Encountering Materials in Architectural Production

The case of Kahn and brick at IIM

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Thesis Abstract

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The architectural discourse on materials frequently engages the legendary dialogue between architect Louis Kahn and the brick that wanted to be an arch to alert us to the role played by materials in the process of architectural production. However, over the four decades in which this anecdote has come to rule the collective memory of our profession very little has been done to examine the actual circumstances behind such an encounter. It is the contention of this thesis that the disregard for historical conditions surrounding this event stems from a historiographical tradition that employs the subject-object dichotomy to negate the very possibility of such an event, forcing the dialogue to be regarded as just a metaphor for the mentality of the architect. In order to question the monopoly of such a theoretical stance, which inadvertently limits the understanding of the role played by materials in the process, the thesis posits the dialogue between Kahn and brick as a subject of historical inquiry outside the confines of this subject-object paradigm – deconstructed in the recent works of Bruno Latour as the "Modern Paradox." By historically reconstructing the event of this dialogue, the thesis exposes the neglected realm of action where the encounter between the architect and the material takes place, and thereby helps to reveal a new and more complex picture of the process of architectural production.

At the outset the thesis conducts a thematic survey of twentieth century architectural theory exposing an epistemological bias in the approach to architectural materials. It then employs the philosophical works of Martin Heidegger on the nature of "things" and the current sociological debate on the shift from actors to "actants" in the works of Bruno Latour to construct a framework where the architectural experience of an active and symmetric exchange with materials can be argued. Theoretically, then, the thesis invokes arguments for a "social life of things" to situate the discourse of materials in architecture within a larger framework of the social, and thereby offers an alternate way of both understanding and representing materials in architectural practice.

As an interpretive historical study, the second part of the thesis then employs its adopted theoretical framework to situate new historical information regarding both Louis Kahn (as an architect) and brick (as an architectural material in India) during the critical decade of the 1960s. Using the historiographical method of a micronarrative, it focuses its gaze on the design and construction of the Indian Institute of Management (IIM) campus in Ahmedabad, the site of the fabled encounter, and incorporates the narrative of the material actant (brick) in parallel to the narrative of the human actant (Kahn). The alternative account of the architectural production of the IIM that emerges offers a much more detailed picture of the historical conditions and conjunctions that might explain one of the most influential anecdotes in the architectural discourse of the past century. Through this case study the thesis generates an enriched understanding of the encounter between architects and materials, wherein materials may be recognized beyond just their physical properties as active contributors to the process of architectural production.

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Thesis Declaration

Name: **AMIT SRIVASTAVA**   Program :   **Ph.D. ɪɴ ARCHITECTURE**

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Acknowledgements

"I want an arch."   - A brick, quoted by Louis I. Kahn (1974)

In an interview in 1974, just weeks before his unexpected death, Kahn justified his designs for the Indian Institute of Management (IIM) in Ahmedabad, India as a result of his dialogue with a brick.[1] This assertion was not entirely new in its formulation, and Kahn had spent the last decade of his life arguing the possibility of such a dialogue. The idea of this dialogue has since been recounted on numerous occasions to alert us to the role played by materials in architectural production.[2] But while the architectural discourse on materials continues to employ this anecdote of *Kahn's dialogue with the brick* to establish an understanding of how to encounter materials in the design studio, very little has been done to examine the actual circumstances of such an encounter. In an intellectual climate that is replete with references to twentieth century developments in psychoanalytical theory, the dialogue can serve no other role than the indicator of a *mental* process. Therefore, while certain theorists might at first ask the question, "Why do we not immediately resist the possibility that inanimate objects can nonetheless seem to have life?" they often continue to dismiss this with a jargon of projection, reflectance, or transference.[3] As a result, even though this dialogue remains one of the most influential anecdotes in the architectural discourse of the past century its place in architectural historiography remains uncertain.

Unable to cope with the paradox of *a dialogue with a mute*, architectural historiography continues to treat Kahn's dialogue with the brick as an indicator of other conventionally acceptable conditions. The dialogue is primarily mentioned in numerous monographic

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[1] Louis Kahn, "Louis Kahn defends: Interview, Indian Institute of Management, Ahmedabad, India, May 31[*sic*], 1974," in *What will be has always been: The words of Louis I. Kahn*, ed. Richard Saul Wurman (New York: Rizzoli, 1986), 252.

[2] For a recent perspective on the undeniable impact that this dialogue has had on architectural education in the design studio, see Jeffrey Karl Ochsner, "Behind the Mask: A Psychoanalytic Perspective on Interaction in the Design Studio," *Journal of Architectural Education* 53, no. 4 (2000).

[3] See for instance Ochsner, "Behind the Mask."

art historical studies that focus on the life and works of their subject – Louis I. Kahn. Where such a project deals with the formal aspects of built form, the dialogue serves as an indicator of a *mannerism* of style associated with Kahn, which can be used to justify a morphological grouping of his architectural projects. [4] Alternatively, when the inquiry focuses on the theoretical musings of Kahn, the dialogue functions as an indicator of a *mentality* which defines a coherent picture of development in Kahn's architectural interventions.[5] On the other hand, historiographical accounts that are guided by their search for a stylistic –ism, continue to employ this dialogue in context of other contemporaneous architectural works. Here the dialogue serves as a *symptom* of a larger ideological *movement* that can be identified through a grouping of architectural objects across a geographical area.[6] In all such representations Kahn's dialogue with the brick is merely recognized as a rhetorical device to point at something else – *mannerism, mentality, movement* – and does not inform the actual circumstances of such an encounter.

It is a contention of this thesis that the disregard for historical conditions surrounding this encounter, stems from a historiographical tradition that employs the subject-object dichotomy to negate the very possibility of such an event. Therefore, while architects like Kahn continue to debate the possibility of such a dialogic encounter with materials in their experience of architectural production, representations of the same in architectural historiography continue to undermine their efforts through the discipline's own methodological limitations. Here, the thesis recognises that this condition is intricately bound to the methodological alliance that architectural historiography shares with the discipline of art history, whereby it may treat the subject of its inquiry within

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[4] For examples of such an approach, see Romaldo Giurgola and Jaimini Mehta, *Louis I. Kahn* (Boulder, CO: Westview Press, 1975), or the more recent Robert McCarter, *Louis I. Kahn* (London ; New York: Phaidon, 2005).

[5] See Alexandra Tyng, *Beginnings: Louis I. Kahn's Philosophy of Architecture* (New York: Wiley, 1984), and Urs Buttiker, *Louis I. Kahn: Light and Space* (New York: Whitney Library of Design, 1994). Also see a more 'non-referential' philosophical argument in Christian Norberg-Schulz, "Kahn, Heidegger and the Language of Architecture," *Oppositions* 18, no. Fall (1979), or a trifling attempt at an equation with eastern transcendentalism (identifying Kahn as a yogi) in Balkrishna Doshi, Muktirajsinhji Chauhan, and Yatin Pandya, *Le Corbusier and Louis I Kahn: The Acrobat and the Yogi of Architecture* (Ahmedabad: Vastu-Shilpa Foundation for Studies and Research in Environmental Design, 2007).

[6] While there are many attempts at defining new –isms and the corresponding appropriation of the dialogue as a symptom for the same, the most widely acknowledged interpretation comes from a desire to classify Kahn's architecture as part of the stylistic trend of Brutalism. For an early reading of Kahn's architecture as following the Brutalist idiom, see Reyner Banham, *The New Brutalism: Ethic or Aesthetic?*, Documents of Modern Architecture (London: Architectural Press, 1966).

the restricted definitions of 'architects' and 'architectural products'.[7] Within such a paradigm, then, buildings act as 'representations' of an 'Idea' which originates in the architect's mind, and architectural materials merely serve to aid this process of translation. In an attempt to address this limitation of existing architectural historiographical traditions to acknowledge the experiences of its most prolific practitioners, the current thesis will treat the dialogue between Kahn and the brick as a subject of historical inquiry outside the confines of such a restrictive paradigm. By historically reconstructing the *event* of the dialogue, the thesis aims to expose the neglected realm of *action* where the encounter between the architect and the material takes place, and thereby generate a better understanding of the process of architectural production.

Such a project which aims to historicise the dialogue between a human subject and a material object might, at first, seem absurd in its formulation. This is because a dialogue with an inanimate object, which cannot be argued to possess powers of locution, can hardly be defined as an *objective* historical event. However, it is precisely this inability to define such an experience of symmetric exchange within the current methodological paradigm that drives this search for an appropriate form of representation of the relationship between architects and materials. To address this unorthodox formulation and engage these seemingly irrational events within the narrative of architectural history, then, the thesis defines two separate objectives that it must achieve. At first, the thesis needs to develop a theoretical framework which will allow us to transcend these epistemological barriers and address the exact event of the encounter. Here the present study proceeds with an interdisciplinary search for alternative accounts of social action which might acknowledge the possibility of such an intimate exchange between the human and material realms. As its second objective, the thesis needs to employ this adopted theoretical framework to develop an alternate account of the architectural production of the Indian Institute of Management (IIM) project in Ahmedabad, which it identifies as the site of the fabled encounter. In addressing these two separate objectives, the thesis hopes to generate a better understanding of the historical conditions that might explain one of the most influential anecdotes in the architectural discourse of the past century.

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[7] This is a more widely acknowledged phenomenon, but for instance, see Demetri Porphyrios, "Notes on a Method," in *On the Methodology of Architectural History, Architectural Design Profile* (London, New York: Architectural Design, St. Martin's Press, 1981).

MATERIALS AND SOCIAL PRACTICE

To historicize the event of the encounter between Kahn and brick, the project first needs to develop a suitable understanding of the role played by the material in the process. What role materials play in architectural production is hardly a novel question, of course, and has been addressed in one way or another by many practitioners and theorists of architecture throughout the ages. In search of possible precedents and critical perspectives useful for the present inquiry, we begin by examining existing thinking about materials inherent in previous architectural discourse. David Leatherbarrow's *The Roots of Architectural Invention* of 1993, is recognized as a landmark study of the status of materials in pre-twentieth century western thinking on architecture.[8] However, identifying the absence of a similarly comprehensive account of related thinking in the twentieth century, the current study proceeds to review the theoretical arguments of the last century to better comprehend prevalent tendencies in thinking about materials. Chapter 1 represents this review as a thematically structured survey of the attitudes towards materials that have both guided and resulted from the main theoretical movements in architecture through the twentieth century. It is in this process of defining the agency of the material that the study encounters its first major challenge – the seeming incommensurability of *materiality* with *social action*.

Because working with materials is a matter of daily experience we assume that we are aware of the nature of this process. However, as Leatherbarrow notes "in fact the opposite is true, for it is both a rarely discussed procedure and one that exposes strikingly obscure and indefinite thinking when questioned."[9]As a result of this unreflective engagement with the material world, in conventional understanding the nature of *materiality* remains distinctly different from the realm of *social action*, which is understood to constitute architectural production. Firstly, the nature of the *social* is often understood at an inter-subjective level where social action is limited to human interaction. In such a scenario, social action merely corresponds to an extension of human intentions and values in relation to other humans that share this inter-subjective space. Secondly, the role of materials as offering support or resistance to this extension of human intentions remains contingent to it. The material object is thus regarded as

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[8] David Leatherbarrow, *The Roots of Architectural Invention: Site, Enclosure, Materials*, Res Monographs on Anthropology and Aesthetics (Cambridge [England] ; New York, NY, USA: Cambridge University Press, 1993).

