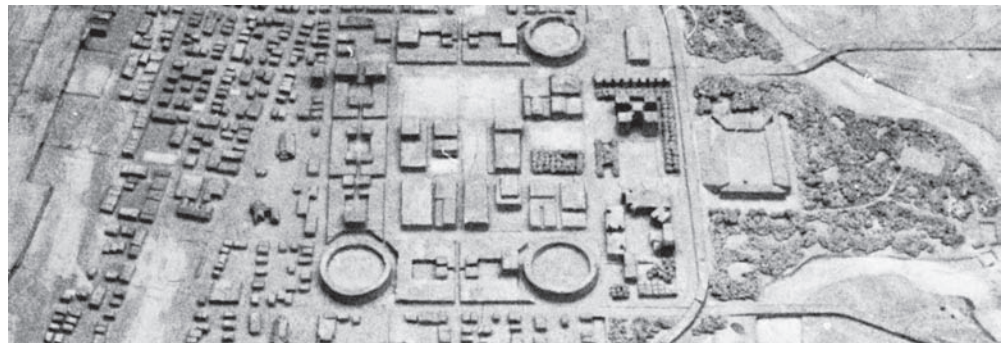
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Center
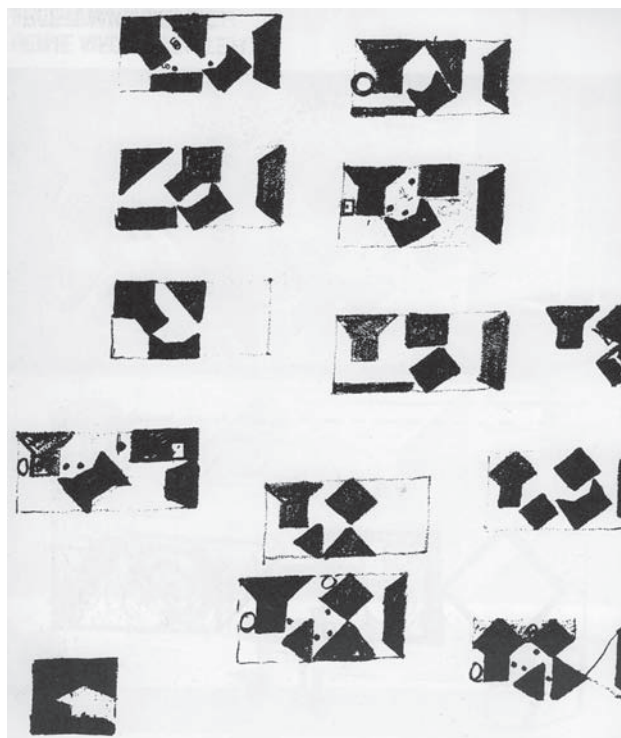
Fig. 10.15
Fort Wayne Fine Arts
Center