[9] Leatherbarrow, *The Roots of Architectural Invention*, 143.

being inert, serving as a mute receptacle of human values in the process of this inter-subjective exchange. Within such a commonsensical approach, then, the material object merely serves as an appendage of human intentions, and cannot be regarded for its individual agency in the realm of social action. This biased approach to the agency of materials in the social realm is succinctly captured in Bruno Latour's remark that,

> *Much like sex in the Victorian period, objects are nowhere to be said and everywhere to be felt. They exist, naturally, but they are never given a thought, a social thought. Like humble servants, they live on the margins of the social doing most of the work but never allowed to be represented as such.*[10]

This bias against the inanimate world is also available in the various modes of thinking about materials in twentieth century architectural thought. Two recent publications, by Richard Weston, and Victoria Ballard Bell and Patrick Rand respectively, serve as good indicators of the impact of this phenomenon on the architectural literature on materials, which seems to have been split into two camps.[11] The first camp, represented by Weston's book, offers a *social* account of architectural materials by concentrating on practitioners of architecture and their views on materials as reservoirs of different human values. On the other hand is the technological and *scientific* view of architectural materials, represented by Bell and Rand's book, which concentrates on the identifiable properties of the material and its impact on architectural production by supporting or resisting the architectural intentions. Chapter 1, thus, considers the incommensurability of materiality and social action in twentieth century architectural thought, and the various forms and categories of the existing literature in which this has become institutionalised.

Here the project turns to an extra-disciplinary search for an understanding of social action which might allow for an agency of materials to be included more thoroughly into an account of the social practice of architecture. Recent research in the discipline of social theory has also acknowledged such an epistemological bias which restricts the inclusion of materials within narratives of social action to a mere "supplément" of the inter-subjective domain. As Andreas Reckwitz notes in his evaluation of *The Status of the Material in Theories of Culture,*

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[10] Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory*, Clarendon Lectures in Management Studies (Oxford ;: Melbourne: Clarendon, 2005), 73.

[11] See Richard Weston, *Materials, Form and Architecture* (London: Laurence King, 2003), and Victoria Ballard Bell and Patrick Rand, *Materials for Design* (New York: Princeton Architectural Press, 2006),

the classical dualisms of modern thought between "idealism" and "materialism"[...] between the culture of the symbolic and the factualism of material objects thus appears to have been resolved in favour of the former elements[...] – within the cultural/ material distinction the material functions as the "supplement" to something already complete in itself: to culture.[12]

However, social theorists over the latter half of the twentieth century have also shown a keen desire to bridge this gap between the seemingly *passive* world of materials, which is the domain of *science*, and the seemingly *active* world of humans, which is the realm of the *social*. At the outset these attempts merely present themselves as questioning the limits of the individual human subject, but often transform into a rethinking of the entire nature of the *social* in a critique of the "agency-habitat" model. From Anthony Gidden's "unacknowledged conditions" and "unintended consequences" to Pierre Bourdieu's "field" and further to Theodore Schatzki's "practice", the limits of the human actor has prompted a continuous evolution of the conception of the social realm over the past decades.[13] The current thesis recognizes this trend as a precursor to the arguments for the agency of materials as being *symmetric* to the agency of humans, as offered by Bruno Latour. Building on the pioneering efforts of Science Studies (STS) to bridge the gap between the incompatible realms of the *natural* and *social* sciences, Latour has recently offered a model of his social theory with the 2005 publication of *Reassembling the Social,* in which he deals with the problems of the agency of materials within this new landscape of the *social*.[14] Chapter 2 explores the ideas offered through these accounts of social theory, and further contextualises it within the more widely discussed contributions of Martin Heidegger's philosophy to architectural thinking, to argue for a theoretical framework that offers an alternative means to understand the encounter of architects and materials in the process of architectural production.

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[12] Andreas Reckwitz, "The Status Of "Material" In Theories of Culture: From "Social Structure" To "Artefacts"," *Journal for the Theory of Social Behaviour* 32, no. 2 (2002), 195.

[13] For instance, Anthony Giddens, *The Constitution of Society: Outline of the Theory of Structuration* (Cambridge: Polity Press, 1984), Pierre Bourdieu and Randal Johnson, *The Field of Cultural Production: Essays on Art and Literature* (Cambridge [England]: Polity Press, 1993), and Theodore R. Schatzki, *Social Practices: A Wittgensteinian Approach to Human Activity and the Social* (New York: Cambridge University Press, 1996).

[14] Latour, *Reassembling the Social*.

WRITING A NARRATIVE OF MATERIALS

Whilst these extra-disciplinary insights open up important new avenues for re-thinking the core theoretical concerns of the present study, they do not offer a solution to the problem of historicizing the *event* of the dialogue between Kahn and brick. As discussed earlier, the methodological alternatives offered by current trends in architectural historiography are bound by the subject/object paradigm of the architect as *author* and architecture as *object*. Therefore, to transcend this subject/object dichotomy where the two protagonists, namely Kahn and brick, "cannot share history equally", the thesis turns to the methodological alternatives offered by a parallel development in historiographical theory – *micronarratives*. This alternative historiographical trend is centred around two specific concerns of a re-found focus on the narrative tradition that describes rather than analyzes historical phenomena, and a concentration on the micro-region in order to address the singular event of action. Considering the intent of the thesis to historicise a singular event of encounter between the architect and the material, this historiographical model allows the basic ingredients to develop a new methodological stance. The thesis further engages the theoretical works of the pioneers of this field, such as Emmanuel Le Roy Ladurie and Carlo Ginzburg, to address the problems of the notion of *event* and *proof* in history which might deny the historicizing of such a dialogue in the first place.[15] Chapter 3, then, deals with the discussion of these methodological issues and the subsequent development of a revised methodological stance to address this dialogic encounter between Kahn and brick. On the basis of its newly defined theoretical framework the thesis further argues for a symmetric *narrative of materials* to be included in parallel to the narrative of the human architect, to generate an alternative account of the architectural production of the Indian Institute of Management (IIM) project in Ahmedabad, which it identifies as the site of the fabled encounter.

Amongst the other theoretical challenges faced by this project, this attempt to generate an unprecedented *narrative of materials* poses further problems in the form of linguistic and rhetorical barriers. The works of theorists like Hayden White have already alerted us to the undeniable impact of these *metahistorical* elements which need to be

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[15] For instance, Emmanuel Le Roy Ladurie, *The Territory of the Historian*, trans. Ben Reynolds and Sian Reynolds (Hassocks: Harvester Press, 1979), and Carlo Ginzburg, *History, Rhetoric, and Proof*, Menaham Stern Jerusalem Lectures (Hanover, NH: University Press of New England, 1999).

addressed before the formal analysis even begins.[16] In the case of the current study the most significant barrier is posed by the very structure of language where the subject/object paradigm is deeply instated. The subject/object division in written language has been in effect long enough for the development of a normative standard where activity and passivity is distributed along this division, between the world of humans and materials. The thesis, then, faces the challenge of rewriting its historical narrative while exploring and exploiting the limits of such a structure of language, albeit without resorting to an absurd construction of sentences. Much of the discussion on methodology, as formulated in Chapter 3, then also elaborates upon this major hurdle which precedes the actual rewriting of the case.

In spite of these rhetorical and linguistic barriers the historical narrative that follows is given a degree of clarity through its handling in three distinct parts, where the first two parts deal equally and symmetrically with the respective backgrounds of the two protagonists, Kahn and brick, before their arrival at the scene of the encounter, while the third part concentrates on the event of the encounter itself. Through the first two sections, Chapters 5 and 6, various associations are identified in the individual histories of Kahn and brick of eventual consequence in the event of their encounter. Chapter 7 then undertakes an original, in-depth exploration of the architectural production of the Indian Institute of Management (IIM) project in Ahmedabad, focusing on the events that led to the moment of encounter as well as its immediate impact on the process of production. The study, then, returns in the concluding chapter to evaluate the merits of such an attempt at writing architectural history, and its contributions to both the critical historiography of architecture and the understanding of the relationship of architects and materials in the process of architectural production.

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As a contribution, first and foremost, to the critical history of modern architecture, this study offers a substantially enriched and thickened micronarrative of a well-known but previously little interpreted moment in the canonical modernist narrative of mid-twentieth century architecture, when one of the most fundamental theoretical premises – the mute and inert nature of architectural materials – was called into question. This

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[16] Hayden V. White, *Metahistory: The Historical Imagination in Nineteenth-Century Europe* (Baltimore: Johns Hopkins University Press, 1973), ———, *The Content of the Form: Narrative Discourse and Historical Representation* (Baltimore: Johns Hopkins University Press, 1987).

study is, thus, also a contribution to architectural theory where it attempts to offer a better understanding of the dialogical relationship between the architect and architectural material in the process of architectural production, and the ways in which our thinking about this relationship is limited by the conceptual biases and narrative conventions institutionalised within architectural historiography. Empirically, the study evaluates a broad range of new information regarding both the development of the architect, Louis Kahn, and the brick as an architectural material in India, during the critical decade of the 1960s. In adopting its new theoretical framework to situate this historical information the study poses a challenge to some established notions about both Kahn and Modernism in India. Firstly, it challenges the dismissing argument that economic concerns were the only basis for the major shift in Kahn's architectural projects during the last decade of his life, which went from the exposed concrete rendering of the Salk Institute to the rough man-made brick vocabulary of the Indian Institute of Management in less than half a decade. In contrast the study offers a minute evaluation of the events of this period and foregrounds the role played by several other agencies in this process that have remained unacknowledged in the existing accounts. On the other hand, by regaining a focus on the historical context of brick, the present study also offers a different explanation of the rise of Modernism in India. A new picture of Modernism emerges which grounds it within an Indian building tradition rather than the prevalent idea of a stylistic import that came as a result of the post-colonial identity struggle.

Through this alternative account, this thesis is also a study in (and on) the field of architectural historiography. Whilst the historical subjects addressed here, namely Kahn and brick, have both played immensely important roles in the history of the discipline and have each been the focus of multiple monographic studies, the current study questions some of the conceptual constraints that keep us bound to precisely such a paradigm of monographs. It is, thus, a critique of the existing methods of writing architectural history which continue to divide the architectural world into *socially* laudable genius architects and *technically* predictable inert materials. It is particularly critical of the reliance on the jargon of *creativity* that keeps architectural production shrouded in the mystery of the *genius* of the architect. By offering an alternative that focuses, instead, on the *event of production*, the thesis hopes to break through the methodological barriers that have kept architectural historiography bound to the conceptual paradigms of its art historical heritage. It is only through further theoretical

and empirical investigations in the same vein that we may be able to shun these illusions of *creativity* and *genius* and acknowledge architecture as a process of *mediation* where materials and their human counterparts come together in an event of production.

PART 1

MATERIAL MATTERS

Architecture has always been influenced by social and cultural forces. From spatial reflections of use and experiential criteria to the symbolic and aesthetic functions of the form itself, architectural design is intricately tied to socio-cultural context. Even more obviously, perhaps, the process of architectural construction is inextricably engaged in the realities of the economics and cultural practices that constrain what may be built in a given time and place. It is little surprise, therefore, that such contexts feature prominently in historical and theoretical accounts of architectural production. Too readily subsumed, if not completely overlooked, in this multi-facetted notion of *context*, however, are the actual *materials* with which architecture is produced. Indeed, more than merely passive matter, architectural materials could be said to play an active role as the very substance in which architectural designs are embodied. Yet this key role has rarely been addressed as such in any comprehensive manner in the architectural literature.