143
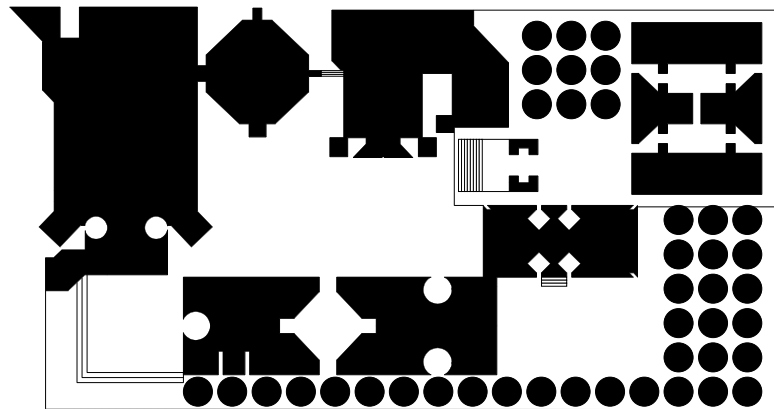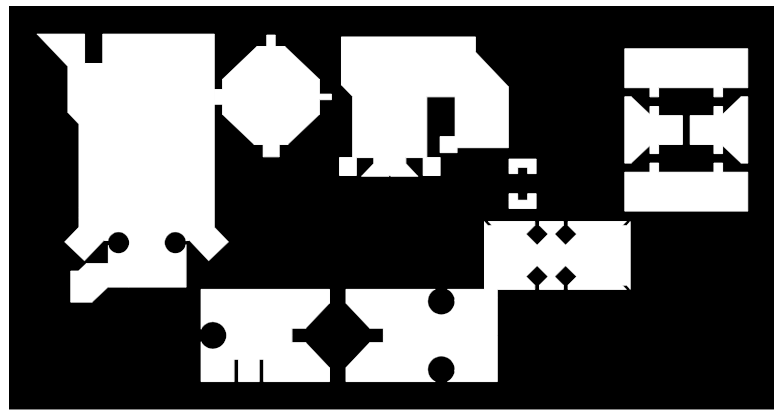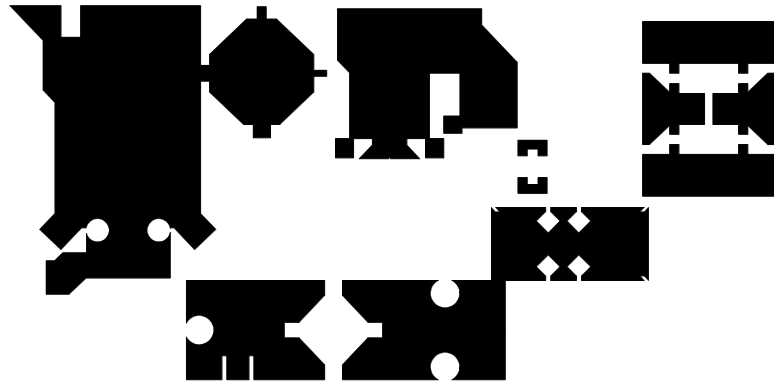
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Center
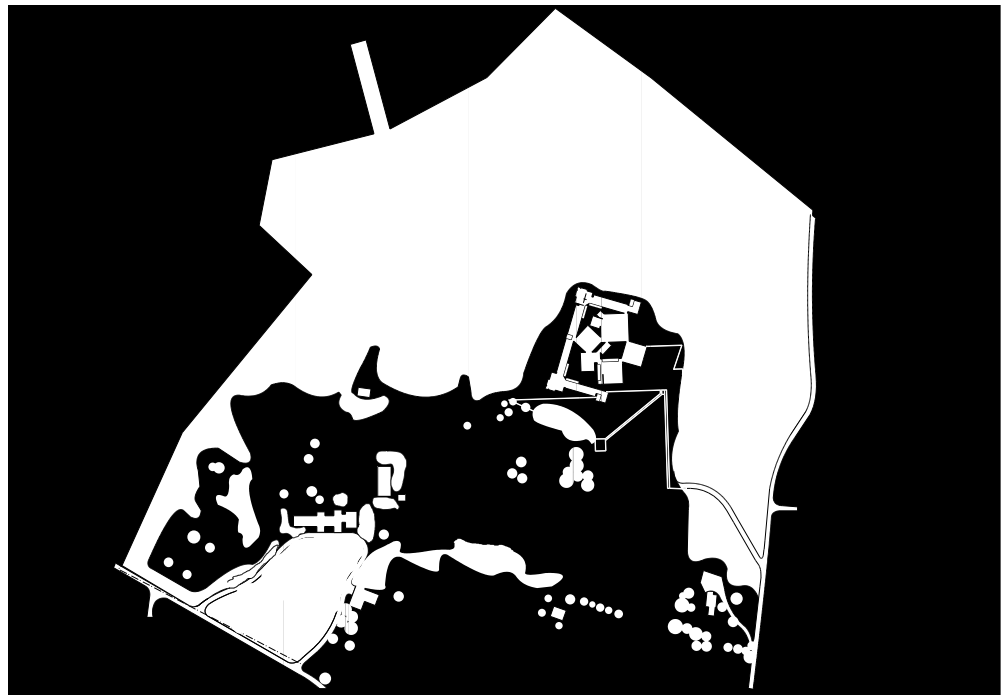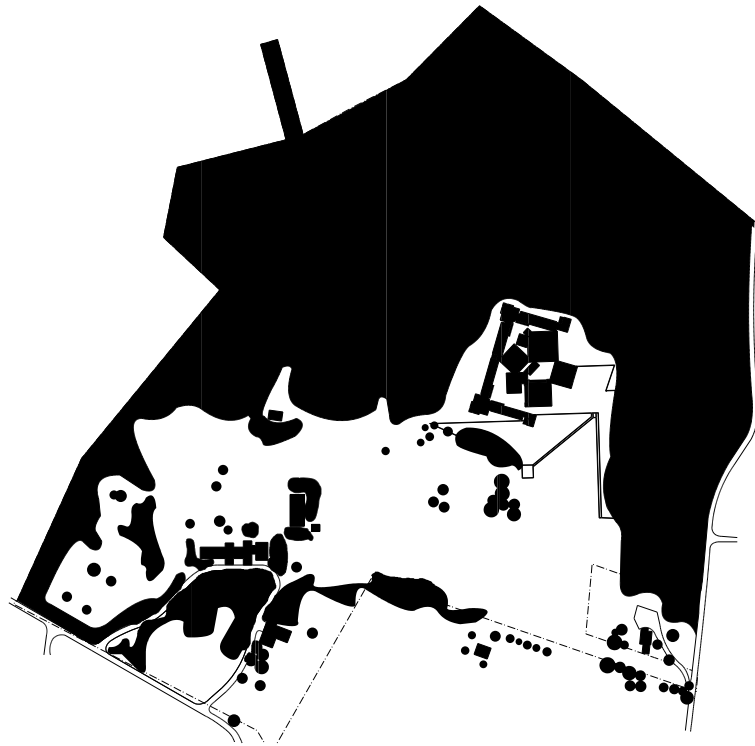
Fig. 10.17
Fort Wayne,
Dominican
Motherhouse