A landmark attempt at such a comprehensive treatment of the status of materials in the history of architectural thought is offered by David Leatherbarrow's *The Roots of Architectural Invention* of 1993, a critical survey of selected works and theoretical writings from Vitruvius to Adolf Loos.[1] Leatherbarrow identifies "material choice" as one of the three central concerns of architectural design and construction (the other two being *site* and *enclosure*), and continues to evaluate the often contradictory opinions of architectural theorists in an attempt to generate a better understanding of this "rarely discussed procedure."[2] On one hand the concerns of *technical knowledge* seem to guide the efforts of several practitioners, while on the other, there is no dearth of socially charged arguments like *modesty*, *decorum*, or even *truth* that play into this process of

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[1] David Leatherbarrow, *The Roots of Architectural Invention: Site, Enclosure, Materials*, Res Monographs on Anthropology and Aesthetics (Cambridge: Cambridge University Press, 1993).

[2] Leatherbarrow, *The Roots of Architectural Invention*, 143.

material choice. Although Leatherbarrow's study does not arrive at any definitive conclusions concerning the status of materials in architectural thought, it does pave a way for further investigation. In particular, what Leatherbarrow's study reveals is that, even though the pre-twentieth century architectural writings he examined rarely take explicit stances on the role of materials, there are certain recurrent themes in thinking about materials that present themselves time and again in the discussion of architecture. As Richard Weston has shown in a more recent study, that extends Leatherbarrow's inquiry to the architectural thought of the early twentieth century, similar themes are recurrent in early modernist architectural thinking as well. [3]

To begin the present inquiry into the role of materials in architectural production, with its empirical focus on a particular case of production at the apex of mid-twentieth century modernism, we need therefore to complete this picture of previous thought about architectural materials with regard to twentieth century theorists and practitioners. Whilst a thorough exploration and analysis is beyond the scope of this thesis, the dearth of an existing account that specifically critiques twentieth century architectural thought dealing with materials poses the need for at least a brief critical summary. This is attempted here through a thematically structured survey of relevant ideas and stances in the wider architectural literature, similar in approach to Leatherbarrow's and Weston's earlier studies. The aim is to gather the theoretical arguments of the last century under broad categories that may inform us of the prevalent trends in thinking about materials that continue to shape present understanding.

Drawing on the arguments of both Leatherbarrow and Weston, the account of the survey offered here has initially been organized under the four thematic categories of *Use, Nature, Meaning* and *Desire*. These categories are in no way exhaustive of all the possible arguments about materials that might have been presented during the course of the entire century, but they do constitute amongst them the majority of arguments about materials that have shaped the architectural thought of the twentieth century. Merely establishing these thematic categories, however, does not resolve the problem of identifying the status of the material under each category. Within the vast and varied domain of architectural writing it would be absurd to claim any consensus among the authors even on the topic of architecture, let alone the status of material within it. The previous studies offered by Leatherbarrow and Weston suffer from exactly such a lack

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[3] Richard Weston, *Materials, Form and Architecture* (London: Laurence King, 2003).

of consensus, where the unrestricted category of a *theme* can be applied in completely incompatible ways to the topic of architecture depending upon the stance of the author. To merely chase the themes in such an indefinite scenario, then, cannot aid our understanding of the role of the material any better. Therefore, to overcome this problem we need to view the theoretical arguments and the thematic categories they address within a contextual framework.

It has already been mentioned that although accounts of architectural production rarely address the role of materials, they continue to deal with the socio-cultural considerations of design and construction in explicit detail. Therefore, we may find that it is the interpretation of the nature of the very socio-cultural reality the author seeks to address which continues to colour his/her view of the material. Disciplinary movements and ideological consensus regarding the nature of the *social* can, then, also be seen as driving the representation of architecture of a period. This is not to claim that any particular theme has an accepted and defined application within a particular time period (acting as a *Zeitgeist*), but that representations of architecture continue to engage certain thematic notions to circumvent addressing the question of materials directly within the narrative, and these seemingly acquire a discernable meaning over time.[4] Therefore, the arguments of a given theorist must be viewed against the contemporary theoretical context of the *social* that they espouse, in order to generate a more comprehensive picture. Only by claiming such a situational bias can the status of materials be determined within the general arguments of the defined thematic category. Here, we may observe that the inherently limitless capacity afforded by the themes of *use, nature, meaning,* or *desire*, are continually restricted within the twentieth century context by the socio-cultural focus on *function, intention, communication,* and *fetish* respectively. The following survey is, thus, divided along the four conceptual axes of *use/function, nature/intention, meaning/language*, and *desire/fetish*. While the arguments offered here specifically relate to architectural thinking, this view that situates the ideas of architectural theorists within general tendencies of thinking about the nature of the

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[4] The historiographical method of identifying *mentalities* and *movements* has come under some criticism, and the stance adopted by the current thesis within this context will be discussed in detail later. However, for the purpose of generating this highly condensed account of a century of architectural thought, the thesis agrees with the observations of Charles Jencks, when he notes that there is a trend in architectural writing where a classification develops through a "long and cumulative" process outlining "loose overlaps" between architectural thought, and that this is further "spelled out and modified by much subsequent research, which shows, for instance, the exceptions to straight line development." See Charles Jencks, *The New Moderns: From Late to Neo-Modernism* (London: Academy Editions, 1990), 289.

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social, builds upon the arguments of Andreas Reckwitz, offered in his similar appraisal of "the status of "material" in theories of culture."[5] With this contextual background, and in order to understand the role of materials in architectural production better, let us now attempt a brief survey of the ways of thinking about architecture in the last century, and the status that materials acquire within these perspectives.

USE/FUNCTION

The most recurrent theme in the discussion of materials in architectural production is *use*.[6] The notion of *utility* is probably the oldest continuing thread in architectural thinking finding a prominent place even in the Vitruvian triad (*utilitas*). However, by the start of the twentieth century the term had acquired a very narrow and mechanistic definition with the rise of *functionalism* in modern architectural thought. Once again, as Edward de Zurko has shown in his *Origins of Functionalist Theory*, the modern notion of functionalism in architecture is the result of a consistent fascination with mechanical utility throughout the ages.[7] However, in the early nineteenth century considerable developments in the discipline of natural sciences coupled with the parallel fascination with historical progress, as professed by Hegel, gave rise to the idea of evolution.[8] It is within the context of this theory of biological evolution, which sparked a debate on *form and function*, that we find the notion of utility take on a stronghold in architectural thought. The debate on *form and function* that ensued from the introduction of an evolutionary theory in the nineteenth century has already been dealt with in considerable detail and need not be repeated here. However, it is useful to reiterate Peter Collin's observation that it was not until the arrival of Darwin that the debate was seemingly resolved in the favour of *function*.[9] Darwin's arguments for a process of "natural selection," which relieved his notion of evolution from the burden of final

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[5] See Andreas Reckwitz, "The Status of "Material" In Theories of Culture: From "Social Structure" to "Artefacts"," *Journal for the Theory of Social Behaviour* 32, no. 2 (2002).

[6] Even though this may be assumed as common knowledge, the works of both Leatherbarrow and Weston cited before recognise this as a prime thematic category in the discussion of materials.

[7] Edward Robert De Zurko, *Origins of Functionalist Theory* (New York: Columbia University Press, 1957).

[8] For an introduction to various theories that developed over the period of the late eighteenth and early nineteenth century leading up to the publication of Charles Darwin's *The Origin of Species*, see Yves Delage and Marie Goldsmith, *The Theories of Evolution*, trans. Andrè Tridon (New York: B. W. Huebsch, 1912). For an overview of this process see arguments in Robert Scoon, "The Rise and Impact of Evolutionary Ideas," in *Evolutionary Thought in America*, ed. Stow Persons (New York: Braziller, 1956).

[9] See discussion in, Peter Collins, *Changing Ideals in Modern Architecture, 1750-1950*, 2nd ed. (Montreal: McGill-Queen's University Press, 1998), 149-158.

causes or behavioural development and returned to it an effect-based actualization of forms, was founded on similar principles of mechanical causes and natural laws that had formed the underpinning of physicists like Galileo and Newton.[10] This was, consequently, to lead to Louis Sullivan's recognizable maxim of "Form ever follows Function," which guided much of early twentieth century architectural thought.[11] Before we discuss the status of materials within the thematic category of *use* as defined by this paradigm of *functionalism*, it is important to consider yet another significance of engaging this evolutionary theory as a point of departure. The allusion to the notions of biological evolution as a starting point for this discussion is particularly relevant considering that, the nineteenth century debate on form and function was the result of an expanding definition of *life* which was modified to include a larger understanding of the non-human realm.[12] This was to be later incorporated into architectural discourse through a focus on the notion of the *organic*. Competing ideas in evolutionary theory, such as those offered by Darwin's predecessor Lamarck, further serve as the basis for other interpretations to this debate and will be dealt with later.[13] However, for now, let us return to the increasingly mechanistic worldview of early twentieth century architectural thought and the resultant status of materials.

The mechanistic view of utility that became established in architectural thinking by the early twentieth century – most commonly though somewhat paradoxically associated with the formal tendencies and quasi-rationalist polemics later branded as "The International Style"[14] – needs to be contextualized in terms of developments in architectural thought in the previous century. As Zurko reminds us, the arguments for *function*, that became central to early twentieth century architectural modernism, can be

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[10] See arguments in F.S.C. Northrop, "Evolution in Its Relation to the Philosophy of Nature and the Philosophy of Culture," in *Evolutionary Thought in America*, ed. Stow Persons (New York: Braziller, 1956).

[11] The contributions of Louis Sullivan to modern architectural thought have been discussed in many sources, for instance see Hugh Morrison, *Louis Sullivan: Prophet of Modern Architecture* (New York: W.W. Norton, 1935). Also see Robert Twombly, ed. *Louis Sullivan: The Public Papers* (Chicago: University of Chicago Press, 1988).

[12] See discussion in Collins, *Changing Ideals in Modern Architecture*. Also see Donald Drew Egbert, "The Idea of Organic Expression and American Architecture," in *Evolutionary Thought in America*, ed. Stow Persons (New York: Braziller, 1956).

[13] For an introduction to the Lamarckian theory of evolution, see Delage and Goldsmith, *The Theories of Evolution*. Lamarck's maxim of "the function creates the organ," is closer to the idea of Organicism that was at least offered by Frank Lloyd Wright.

[14] The idea of "The International Style" was definitively established with the 1932 MOMA exhibition and developed through the corresponding publication, Henry Russel Hitchcock and Philip Johnson, *The International Style: Architecture since 1922* (New York: W.W. Norton, 1932).

traced back to the writings of the American sculptor, Horatio Greenough, almost a century before.[15] While not an architect by profession, Greenough was greatly affected by the developments in physical sciences that had prompted the rise of civil engineering as a discipline, thereby generating a general interest in structures.[16] The Industrial Revolution had led to considerable technical improvements, and the construction of mechanical structures, subject to a rational process determined by the discipline of civil engineering, stood in direct contrast to existing architectural forms.[17] At a theoretical level too, the legacy of the likes of Galileo and Leonardo da Vinci had found its way into architectural thinking with the rise of the Rationalist schools.[18] While Greenough argued that we need to look at *shipbuilding* as a means to understand the development of form based on function, the highly influential Viollet-le-Duc of the French Rationalist school took a more historicist approach in expounding the need for a new style while using similar analogies of *shipbuilding*.[19] In either form, the basic argument intended to achieve the subversion of the classical concerns for *beauty* to the upcoming notions of *function*.[20] With the growing influence of the Rationalist school, architectural form increasingly came to be regarded as structural form.[21] This search for new forms, which was devoid of aesthetic judgment, was merely focused on structural economy and regarded all else as subservient to this immediate mechanical need. With the development of parallel arguments for a definition of social needs based on a similarly mechanistic premise, architectural form was stripped of everything else but its *utility* defined in these exceedingly narrow terms. With the advent of the twentieth century, then, we find Le Corbusier invoking the analogy of shipbuilding once again, this time to argue for architecture as a "machine to live in."[22] Within such a stripped down

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[15] See Horatio Greenough and Harold A. Small, *Form and Function: Remarks on Art, Design and Architecture* (Berkeley, Calif.: University of California Press, 1947).