Fig. 10.18
Philadelphia College
of fine Arts
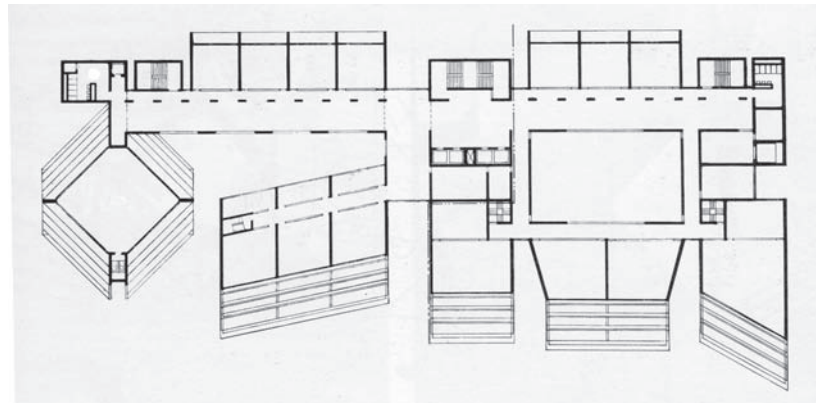
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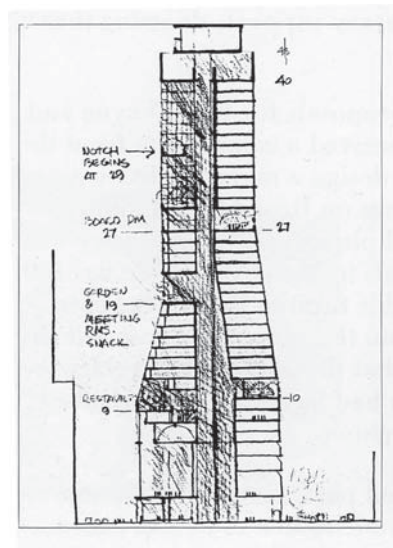
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Baltimore Inner
Harbor Development
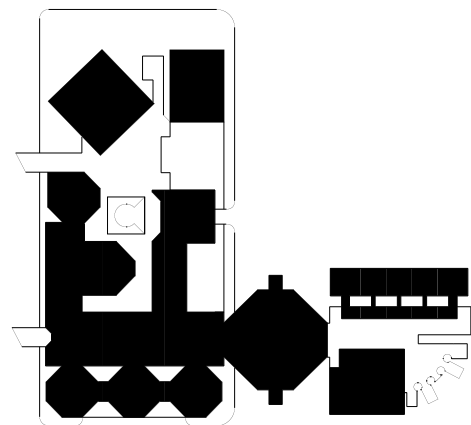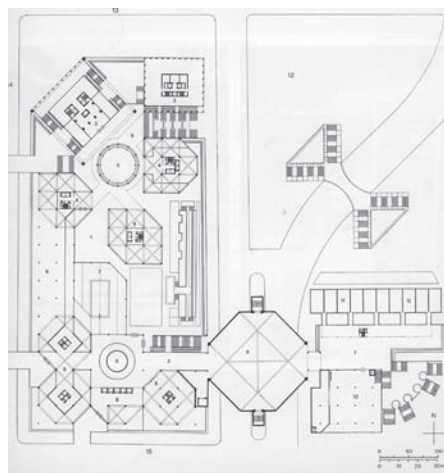
Fig. 10.21
DeMenil Foundation:
**Suburban
Figure-Ground**
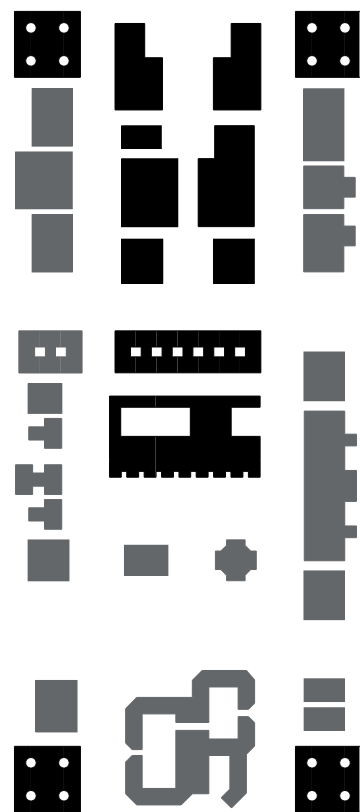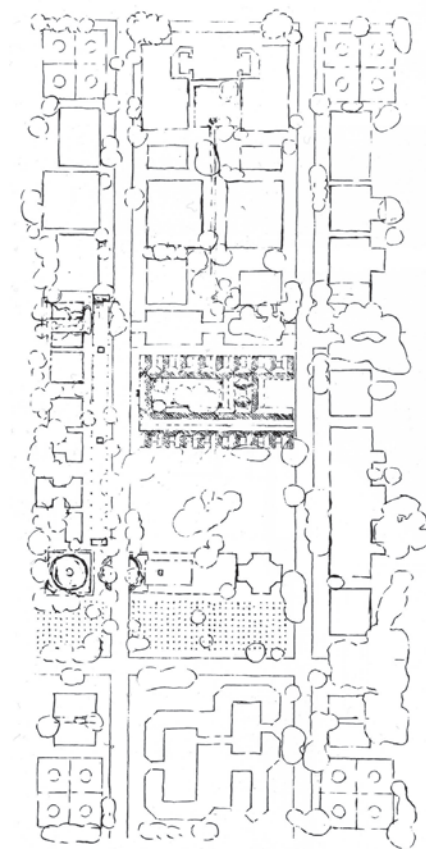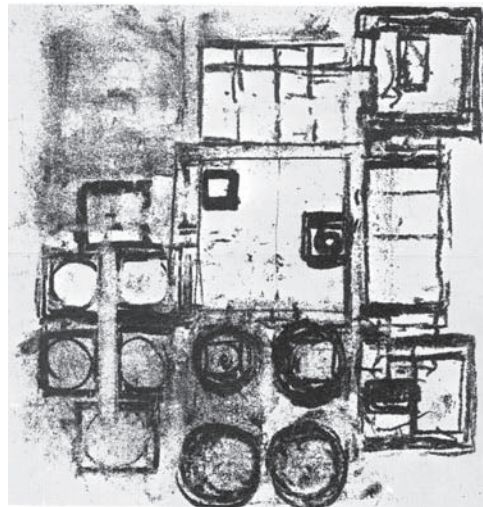
Fig. 10.28
Border-Space
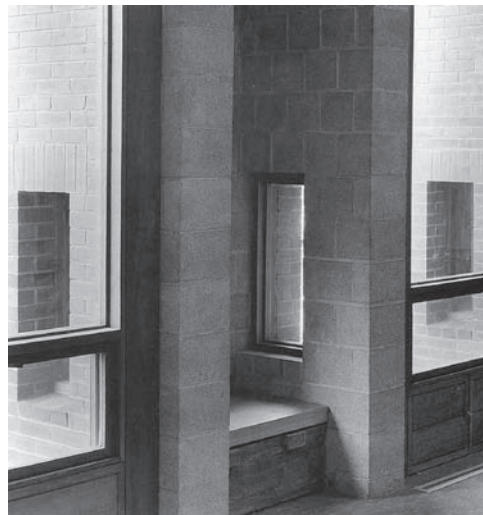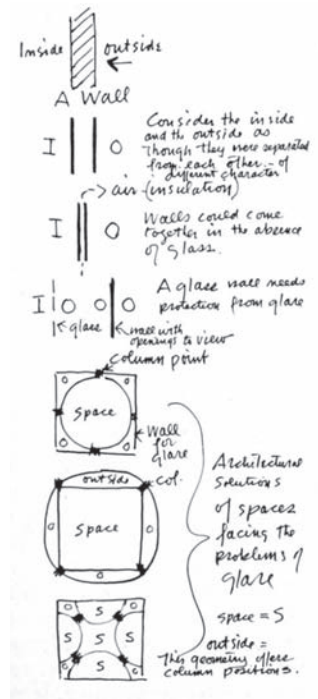
Fig. 10.29
Border-Space
Vertical:
First Unitarian
Church
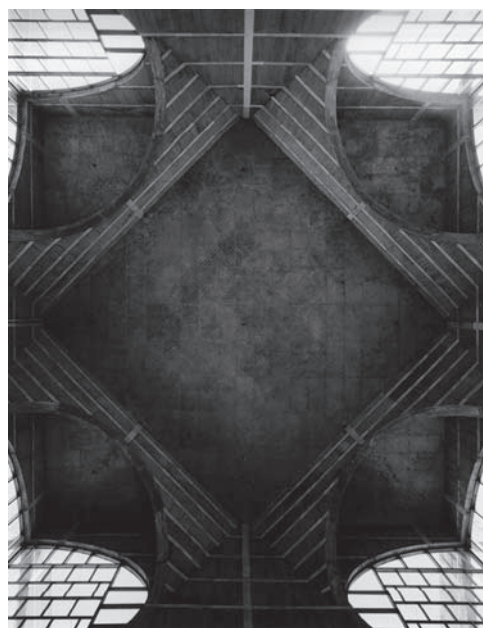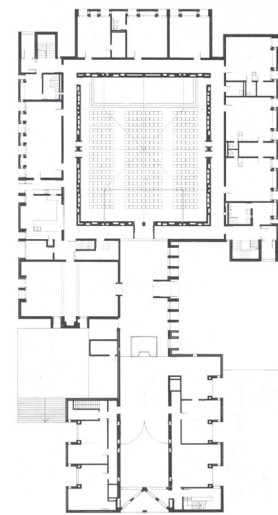
Fig. 10.30
Border-Space
Horizontal:
National Assembly,
Dhaka