[16] For a concise study of Greenough's aesthetic thought, see Charles R. Metzger, *Emerson and Greenough: Transcendental Pioneers of an American Esthetic* (Westport: Greenwood Press, 1974).

[17] The effect of the nineteenth century rise in engineering practices on the profession of architecture has been discussed by many authors, but for a more recent and detailed account see Andrew Saint, *Architect and Engineer: A Study in Sibling Rivalry* (New Haven: Yale University Press, 2007).

[18] See arguments in Collins, *Changing Ideals in Modern Architecture*. Also see Liane Lefaivre and Alexander Tzonis, "The Machine in Architectural Thinking," *Daidalos* 18, no. December (1985).

[19] See Greenough and Small, *Form and Function*, and Eugène-Emmanuel Viollet-le-Duc, *Discourses on Architecture*, trans. Benjamin Bucknall (New York: Grove Press, 1959).

[20] See arguments in Collins, *Changing Ideals in Modern Architecture*.

[21] See discussion in Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, ed. John Cava (Cambridge, Mass.: MIT Press, 1995).

[22] See Le Corbusier, *Towards a New Architecture*, trans. Frederick Etchells (London: John Rodker, 1931).

understanding of architecture, the nature of *purpose* is seemingly reduced to the two concerns of, expression of structural economy based on a technological ascendancy, and serving the needs of the human occupants.[23]

In an understanding of architecture which is based on a preoccupation with *structural economy,* the material is regarded as a necessary evil which is unavoidable in construction, and therefore needs to be employed economically. An argument for structural economy is predominantly premised on, what Soufflot articulated as early as 1762 as a "great saving in materials."[24] With the continuing developments in natural sciences both the so called *properties* of materials and the *universal laws* of physics become more defined, and it becomes feasible for the architect to be prudent in the *use* of materials. This idea of an economy of materials being concomitant with a greater understanding of the natural context is espoused in the Miesian aphorism of "less is more." Such a quest for purity of form denies the reliance of the development of the form on its material content.[25] The architectural form, as if caught in a Darwinian actualization of forms, is developed through natural processes of negation until the most useful and thereby the *fittest* form is achieved. Here, the context of architectural production only affects the realization of these, to borrow Darwin's words, "incipient" forms, and the forms themselves are not affected by the process of materialization.[26] In advocating the rise of International Style Modernism, such an understanding was employed to justify the minimizing of the architectural palette of materials to the avant-garde set of glass and steel in the quest for a universal and utilitarian form. The concern for a universal definition of utilitarian form itself derives from a peculiar understanding of the human social condition that supports this understanding of materials. However, let us first look at yet another factor that has contributed to the continuation of such an understanding of materials in the last century – a preoccupation with technology.

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[23] These two categories are also highlighted in De Zurko, *Origins of Functionalist Theory*. There are several excellent studies that chronicle the developments of the early twentieth century ideas of modernism. For some important perspectives that have come to serve as the bedrock of these discussions, see Henry Russell Hitchcock, *Modern Architecture: Romanticism and Reintegration* (New York: Payson and Clarke, 1929), Nikolaus Pevsner, *Pioneers of Modern Design: From William Morris to Walter Gropius* (New York: Museum of Modern Art, 1949), Reyner Banham, *Theory and Design in the First Machine Age*, 2d ed. (New York: Praeger, 1967), and Manfredo Tafuri and Francesco Dal Co, *Modern Architecture*, trans. Robert Erich Wolf (New York: H.N. Abrams, 1979).

[24] Soufflot, quoted in Collins, *Changing Ideals in Modern Architecture*, 199.

[25] In particular see arguments for "Miesian purity" in Tafuri and Francesco Dal Co, *Modern Architecture*.

[26] See Northrop, "Evolution in Its Relation to the Philosophy of Nature and the Philosophy of Culture."

Once again, the preoccupation with *technology* is a result of the increasing interest in the development of natural sciences. However, this interest in technological development is further affected by the arguments for *progress* that were propagated by the nineteenth century interest in history as a process of development.[27] As a part of this argument, technological development becomes a marker of progress and the quest for being avant-garde leads to a preoccupation with technological ascendancy.[28] Much of early twentieth century European modernism and works of figures like Buckminster Fuller, then, also rely on such an argument to justify their efforts.[29] Even after these early modernist arguments have lost their appeal, the preoccupation with technological ascendancy has continued to affect the representation of architectural works in the twentieth century. The high-tech works of Norman Foster, or the quest for a Miesian purity embraced by Skidmore Owings and Merrill, or even the machine aesthetics of Renzo Piano and Richard Rogers are still partially justified through this need for technological ascendancy.[30] Within such a paradigm, the discourse on tectonics has also been reduced to a quest for superiority in fabrication procedures guided by scientific development. The focus on technological ascendency within the perspective of architecture of *function*, then, reduces the role played by materials to its exploitation by the technologically advanced procedures in achieving the preconceived form. Although the quest for form itself may not always be guided by social needs in some of these later examples, and these will be discussed further, it is still relevant to note that the preoccupation with *technology*, much like that with *structural economy*, regards the materials merely as a means to realize a predetermined architectural form.

In the absence of a material basis for the development of form, such an understanding of architecture often has to rely on the arguments of *social needs*. While the fact that architecture provides for the needs of its human occupants cannot be contested, the

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[27] The triumph of the idea of progress in the nineteenth century is well acknowledged; see Robert A. Nisbet, *History of the Idea of Progress* (New Brunswick: Transaction Publishers, 1994).

[28] See in particular, arguments in Banham, *Theory and Design in the First Machine Age*.

[29] For arguments in European modernism see Walter Gropius, *The New Architecture and the Bauhaus*, trans. P. Morton Shand (Cambridge: MIT Press, 1965), and Hans M. Wingler, *The Bauhaus: Weimar, Dessau, Berlin, Chicago* (Cambridge: MIT Press, 1978). For Fuller a good introduction can be found in Joachim Krausse and Claude Lichtenstein, eds., *Your Private Sky: R. Buckminster Fuller: Art, Design, Science* (Baden, Switzerland: Lars Müller, 1999).

[30] See Colin Davies, *High Tech Architecture* (New York: Rizzoli, 1988). Also see Reyner Banham, *The Architecture of the Well-Tempered Environment* (Chicago: University of Chicago Press, 1984). For an introduction to the "loose overlaps" across the works of Foster, Piano and Rogers see Kenneth Powell, *Richard Rogers* (London: Artemis, 1994).

functionalist arguments of the early twentieth century offer a narrow and mechanistic definition of this need based on its perception of the *social*. The nineteenth century developments in the newly established discipline of sociology had led to the gradual shift from a *cultural* understanding of human behaviour to a more universal and rational basis of human action defined as the *social*.[31] With Karl Marx, as a member of the Hegelian school, the explanation of human behaviour had already been relegated to a dialectical conflict of classes in production. Further developments in the natural sciences led to the understanding of human action as being based on *underlying rational structures* that stem from *universal* needs. Once again, the developments of the evolutionary theory along the Anglo-French axis of Darwin and Lamarck contributed considerably to this transformation. Herbert Spencer, in adopting this newly established theory of biological evolution to explain cultural phenomena, had become the basis for Louis Sullivan's call for "form ever follows function."[32] However, while implementing this transformation from the *biological* to the *cultural*, Spencer had resorted to Comte's positivism and simultaneously achieved a transformation from the *cultural* to the *social*, which was to become the basis for future works of social theory like those of Emile Durkheim.[33] By the twentieth century, then, a new understanding of human need and action were established, one that was based on *universal* and *unconscious rational structures*, and which needed to be released from the veil of the *cultural* to reveal its true nature as the *social*.[34] True to its source of inspiration, then, the maxim of "form

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[31] For an introduction to the origins of classical sociological thought in the nineteenth century, see Bert N. Adams and Rosalind A. Sydie, *Classical Sociological Theory* (Thousand Oaks, CA: Pine Forge Press, 2002). Also see Craig Calhoun et al., eds., *Classical Sociological Theory* (Malden MA: Blackwell, 2007). For a concise overview of developments in sociological thought see Andreas Reckwitz, "Toward a Theory of Social Practices: A Development in Culturalist Theorizing," *European Journal of Social Theory* 5, no. 2 (2002).

[32] See Herbert Spencer and Stanislav Andreski, *Herbert Spencer: Structure, Function and Evolution* (New York: Scribner, 1971). For development of Sullivan's idea, see Louis Sullivan, *The Autobiography of an Idea* (New York: Peter Smith, 1924).

[33] For a discussion on this lineage of thought, see Steven Lukes, *Emile Durkheim, His Life and Work: A Historical and Critical Study* (Stanford, CA: Stanford University Press, 1985). Also see discussion in Northrop, "Evolution in Its Relation to the Philosophy of Nature and the Philosophy of Culture."

[34] This trend in sociological theory, identified as Structural Functionalism, most specifically derives from the works of Talcott Parsons. Parsons arguments were an extension of the ideas already developed through the works of Comte, Spencer and Durkheim, but his contribution came in form of a generalised notion of *structure* which created a more universal understanding of the *social* as a system. For an overview of Parsons ideas of social action, see Richard Munch, "Talcott Parsons and the Theory of Action II: The Continuity of the Development," *The American Journal of Sociology* 87, no. 4 (1982), ———, "Talcott Parsons and the Theory of Action I: The Structure of the Kantian Core," *The American Journal of Sociology* 86, no. 4 (1981). These arguments had a strong impact on the developments of the theoretical trend of Structuralism most closely associated with the idea of the "universal unconscious." See Edith Kurzwell, *The Age of Structuralism: From Levi-Strauss to Foucault* (New Brunswick NJ: Transaction Publishers, 1996).

follows function" was interpreted as an explanation of architectural form as an object isolated in space, reliant only on some *universal* definition of *social need* to become the basis of its realization.[35] The engineering analogies of *shipbuilding* that had supported the foregoing arguments for function were themselves not localized, and this further alienated the definition of architecture from its material surroundings.[36] Finally, in its epitome reached through The International Style, we can observe the explanation of the architectural object as a material reality being subservient to an ideal definition of universal human utility.[37] While these arguments for the rational and unconscious basis for universal archetypal human needs was limited to the functionalist notions of the early twentieth century, this departure from the situatedness of the material and the cultural context is perpetuated by all explanations of architecture that rely on the *social* human need to justify the development of architectural form.

In this mechanistic understanding of architecture, which is defined here along the conceptual axis of *use/function*, the status of materials is easy to identify. The exclusive preoccupation with *function* as a generator of form precludes an understanding of the complex relationship between the material and form. The material, then, serves as a means to realize a predetermined architectural form, and needs to be employed economically. This quest for economy is further supported by the developments in natural sciences, which are constantly improving in defining certain physical properties of the material. From the perspective of technological advancements, these physical properties are more a reflection of the seemingly immutable laws of physics than a quality of the material itself. These technological advancements are, thus, directed towards a more efficient exploitation of the materials in realizing the predetermined architectural form. This very possibility of a predetermination of form devoid of a material context subordinates the *physical* realm of the material to the *mental* realm of its human users, which seemingly carries this potential. Furthermore, since the form itself is developed out of a quest for perfect and simplest utility pertaining to human

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[35] This altered understanding of architecture as an isolated object in space has been most strongly attributed to the new ideas of space and time being developed at the time, see Sigfried Giedion, *Space, Time and Architecture* (New York: Collier Books, 1943).

[36] Also see Adolf Behne, *The Modern Functional Building*, trans. Michael Robinson (Santa Monica, CA: Getty Research 1996).

[37] For arguments dealing with the social orientation of early twentieth century architectural thought, in addition to the sources already cited before, see William J.R. Curtis, *Modern Architecture since 1900* (London: Phaidon, 1996), Kenneth Frampton, *Modern Architecture: A Critical History* (New York: Oxford University Press, 1980).

users, the material is only regarded for that definable set of properties which serve the desired function of fulfilling human needs. The *social* basis for the definition of this function – as serving a *universal* human utility – further privileges the human realm as being singular and distinct from the material realm. Those aspects of materiality that correspond to cultural concerns are, therefore, deliberately discarded as veiling the underlying rational basis of universal human needs and architecture becomes a manifestation of these needs. Within such an understanding of architecture, then, the material is a non-cultural and real entity that is implicated into human *use* by the architect through underlying rational and social structures.

NATURE/INTENTION

In the post-war years the general air of discontent prompted by world events led to major changes in architectural thinking. The arguments for absolute order based on an understanding of the human social condition as a seemingly unconscious system of universal needs had led to an alienation of the individual from its surroundings. In the post-war struggle against such a universal and mechanistic understanding of the human condition the focus was returned to the *situatedness* of the *phenomena*.[38] Within architectural discourses as well, then, the arguments tended to address the relationship of the built form with the immediate surroundings, rather than offering them as a construct of an overarching universal social need. The general trend that guides such arguments about architecture stems from a reorganization of the focus on the *local* and the *individual* rather than the *global* and the *social*. This change in trend which took a stronghold in the post-war decades brings us to reflect on yet another theme that guides the discussion of materials in architectural production – its *nature*.

The notion of the *nature* of materials is no less a focus of continuing argument in architectural writing than the notion of *use*. Once again, if we were to trace its genealogy we would find that it is equally difficult to define. However, in the context of twentieth century architectural thought, an understanding of materials based on the notion of its *nature* has to acknowledge its clear antecedent in Frank Lloyd Wright's

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[38] The hegemony of the structural-functional thinking was challenged in the post-war years, and this led to a greater interest in the ideas of Phenomenology, Symbolic Interactionism and Ethnomethodology. Even though many of these ideas were already in development in early twentieth century it was not until the post-war years that the desire for a non-deterministic role of the individual in society allowed for their growth. See arguments in Bert N. Adams and Rosalind A. Sydie, *Contemporary Sociological Theory* (Thousand Oaks, CA: Pine Forge Press, 2002).

call for building "in the nature of materials."[39] Wright's arguments form yet another part of the nineteenth century debate prompted by the rise of evolutionary theory, one that was affected by the expanding definition of *life* and employed biological analogies in the support of the *organic*. While Louis Sullivan developed his maxim of "form follows function" through his exposure to Herbert Spencer and became synonymous with twentieth century functionalism, his protégé Wright took to the biological writings of Spencer to generate, the then not so divergent, idea of organicism.[40] The mid-twentieth century discontent with the mechanistic analogies of the functionalists and the glass and steel boxes of International Style Modernism led to the revival of this notion of *organicism* as its antithesis. Although Wright could himself be regarded as a functionalist within a nineteenth century context, the twentieth century cult of organicism highlighted in his works all the elements that stood in sharp contrast to the mechanistic interpretations which had gone before.[41] Here Wright became the advocate for the use of local materials, with an understanding that architectural form sprung from its surroundings, and that the built form constituted an inextricable part of a whole that seamlessly connected both its occupier and the surroundings into a singular organism.[42]

This revised definition of organicism and a return to the local context as a basis of architectural form in the mid-twentieth century, was the result of a rising interest in *phenomenology* as a theoretical framework for architecture and must be considered in this light. As forerunners of what Colin St. John Wilson describes as "the other tradition of modern architecture," figures like Hans Scharoun and Alvar Aalto had already stood in contrast to the mechanistic interpretations of the functionalists and the subversion of architectural form to a predetermined universal ideal.[43] Their arguments continued to

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[39] Frank Lloyd Wright, *An Autobiography (1943)* (New York: Horizon Press, 1977).

[40] See argument in Northrop, "Evolution in Its Relation to the Philosophy of Nature and the Philosophy of Culture," Also see Robert C. Twombly, *Frank Lloyd Wright: An Interpretive Biography* (New York: Harper, 1973), and Robert McCarter and Kenneth Frampton, eds., *Frank Lloyd Wright: A Primer in Architectural Principles* (New York: Princeton Architectural Press, 1990). For Wright's account of the influences of Sullivan on his thought, see Frank Lloyd Wright, *Genius and the Mobocracy* (New York: Duell, Sloan & Pierce, 1949).

[41] See Egbert, "The Idea of Organic Expression and American Architecture."

[42] Wright spent the last decades of his life talking about this new idea of organic architecture. Starting from his 1939 lecture entitled *An Organic Architecture*. See argument in Twombly, *Frank Lloyd Wright*.

[43] Colin St. John Wilson, *The Other Tradition of Modern Architecture: The Uncompleted Project* (London: Academy Editions, 1995). For an introduction to Scharoun's theoretical stance in relation to his contemporaries like Hugo Haring and Le Corbusier, see Peter Blundell-Jones, *Hans Scharoun* (London: Phaidon Press, 1995). For Alvar Aalto, see Peter Reed, ed. *Alvar Aalto: Between Humanism and Materialism* (New York: H.N. Abrams, 1998).

espouse the rationalist bent of modernism and the need for addressing human social requirements, but further maintained the importance of the individual's practice of "dwelling" as an integral part of this need. While the ideas of CIAM and the International Style commanded the architectural literature of the early twentieth century, such ideas of *dwelling* were explored by other theoretical and philosophical works.[44] With the presentation of Martin Heidegger's celebrated paper entitled *Building, Dwelling, Thinking* at a colloquium in 1951, then, the arguments of Scharoun found further support from the philosophical investigations into phenomenology, and a new framework was developed for opposing the functionalists.[45] From the set of theoretical notions introduced by these phenomenological ideas into the architectural discourse, the notions of specificity of *place* and *primordial* experience were most relevant in reviving a focus on the role of materials in form generation.[46]

The idea of *place* stood in direct contrast to the notions of a universal and mathematical *space* that was central to the arguments of the International Style. As a microcosm of reality, *place* was constituted of a specific material and cultural context and could not be replicated elsewhere.[47] Refuting the functionalist conception of architectural form as being realized in a limitless space, theorists like Christian Norberg-Schulz, who employed Heidegger's arguments to formulate a new theory of architecture, argued for a regained focus on place, which carried within it all the ingredients necessary for the generation of form.[48] This revised focus on the local material and cultural context,

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[44] In particular are the works of Edmund Husserl which served as a direct influence for Heidegger's ideas of "dwelling." See Edmund Husserl, *Ideas: General Introduction to Pure Phenomenology*, trans. William Ralph Boyce Gibson (New York,: Macmillan Co., 1931).

[45] Heidegger presented the paper at the Darmstadt Colloquium on "Man and Space" held on August 5, 1951. A translation is available from Martin Heidegger, *Poetry, Language, Thought*, trans. Albert Hofstadter, [1st] ed., His Works (New York: Harper & Row, 1971). For discussion on the impact this had on Scharoun's stance see argument in St. John Wilson, *The Other Tradition of Modern Architecture*, 65.

[46] For an overview of the philosophical context of these ideas see Edmund Husserl, *Cartesian Meditations: An Introduction to Phenomenology*, trans. Dorion Cairns (The Hague: Martinus Nijhoff, 1960), Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith (London: Routledge & Kegan Paul, 1962), Martin Heidegger, *Basic Writings from Being and Time (1927) to the Task of Thinking (1964)*, 1st ed., His Works (New York: Harper & Row, 1977), and ———, *Being and Time*, trans. John Macquarrie and Edward Robinson (Oxford: Basil Blackwell, 1967).

[47] See arguments in David Seamon, ed. *Dwelling, Seeing, and Designing: Toward a Phenomenological Ecology* (Albany: State University of New York Press, 1993). This notion of *place* would lead to the development of trends in *regionalism* and the related arguments for Critical Regionalism which further had a bearing on the status of materials. See influential texts by Tzonis and Lefaivre, and Kenneth Frampton in Kate Nesbitt, ed. *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965-1995* (New York: Princeton Architectural Press,1996)

[48] Heidegger's phenomenological arguments were most rigorously incorporated into architectural thought in the writings of Christian Norberg-Schulz. See Christian Norberg-Schulz, *The Concept of Dwelling: On*

similar to the interpretations of Wright's legacy of organicism, allowed materials to become a part of form generation once again. Furthermore, the phenomenological need for a *primordial* engagement with this surrounding, added extra layers to the idea of the *nature* of materials. The need for such a *primordial* experience opened up the understanding of materials and its nature to categories that had otherwise remained marginalized in the efforts of the natural sciences.[49] Beyond the mathematical notions of *properties* afforded to them in the mechanistic account of the functionalists, materials were now susceptible to experiential categories such as *texture* and *warmth* which became an integral part of its nature. From a rationalistic application of this *nature* focused on the enhancement of a singular experience (as attempted by Scharoun), to the pluralistic experience designed for the discovery of this nature itself (as attempted by Aalto), such a perspective returned materials to the centre of form generation. This corporeal interpretation of architectural material – born of the phenomenological concern of being situated within a material world – still forms the basis for explaining the works of architects like Steven Holl and Peter Zumthor, and has more recently been recast as a part of this Scandinavian legacy by Juhani Pallasmaa as the "handshake of the building."[50]

Even as these phenomenological notions of specificity of *place* and *primordial* experience were returning materials to the centre of form generation, the philosophical ideas of Heidegger had another legacy that continued to restrict this revival, that of *Intentionality*.[51] By the post-war era, the philosophical works of Edmund Husserl and his students – Martin Heidegger and Maurice Merleau-Ponty in particular – had generated some interest in the ideas of consciousness and the notion of intentionality. In explaining the relationship between the individual and their surrounding, the arguments

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the Way to Figurative Architecture*, Architectural Documents (New York: Rizzoli, 1985), and ———, *Genius Loci: Towards a Phenomenology of Architecture* (New York: Rizzoli, 1980). Also see a later reflection in ———, *Architecture: Presence, Language, Place*, Skira Architectural Library (London: Thames & Hudson, 2000).

[49] In this context, also of interest are the arguments in modern Japanese architecture offered by figures like Tadao Ando or Kisho Kurokawa. See, Kenneth Frampton, *Tadao Ando* (New York: Rizzoli International, 1984), and Kisho Kurokawa, *Kisho Kurokawa: The Architecture of Symbiosis* (New York Rizzoli, 1988).