Fig. 10.31
Hans van der Laan
Cell, Court, Domain
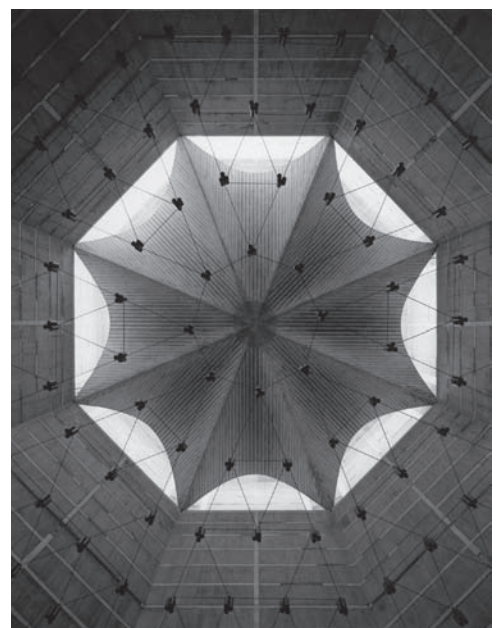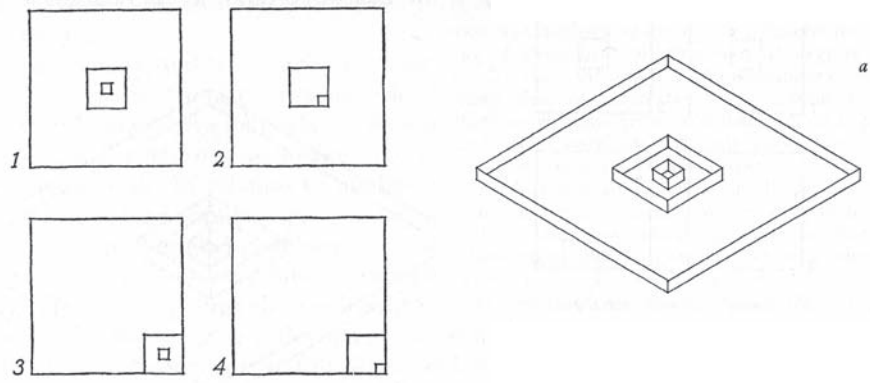
1 Central court with central cell
2 Central court with peripheral cell
3 Peripheral court with central cell
4 Peripheral court with peripheral cell.
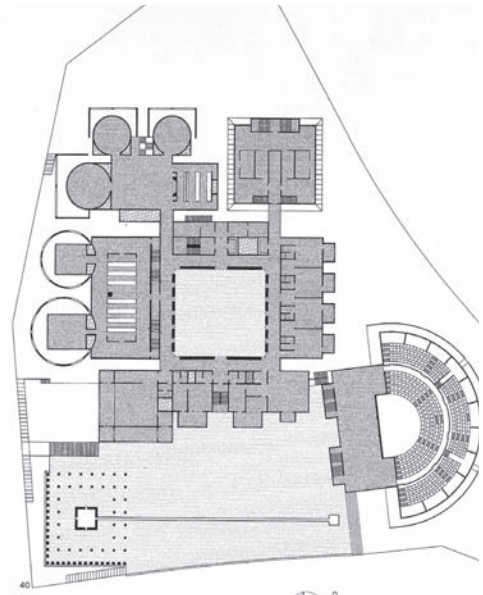
Fig. 10.32
Threefold
Demarcation