[50] See Juhani Pallasmaa, *The Eyes of the Skin: Architecture and the Senses* (London: Academy Editions, 1996). Also see Steven Holl, *Steven Holl: Idea and Phenomena* (Baden, Switzerland: Lars Müller, 2002), and Peter Zumthor, *Thinking Architecture* (Basel, Switzerland: Birkhauser, 2006).

[51] See Husserl, *Cartesian Meditations*, and Heidegger, *Being and Time*. For Norberg-Schulz's attempt at engaging this notion of *intentionality* into a comprehensive theory of architecture, see, Christian Norberg-Schulz, *Intentions in Architecture* (Cambridge, Mass: M.I.T. Press, 1965).

of intentionality offered that the consciousness was always intentional. Such an understanding sought to debunk the functionalists claim for a universal unconscious as the basis of rational structures, and focus on the conscious basis of rational action. The focus once again returned to the individual actor who was responsible for interacting with the external world and ascribing meaning to it in order to generate a more meaningful structure of the whole. Consequently, then, in architectural thought the individual architect became more powerful as the generator of this structure and we can see the rise of expressionistic tendencies in post-war modernism. From the later works of Le Corbusier himself to the clearly expressionistic attempts by yet another set of Scandinavians such as Eero Saarinen and Jorn Utzon, the rationale shifted to an inclusion of the expressionistic intentions of the architect as part of the human needs that architecture needed to address.[52] The ideas of place and primordial experience that had helped bring the nature of materials back to the fore were, then, eventually subsumed by the formalistic needs of these individual human intentions.[53]

This change of focus from the complexity of the *place* and the *nature* of the material, to the individual architect's *intention* as the source of this revelation, is most easily visible in the arguments for *authenticity* that soon took over the subsequent discourse on materials. The notion of intentionality that had served as an undercurrent in the philosophical works of Heidegger and Merleau-Ponty was taken up by theorists like Jean-Paul Sartre to expound the ethical concerns for authenticity.[54] In terms of architectural thought, then, the generation of form was not only an aesthetic process of discovery of the nature of material but the ethical duty to authentically express this nature. The potentiality of the layered and pluralistic understanding of materials that was offered by the notion of *nature*, was once again reduced to a restricted definition that needed to be available as part of the individual architect's repertoire of *expression*.

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[52] For Eero Saarinen, see Allen Temko, *Eero Saarinen* (New York: Braziller, 1962). A good introduction to Utzon is available from Frampton, *Studies in Tectonic Culture*, 247-334.

[53] This is evident in Colin Rowe's arguments for "Mannerism and Modern Architecture." See Colin Rowe, "Mannerism and Modern Architecture," *Architectural Review* 107 (May 1950). Also see Colin Rowe, *The Mathematics of the Ideal Villa, and Other Essays* (Cambridge, Mass: MIT Press, 1976), and Colin Rowe and Fred Koetter, *Collage City* (Cambridge, Mass.: MIT Press, 1978). Also of relevance are the developments in the so called Venice school, see Vittorio Gregotti, *New Directions in Italian Architecture*, trans. Giuseppina Salvadori (New York: George Braziller, 1968), and a corresponding rise in tectonic tradition, see Marco Frascari, "The Tell-the-Tale-Detail," *Via* 7 (1984).

[54] For Sartre's notion of *authenticity* see Jean-Paul Sartre, *Being and Nothingness: An Essay on Phenomenological Ontology*, trans. Hazel E. Barnes (London: Methuen, 1957). A good discussion of Sartre's existentialist ethic is available from Norman Nathaniel Greene, *Jean-Paul Sartre: The Existentialist Ethic* (Westport: Greenwood Press, 1980).

Consequently, the clearly expressionist tendencies of architects like Corbusier mentioned above were recast as an ethical expression within the arguments of Brutalism, initiated by Alison and Peter Smithson and later popularized by Reyner Banham.[55] Even when such a strong ethical consideration is not applied, such as in explaining some of the later expressionist works of Herzog and de Meuron or Santiago Calatrava, the material is considered as a complex yet definable part of the architect's repertoire.[56]

Considering the status of materials, there is no doubt that the arguments for building "in the nature of materials" had returned materials to the realm of form generation, from whence they had been banished by the utilitarian definitions of the functionalists. The material, whether viewed through an aesthetic consideration of *experience* or an ethical consideration of *expression*, was very much at the centre of the process of architectural production. However, when considered in its definition along the axis of *nature/intention* attempted here, the material takes a secondary position to the individual human architect. Within the basic arguments of a Husserlian phenomenology, that serve as the basis of Heidegger's works and all its subsequent appropriation in architectural thought, the material is still considered as external to the mental realm of the individual human and is only available through a mental process of "schematization." The material is thus subject to the structuring intentions of the individual as he/she mediates the material through this mental *schema*, and ascribes meaning to the surrounding landscape. Within architectural arguments dealing with such an interpretation of phenomenology, then, this condition means that the *nature* of the material is subject to the architect's perception of the nature of the material and remains distinct from the actual material which may be available for other such interpretations.[57] The notion of *nature*, therefore, does not belong to the material itself, but is an inert set of qualities that are subservient to human interpretation (phenomena). Furthermore, in the context of architectural production, the material, no doubt in its much more complex guise, is still dependant on the structuring intentions of the architect who must express such a nature in order to ascribe meaning to the landscape

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[55] See Reyner Banham, *The New Brutalism: Ethic or Aesthetic?*, Documents of Modern Architecture (London: Architectural Press, 1966).

[56] See Leon van Schaik, ed. *Poetics in Architecture* (London: Wiley-Academy, 2002). Also see Alexander Tzonis, *Santiago Calatrava: The Poetics of Movement* (New York: Universe, 1999).

[57] See specifically the arguments for object and quasi-object in Norberg-Schulz, *Intentions in Architecture*.

and reveal the place. The materials are, thus, subject to the intention of the individual architect in this ethical task of expression. We can say, then, that in such an understanding, the *material* is a culturally situated entity which is dependent on the structuring intention of the individual architect to reveal this truth and ascribe meaning into the world.

MEANING/COMMUNICATION

The discontent of the post-war years led to a more drastic change in the approach to architectural thinking over the last quarter of the century. The growing dissatisfaction with the notions of absolute order of the early twentieth century had already sparked a return to the local and situated condition of the individual. We have discussed the effect of this reappraisal of the status of the individual in the growth of post-war expressionist endeavours. Once the individual was afforded the power to express a different perspective through the architectural work that did not need to rely solely on the definition of a universal social need, the expression itself became the centre of concern. Disaffected by world events of the recent past, this freedom of expression was most strongly directed against the functionalist ideals that were considered synonymous with these events. Consequently, architecture became the means of this expression, and architectural elements the symbols of a *post-modern language*.[58] It is within the context of this legacy of the late twentieth century focus on the communicative function of architecture that we come across the next theme for in the discussion of materials – their *meaning*.

The question of what the use of a particular material *means* to the complete composition of architectural design has been an important consideration throughout history. Since architectural objects are recognized as a part of a cultural reality they have always been read as having some or the other *symbolic link* to the cultural context that they belonged to. From the perspective of a later culture that is guided by archaeological or historicist considerations to categorize, this symbolic link is defined through stylistic meanings that are applied in retrospect to the architectural form.[59] However, within the realm of

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[58] The theoretical basis for much of what would be defined as this *postmodern language* was already in development with the 1960's concern with *meaning* in architecture, which was fuelled by parallel developments in philosophy and sociological theory. See arguments in Charles Jencks and George Baird, eds., *Meaning in Architecture* (London: Barrie & Rockliff, 1969), and Charles Jencks, *The Language of Post-Modern Architecture* (London: Academy Editions, 1977).

[59] For a discussion of such a context of *meaning* in relation to materials in architecture, see Leatherbarrow, *The Roots of Architectural Invention*.

architectural production itself, the application of materials is also subject to a consideration of symbolic communication between the members of a particular cultural group. For example, within what Peter Kohane recognizes as a notion of "decorum" in the eighteenth century, the use of a particular material was subject to a consideration of the hierarchical strata of society.[60] The consideration of *meaning* in architecture, then, is a dual concern to address both the past and the present cultural context simultaneously. By the early twentieth century, concerns of universal *social* needs had removed any requirement for a *cultural* and hierarchical expression to be included within the form development process. Even with the expressionist arguments of the mid-twentieth century the concern was always towards expressing a situated but generic human condition rather than a personal statement. Therefore, it was only by the fourth quarter of the century, when expression became central to architectural concerns, that we can see the revival of a focus on the meaning of materials as part of an *intersubjective communication*.[61]

At the start of what is now regarded as the postmodern era, the post-war trend of employing architectural form as a means of expression was turned around to critique the preceding modern era. The notions of absolute order of the "orthodox modern" or even the overriding social concerns of the post-war years became synonymous with all the tribulations that the first half of the century brought with it. As a reaction to this, architectural form became a medium of expression in a statement guided against the "orthodox modern."[62] For architectural form as a communicative statement to have the widest possible application it became important to understand and employ the structure of language for architectural form generation in a way so as to generate a universal impact. As Charles Jencks explains in the *Language of Postmodern Architecture*, architectural elements could now be considered for their purpose as linguistic tools of *metaphors*, *words*, *syntax* and *semantics*. Furthermore, this appropriation of

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[60] See Peter Kohane and Michael Hill, "The Eclipse of a Commonplace Idea: Decorum in Architectural Theory," *Architectural Research Quarterly* 5, no. 1 (2001).

[61] Notion of *intersubjective communication* is part of the contemporary philosophical trends of theorists like Jurgen Habermas and Jean-François Lyotard that directly affected architectural thought. For an introduction to some of these theoretical works see Neil Leach, ed. *Rethinking Architecture* (New York: Routledge, 1997). Also see Jean-François Lyotard, *The Postmodern Condition*, trans. G. Bennington and B. Massumi (Manchester: Manchester University Press, 1984), Michel Foucault, *Power/Knowledge* (New York: Pantheon, 1980), and Victor E. Taylor and Charles E. Winquist, *Postmodernism: Critical Concepts*, 4 vols. (London: Routledge, 1998).

[62] For an introduction to these trends in Postmodern architecture, see Heinrich Klotz, *The History of Postmodern Architecture*, trans. Radka Donnell (Cambridge: MIT Press, 1988).

architectural elements as linguistic tools was, as Jencks notes, achieved through a "domination of conventional meaning over natural significations."[63] Architectural materials then, like architectural forms, became open to interpretation as reservoirs of meaning from their previous cultural associations. The existing history of use that was associated with these forms and materials bestowed upon them a *meaning* that carried through into their new architectural appropriation, and this needed to be exploited in their recognition as linguistic tools. In directing this recognition of materials and forms as reservoirs of meaning, towards a statement against the "orthodox modern," the pioneers of this field like Robert Venturi or Charles Moore (more easily recognized as members of the ideological group: the *Greys*) employed historical forms and materials in an eclectic fashion to compose a critique of the social ideas that the glass boxes synonymous with the "modern orthodox" stood for.[64] This eclectic revival of historical forms and materials merely sought to disassociate the symbolic allegiance of such forms and materials with social and ideological stance, and were not directed at their contribution to form generation. This use of forms and materials as a means of generating a statement against the previous absolutist order gained much popularity and formed the basis of arguments for the post-modernist classicism of Michael Graves, James Stirling or Ricardo Bofill.[65] The widely recognized aphorism of "less is a bore" is directly aimed at alerting us to the complexity of meaning inherent in the architectural materials and forms, waiting to be exploited as linguistic tools.