Fig. 10.33
Threefold
Demarcation
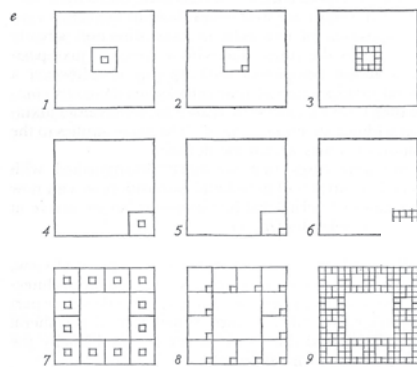
1 Central court with central cell
2 Central court with peripheral cell
3 Central court with peripheral juxtaposition of cells
4 Peripheral court with central cell
5 Peripheral court with peripheral cell
6 Peripheral court with peripheral juxtaposition of cel¹⁻
7 Peripheral juxtaposition of courts with central cell
8 Peripheral juxtaposition of courts with peripheral cell
9 Peripheral juxtaposition of courts with peripheral juxta-
   position of cells

Fig. 10.34
Kahn: Mass-Void
Reciprocity
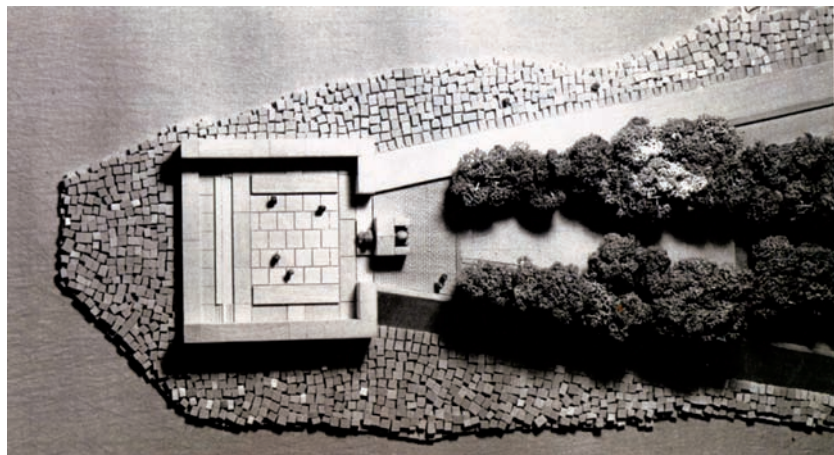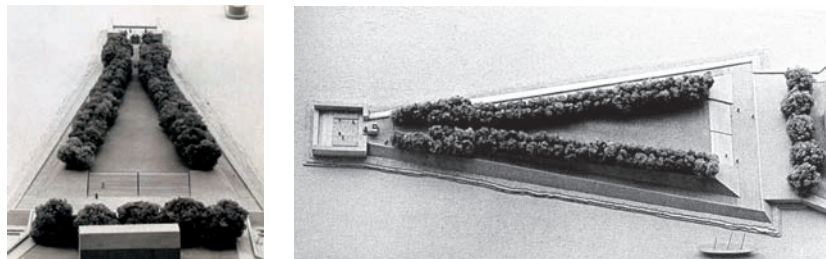
Fig. !0.35
Kimbell Art Museum
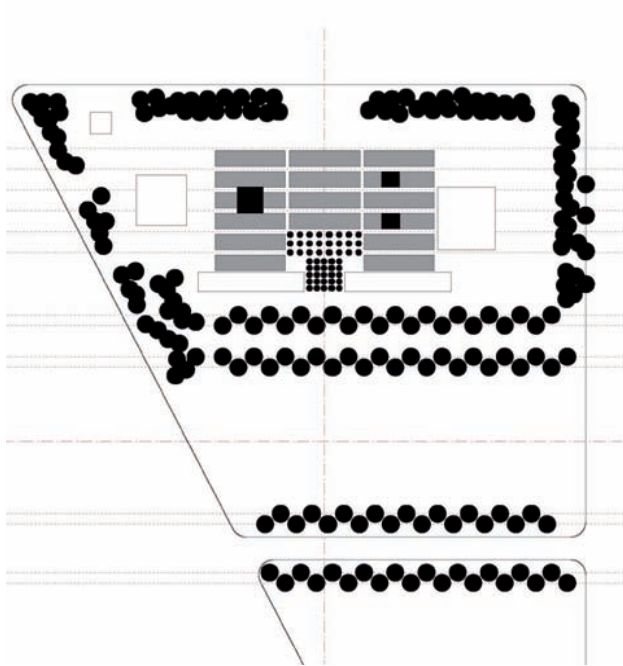
Fig. 10.36
Kimbell Art Museum
Reciprocal Structure:
Built and Grown