It must be clarified here that the application of materials as linguistic tools in the postmodern era is predominantly different from any linguistic analogy applied to materials during the first half of the century. Since architecture exists in the public domain, in compliance with Jurgen Habermas's arguments for a Communicative Action all architectural work is already part of a social discourse.[66] According to this line of argument, architectural forms of the early twentieth century "orthodox modern" were already part of a linguistic structure. However, as Jencks highlights, the difference between the modern and postmodern era lies in the former's application of *indexical*

[63] Jencks, *The Language of Post-Modern Architecture*, 61.

[64] See arguments in Robert Venturi and Denise Scott Brown, *Architecture as Signs and Systems: For a Mannerist Time* (Cambridge: Belknap Press, 2004), and Charles Moore and Gerald Allen, *Dimensions: Space, Shape & Scale in Architecture* (New York: Architectural Record Books, 1976).

[65] Also see Paolo Portoghesi, *Postmodern, the Architecture of the Post-Industrial Society*, trans. Ellen Shapiro (New York: Rizzoli, 1983), and Charles Jencks, ed. *Post-Modern Classicism: The New Synthesis* (London: Architectural Design, 1980).

[66] Jürgen Habermas, *The Theory of Communicative Action* (Boston: Beacon Press, 1984).

and *iconic* signs as opposed to the postmodern focus on *symbolic* usage.[67] The idea of indexical signage is commensurate with the orthodox modern arguments of universal archetypes of an unconscious mental realm, while the idea of iconic signage corresponds to the structuring intentions of a situated and conscious mental realm of the post-war modernism. The postmodern idea of symbolic usage, on the other hand, focuses on the history of the material object itself as the generator of meaning rather than falling back on a *universal* or *real* signified. Although such an understanding brings back the focus of a linguistic analogy to reside on the material condition itself, the material regarded as a *symbol* still continues to be a reservoir of human cultural values. The material absorbs the structuralizing actions of human systems and becomes representative of the same, waiting to be employed as a linguistic tool for a formal expression of human values.

The focus on language in the architectural thought of the late twentieth century is not merely limited to a symbolism of culturally determined conventional codes. There is no doubt that language has been the preoccupation of philosophical thought throughout most of the twentieth century. From Wittgenstein to Heidegger the early half of twentieth century had already been concerned with language as a timeless ground on which revelations occur.[68] In such an understanding language was no more a culturally determined set of codes but the very basis of all human action, as existence itself was a function of discourse. As Heidegger noted, "Discourse is essentially equiprimordial with the state-of-mind and understanding."[69] Within this existential recourse to language we can witness the works of Jacques Derrida and the birth of Deconstruction.[70] The deconstructionist ideas of "hierarchy reversal" and "difference" that were eventually to consume late twentieth century theoretical works find their parallel in architectural thought as early as the beginning of the 1960s when the young Peter Eisenman began to

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[67] In addition to sources cited before, see Geoffrey Broadbent, Richard Bunt, and Charles Jencks, eds., *Signs, Symbols and Architecture* (New York: Wiley, 1980), and Charles Jencks, *Towards a Symbolic Architecture* (New York: Rizzoli, 1985).

[68] For instance see Martin Heidegger, *On the Way to Language*, (San Francisco: Harper & Row, 1982), Ludwig Wittgenstein and G. E. M. Anscombe, *Philosophical Investigations*, (Oxford: Blackwell, 1968), Ludwig Wittgenstein, *Tractatus Logico-Philosophicus*, (London: Routledge & Kegan Paul, 1974).

[69] Heidegger, *Being and Time*, 203.

[70] For instance see Jacques Derrida, *Of Grammatology*, 1st American ed. (Baltimore: Johns Hopkins University Press, 1976), ———, *Writing and Difference* (London: Routledge & Kegan Paul, 1978). Also see Jacques Derrida and John D. Caputo, *Deconstruction in a Nutshell: A Conversation with Jacques Derrida*, Perspectives in Continental Philosophy, (New York: Fordham University Press, 1997).

explore such notions in his doctoral thesis.[71] Eisenman's quest for a "language" of form sought for an absolute basis of communication that goes beyond the stylistic and cultural notions of symbolism, and addresses the formal essence of all such communication.[72] The rise of this argument could be seen in the parallel but self-consciously distinct school of thought to the Greys – that critics had labelled the Whites. Including Eisenman, the *Five Architects* whoconstituted the Whites chose to employ the very elements of the modern style as a linguistic tool, instead of other historically saturated forms, in a process of reversal that was purely based on syntactic rearrangement.[73] What seemed to be Eisenman's preoccupation with "ordering of forms" meant that this school was involved with *syntax* itself as a basis of meaning rather than *semantics*.[74] The status of the material, then, remains unchanged as a linguistic tool subservient to the ordering intentions of the design process. However, it is important to recognize that even though the material was still not regarded as an active contributor, within the framework of such arguments it came to hold a better position by being considered not through the human architect's intention but instead the process of *textuality*.[75] Architecture as belonging to the neutral realm of the *text* replaces the privilege of the *knowing* subject by an abstract and generic process of language. Such a subordination of the individual human to the realm of *text*, then, further serves as a basis for questioning the superiority of the subjective realm, seemingly responsible for the construction of meaning, to the objective realm of material signifiers.

The understanding of materials in architectural thinking defined along the axis of *meaning/language* brings it closest to the realm of the otherwise exclusively human domain of the socio-cultural. Unlike the functionalist and the expressionist categories, within such an understanding material is no more dependent on a predetermined form or

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[71] See discussion in Harry Francis Mallgrave, *Modern Architectural Theory: A Historical Survey, 1673-1968* (Cambridge: Cambridge University Press, 2005), 395-396.

[72] Peter Eisenman, *Eisenman Inside Out: Selected Writings, 1963 - 1988* (New Haven, CT: Yale University Press, 2004).

[73] For an introduction to some of these arguments which defined the divide between the "rationalism" of the "Whites" and the "historicism" of the "Greys", see K. Michael Hays, ed. *Architecture Theory since 1968* (Cambridge: MIT press,1998).

[74] This idea also serves as the basis of several practitioners of Deconstructivist Architecture, whose work Jencks defines as a "self justifying play with metaphysical ideas." For an introduction see Mark Wigley and Philip Johnson, *Deconstructivist Architecture* (New York: Museum of Modern Art, 1988), Charles Jencks, "Deconstruction: The Pleasures of Absence," *Architectural Design* 58, no. 3/4 (1988).

[75] For Eisenman's reading of Derrida's concept of *textuality* see Peter Eisenman, "En Terror Firma: In Trails of Grotextes (1988)," in *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965-1995*, ed. Kate Nesbitt (New York: Princeton Architectural Press, 1996).

a structuring intention, which are products of a human mental realm, to define its inclusion into the socio-cultural realm. As signifiers of embodied cultural qualities materials become an inextricable part of the "language-games" that late twentieth century thought regarded as the very basis of existence. However, in determining this value there is still a problem where the material cannot actively participate in these language-games, and is dependent on the human actor to engage it in an intersubjective process of communication. Within the postmodernist construction of language as a process of engaging cultural symbols into an architectural statement, material itself remains an inert entity upon which human values are ascribed through a cultural process. The material, then, merely serves as a reservoir of these human values and does not mediate the process of communication. On the other hand, when the material is recognized as part of a more neutral realm of *text*, meaning is not accorded through human cultural contact, but through a syntactic self-realization of forms. This syntactic arrangement, though not subject to human intentions, is still contingent on human engagement to create a reversal of forms and generate discernable meaning as part of an intersubjective communication. Whether as *symbol* or as *text*, the material remains an otherwise inactive member of the social realm of *language* that absorbs the structuralizing action of human systems and becomes representative.

DESIRE/FETISH

The argument for transcending the possibility of the human subject as knowing and conscious, which was offered by the arguments of deconstruction, allows for the return of yet another theme that had been outside the purview of high theory for a long time. From the experience of a continuous oscillation between the structuralist arguments of the early twentieth century, where the universal unconscious structure subsumed the individual actor, to those affording a stronger and more conscious agency to the individual, the explanation of the social realm sought to tread a middle ground and incorporate both structure and agency into its purview simultaneously.[76] We have already seen an inkling of this in the arguments for *textuality* and *discourse* which could serve as this middle ground between the structure and the actor. But these arguments are extremely theoretical and do not account for the objects and processes that constitute our daily engagement with material objects. In the late twentieth century, social

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[76] The argument for an early basis of this trend is available from David Held, *Introduction to Critical Theory: Horkheimer to Habermas* (London: Hutchinson, 1980). Also see Andreas Reckwitz, "Toward a Theory of Social Practices: A Development in Culturalist Theorizing."

theorists have, thus, continued to address this problem in generating a picture of the *social* that can accommodate and explain the sometimes conscious yet unconscious engagement of humans in a social becoming – a self-determination of the social realm.[77] In architecture too, the motivation for a work need not be offered through the grand metanarrative of social polemics of aesthetics, ethics, semantics or semiotics, and can be explained through a tacit consideration invoked by *desire*. This notion of *desire* and its appropriation in a late twentieth century context of *fetish* will serve as our final thematic discussion.

Desire as a concept that simultaneously binds the material and human context into a single relationship is hard to define, and this renders its usage in architectural writing ambiguous. Therefore, before we can discuss the impact of this thematic category on the status of materials, we first need to clarify how the notion of *desire*, appropriated in the twentieth century context and presented here, is different from some of its antecedents. The oldest formulation of this theme may be identified in the concept of *delight* which formed the third and final part of the Vitruvian triad (at least as it came into English usage through the translation offered by Sir Henry Wotton for the original Latin word *venustas*). The desire for material objects born of delight has often been interpreted in the sense of corporeal delight in use.[78] Within such an interpretation the concept is similar to the one encountered in the discussion of the nature of the material that is recognized through sensory experience. The classical concept of *delight* is, however, not limited to this corporeal engagement with the material world. Here we acknowledge another appropriation of this thematic category in the arguments for *taste*. Taste as employed here must be understood in its nineteenth century context of the debate on taste rather than a present day colloquial usage as individual preference.[79] In exercising taste, the architect was understood as making a choice in the design process through a process of aesthetic judgment. This capacity of aesthetic judgment, however, was not an

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[77] In particular are the arguments of Anthony Giddens and Pierre Bourdieu, where the "duality of structure" as "a structuring and structured structure," is used to explain the "unacknowledged conditions" and "unintended consequences" of action. For an introduction to Giddens see Ira J. Cohen, *Structuration Theory - Anthony Giddens and the Constitution of Social Life*, ed. Anthony Giddens, (London: Macmillan, 1989). For Bourdieu, see Craig J. Calhoun, Moishe Postone, and Edward LiPuma, *Bourdieu: Critical Perspectives* (Cambridge [U.K.]: Polity in association with Blackwell Publishers, 1993).

[78] For such an interpretation of materials in architectural thought see Leatherbarrow, *The Roots of Architectural Invention*.