Fig. 10.37
Kimbell Art Museum
Entry Grove „Grafts"
onto Existing Allée

Fig. 10.38
Kimbell Art Museum
Entry Grove as
Threshold

Chapter 11. Problems of Space III: From Space to Place:
From Establishing the General to Revealing the Specific

Fig. 11.1
Climate, Place,
Architecture:
American Consulate
Luanda
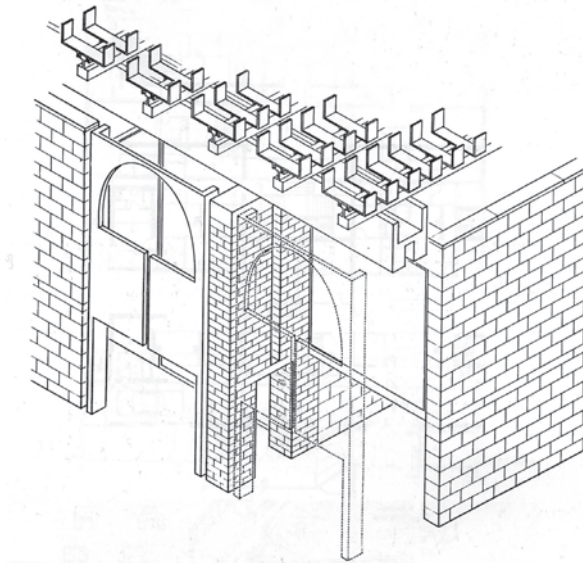
Fig. 11.2
American Consulate
Luanda
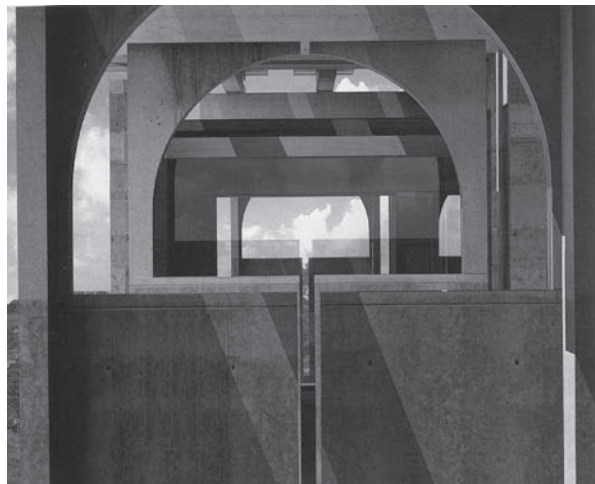
Fig. 11.3
Climate, Place,
Architecture:
Salk Institute
California
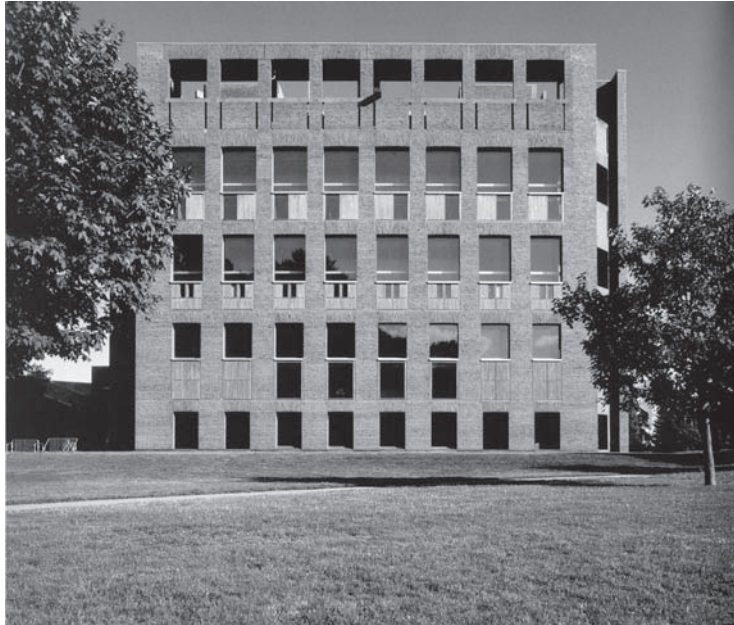
Fig. 11.4
Regional Ethos:
Exeter Library,
Exteter Campus

Fig. 11.5
Regional Ethos:
Kimbell Art Museum
Livestock Sheds
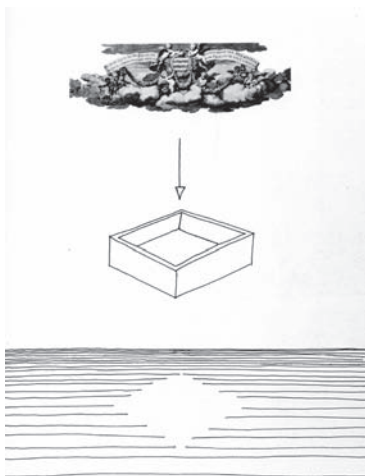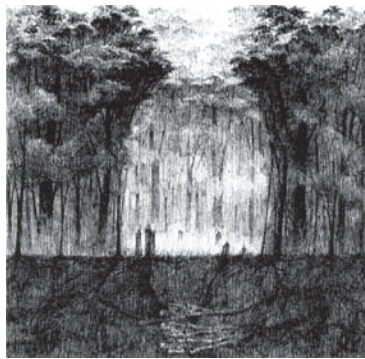
Fig. 11.6
Dominican
Motherhouse:
Hortus Conclusus
as Clearing
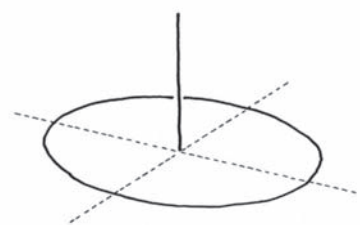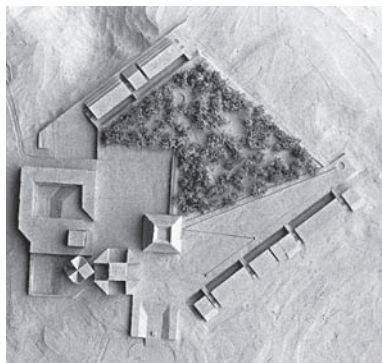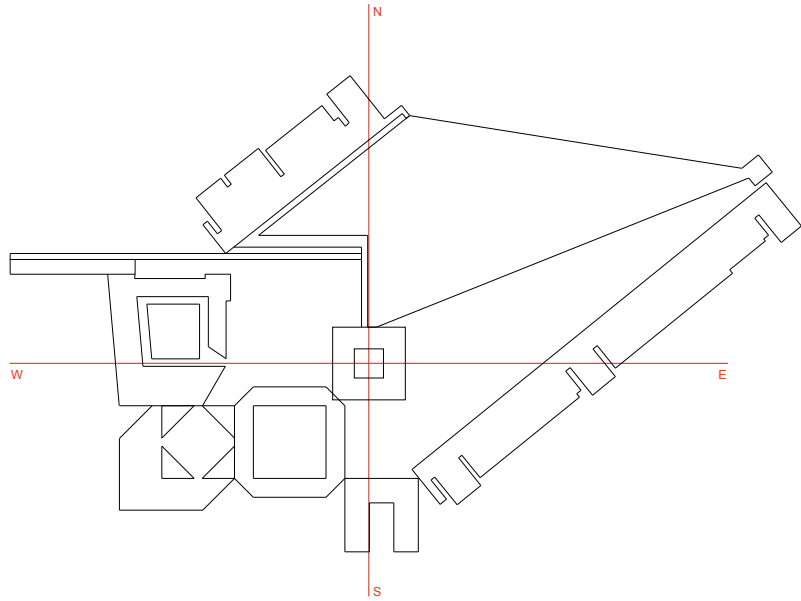
Fig. 11.7 - 11.10
Saint Andrews
Priory: Oasis and
Paradise Garden

Appendix A: Kahn, His Students and the Monastery:
The Master´s Studio: A Give and Take Between Teaching and Practice

Fig. A.1
Masters Studio
Project
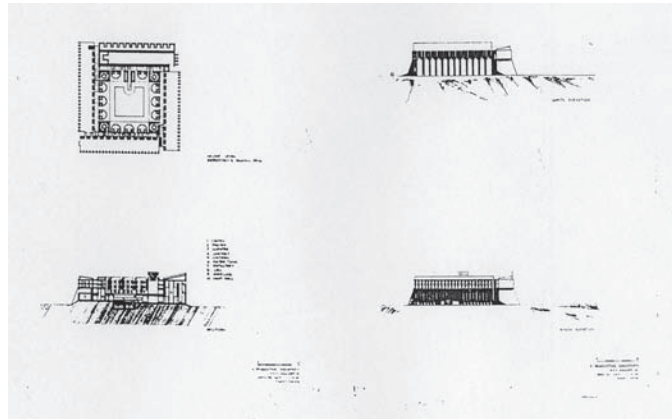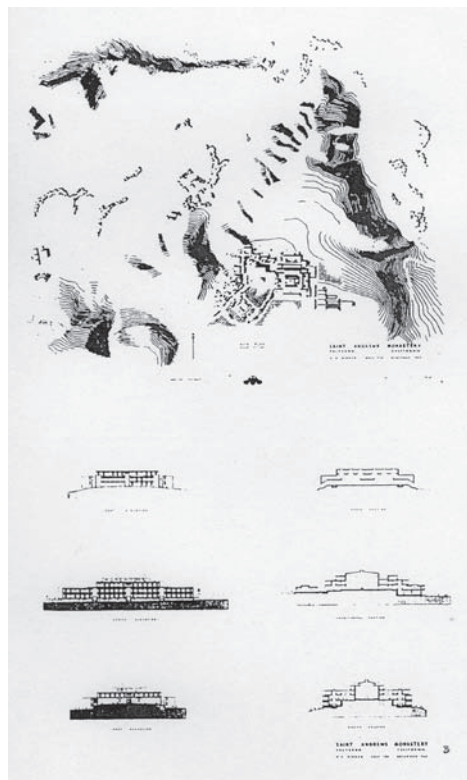R. Vollmer
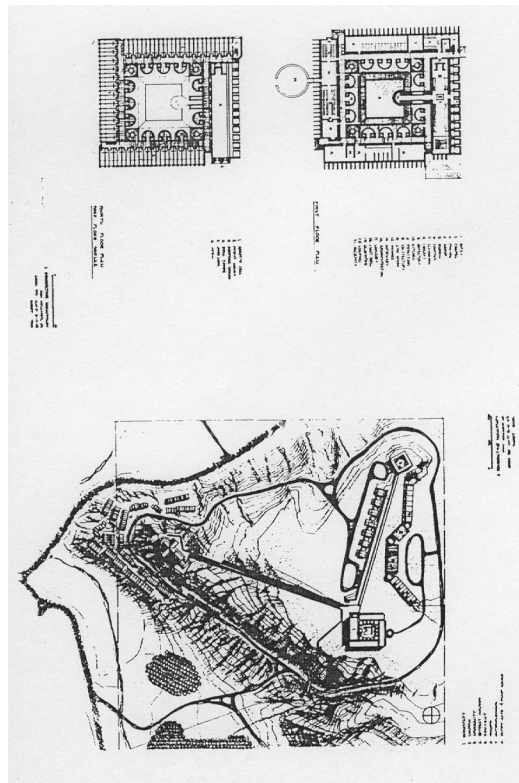
Fig. A.2
Masters Studio
Project
R. Vollmer

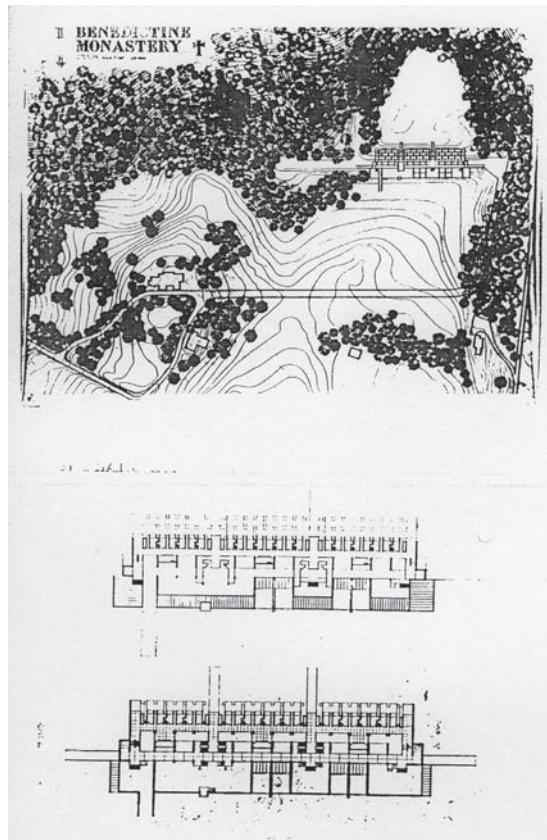**Fig. A.3**
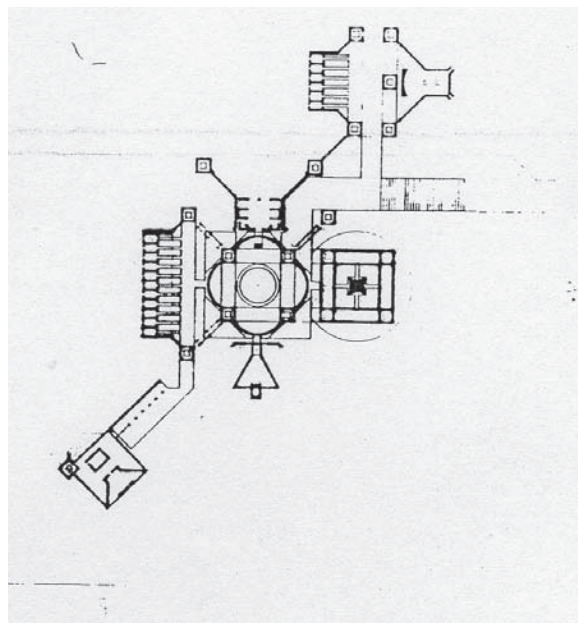Masters Studio
Project
A. Birrer

Fig. A.4
Masters Studio
Project
J. Cox

Fig. A.5
Masters Studio
Project
J. Knowles