[79] See arguments in Collins, *Changing Ideals in Modern Architecture*. Also see Marjorie Joyce Garson, *Moral Taste: Aesthetics, Subjectivity and Social Power in the Nineteenth-Century Novel* (Toronto: University of Toronto Press, 2007).

inherent quality of the individual architect, but since architecture was vested in the preoccupation with its social appropriation it was a reflection of the preference of the social norms and needed to be *cultivated*. When it was not employed in the sense of an apriori standard of good or bad taste based on a historical ideal, the similar cultural conventions were also coded in what is better recognized as *fashion*. However, what is relevant here is that both in its absolutist guise as *taste* or a more relativistic one as *fashion*, the theme of desire is engaged as part of an intersubjective cultural exchange. In this sense, we have already dealt with the impact of such an interpretation in the discussion for architecture as communication. To clarify the notion of *desire* as employed here, then, we must consider its specific quality that is not available through the notion of *delight* or *taste* or *fashion*. Desire, as defined here is understood as being born, not of corporeal or social concerns, but of a process of self-determination espoused in the late twentieth century arguments that could be best described as 'architecture for architecture's sake'. [80]

To understand this limited definition of desire, lets look at some explanations provided in other disciplinary realms for the concept of *desire* and the notion of *self-determination*. Desire as a category that mediates between the human and material realms is clearly the matter of concern for psychology as a discipline. For example, a Freudian definition, which still operates within a biologically restricted paradigm of the human brain, would simply afford this desire to the mental construct.[81] But it is the further development and application of these psychoanalytical theories by Jacques Lacan that are more telling.[82] Lacan includes the psychoanalytical conception of the Id and Ego and Superego into a psychic process of the maturation of the self. Such a process of development of the *self* is then devoid of any external categories of demand or need imposed by the context of its becoming. Here Lacan attributes this process of self-determination to a special condition of desire claiming that "desire begins to take shape in the margin in which demand becomes separated from need."[83] This elusive

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[80] This idea of "architecture for architecture's sake" builds upon the colloquial reference to the more widely acknowledged formulation in "art for art's sake."

[81] For an introduction see Richard Wollheim, *Sigmund Freud* (Cambridge: Cambridge University Press, 1990).

[82] For an introduction to Lacan's thought see Sean Homer, *Jacques Lacan* (London: Routledge, 2004). Also see Slavoj Zizek, ed. *Jacques Lacan: Critical Evaluation in Cultural Theory* (London: Routledge, 2002).

[83] In particular see arguments in Jacques Lacan, "The Subversion of the Subject and the Dialectic of Desire in the Freudian Unconscious," in *Ecrits: A Selection* (London: Tavistock, 1977).

surplus of desire, then, can be seen as the guiding factor in a process of self-determination. In our conception of desire we, then, engage it as such a surplus quality which is beyond any definition of human demand. This quality as a determinant of architecture can be seen in the arguments of post-war architectural theorists like Robert Venturi or Aldo Rossi. The celebrated call for "both-and" in Venturi's *Complexity and Contradiction* and Rossi's arguments for "an analogical architecture" seem to lament the loss of the complexity of an individual's maturation process in addressing an alienated social need.[84] While not articulated as *desire*, or engaged in a Lacanian psychoanalytical text, these arguments still offer the process of the determination of a self as being central to the act of artistic production. To reiterate the stance of this conception of desire, then, we must note that the point of desire is not to find its satisfaction but to reproduce itself as desire – to serve as a goal in itself.

In the appropriation of such a desire in architecture, and especially the desire for/of materials, we can argue that our engagement with materials is not dependent on any human quality of social or individual needs defined before. Instead, such an understanding perceives architecture as that process where the object is appropriated in full complexity due to the desire to engage with the object, which in turn allows for the object to be engaged. Within both Venturi's and Rossi's arguments, the architectural material may be appropriated into architectural work for the most frivolous of reasons of merely engaging with it. This may be interpreted in the case of Venturi as a desire to serve *complexity* and in the case of Rossi as a desire to serve a personal *analogy*. But the point that both theorists would argue is that such an engagement would create a condition for architecture to achieve its own self-development by reaching those complex relationships that it could not within a partially defined paradigm of human needs and wants. Thus, the desire is not only a quality of the architect, but through this *desire* the process of architecture itself engages with the architectural material in an increasingly *autopoietic* mode.[85] The preceding construction may sound a bit convoluted but it may be easier to grasp within an explanation of actual architectural

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[84] In particular see Robert Venturi, *Complexity and Contradiction in Architecture* (New York MOMA, 1966), and Aldo Rossi, "An Analogical Architecture (1976)," in *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965-1995*, ed. Kate Nesbitt (New York: Princeton Architectural Press, 1996). Also see Aldo Rossi, *The Architecture of the City*, trans. Diane Ghirardo and Joan Ockman (Cambridge: MIT Press, 1982), and David B. Brownlee, David G. De Long, and Kathryn B. Hiesinger, *Out of the Ordinary: Robert Venturi, Denise Scott Brown and Associates: Architecture, Urbanism, Design*, Philadelphia Museum of Art (Philadelphia, PA: Yale University Press, 2001).

[85] See Niklas Luhmann's use of the term *autopoesis* to define such environment-observing systems in Niklas Luhmann, *Social Systems*, Writing Science (Stanford, Calif.: Stanford University Press, 1995).

work. The appropriation of galvanized sheet metal in the playful forms emblematic of the architecture of Frank Gehry is a good example. Here Gehry's original motivation stemmed from a desire to generate analogical relations to the "jumping fish," and this in turn got rendered in an early project by metal sheeting.[86] The subsequent engagement of metal sheeting in Gehry's process of "wrappings" is now no more the desire of Gehry but the autopoietic self-determination of architecture, which has determined this path of form generation and will spawn other examples in the future devoid of the initial basis of human desire.[87] Indeed this viewpoint can be seen as allowing for the architectural material to reach a level of independence from the categories of human demand, but here we must try and understand how such a notion of *desire* is appropriated into the accounts of architectural production within the context of late twentieth century theories of social production as *fetish*.

The notion of *fetish* in late twentieth century social theory has acquired a peculiar definition, and to understand this we must recognize the possibilities of architectural production as a function of this social condition of *fetish*. As Pierre Bourdieu explains, every process of social production operates within "fields," which contain the conditions of this production and within which relevant actors take positions.[88] Although such a field of production in Bourdieu's sense should not be confused with the legally defined boundaries and statutory domain of, say, the architectural profession, they can be understood as a more open and actively negotiated 'space' such as the disciplinary field of architecture or of economics. Furthermore, since these fields overlap, there is, in all production, a multitude of fields involved. This results in the definition of a more focused or restricted field which contain the agents involved in immediate production, such as for example architectural construction, and the extended field which contains agents that may be less directly involved but still affect the process of production, say through economic considerations. Here we come across the notion of *fetish*. In Bourdieu's construction the fields play a role in social production by having some affect over the agents contained within them. This is not a level of control that a

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[86] Jencks recounts the source of Gehry's reference to a *fish* as a childhood memory, and warns against a tendency to ascribe it any greater meaning. See Jencks, *The New Moderns*, 194.

[87] A discussion on *theatricality* and *spectacle* inherent in such an approach, "where the element of wrapping defies the tectonic," is available from Gevork Hartoonian, "Frank Gehry: Roofing, Wrapping, and Wrapping the Roof," *The Journal of Architecture* 7, no. Spring (2002).

[88] For Bourdieu's arguments see Pierre Bourdieu and Randal Johnson, *The Field of Cultural Production: Essays on Art and Literature* (Cambridge UK: Polity Press, 1993)

structuralist-functionalist argument would afford to the structure, but a tacit belief that runs right through the field and binds all the members into a singularity. This collective belief system or "illusion" is, then, what is responsible for the actions of the agents within a field. So, in the case of architectural production this may account for the architect's or the user's belief in architectural creativity.[89] Since the restricted field is often a subset of the extended field its constitutive set of members are replicated between two fields, and find their belief systems for the restricted field coming in conflict with those for the extended field. So as Bourdieu notes "the greater the extended field the lesser is the autonomy of the restricted field."[90] Here we come into the possibility of the power struggle between the fields, which can only be won by the restricted field by increasing the intensity of the belief that binds its constitutive members. This belief system then subsequently loses its ties with the production process altogether and establishes itself as a "false transcendence." In architecture, for example, this belief in architectural creativity can establish itself as its own goal, and spawn a desire for 'architecture for architecture's sake'. This established form of "illusion" which is devoid of direct social reality is best understood as *fetish*.

In an architectural production driven by this social condition of *fetish*, then, the *desire* for architectural form, and consequently architectural material, is not merely an individual desire of the architect, but a multitude of social relations of power establishing themselves into the architectural product. This fetishised pursuit of the desire, or indeed the false transcendence, is a result of the power struggle within various social fields. Desire is no more a condition restricted to a relationship between the architect and the object desired, but relates to the entire field of production where social relations generate value. Relegating desire to such a social construct returns it once again to the realm of human social games, where the value of the material object in the apparent process of self-determination is nevertheless determined by the position commanded by the human agent in the field. Therefore, the desire is not considered in and of the object, but instead as an illusion of the architect depending on his or her position in the field. This construction can be used to explain much of architectural

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[89] See Bourdieu's discussions of the field of artistic production and the work of art as fetish in Pierre Bourdieu and Susan Emanuel, *The Rules of Art: Genesis and Structure of the Literary Field* (Cambridge, UK: Polity, 1996). These ideas have also been expounded upon in Niels Albertsen and Bülent Diken, "Artworks' Networks: Field, System or Mediators?," *Theory, Culture and Society* 21, no. 3 (2004).

[90] For a discussion on the inverse relationship of the extended and restricted fields see Bourdieu and Emanuel, *The Rules of Art*, 202, 211. Also see Pierre Bourdieu, "The Field of Cultural Production, Or: The Economic World Reversed " *Poetics* 12, no. 4-5 (1983).

production, but is especially relevant for the cases where the choice of material or form cannot be justified by needs or wants and is more widely acknowledged as *Pop architecture*. In our previous example of Gehry's sheet metal wrappings, then, the *desire* generated for the forms and materials is understood as a result of the power struggle between certain fields where the fetishised production of the form can only be achieved outside the socially constructed needs of economic shelter, in the pursuit of architecture as an end in itself. Here, the *desire* is not a product of Gehry's imagination nor is it the result of an *autopoietic* becoming of architecture, but instead a set of social relations that come into power because of the position commanded by Gehry in the field.

Returning to the status of materials, it is clear that the notion of *desire* is inherently positioned in a domain where it must reside in the human mind. Indeed this is the construction which establishes itself in its various forms as delight, taste, fashion and even the psychoanalytical appropriations of early twentieth century. Therefore, it is understandable that in colloquial usage desire still signifies a personal affinity to an object that is born of the construct of the mental bias. Even when this automatic privileging of the mind is repressed by establishing a very restricted definition of desire as surplus, this seeming capability of the material object to exercise control over the human mind by establishing a desire in the realm of autopoiesis, is taken over by a social appropriation of *fetish*. Indeed the arguments of Venturi or Rossi hold within them a great possibility of approaching architecture in a mode that can bring us closer to the complex nature of materials, but these continue to be curtailed within such a paradigm of social *fetish*. In the description of this theme, then, defined along the conceptual axis of *desire/fetish* here, desire may not be a quality of the individual human but it is also not a notion of the material object. The material object is lost in the social games that once again privilege the human actor as the agent that provides a possibility of change in this power struggle by changing its position. Such a human social actor may involve objects as "capital" to enable this "position taking" but the object nevertheless remains inert, and continues to absorb these social categories. It may be argued, that this condition of desire/fetish is the best alternative for explaining the encounter between Kahn and brick with which we are specifically concerned in the present study, yet, there are severe limitations posed by this and all other paradigms discussed above that must be reconsidered.

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In the brief survey of twentieth century architectural thought offered here, we have articulated at least four different and contradictory ways of thinking about materials in the socio-cultural context of architecture. While this has not conclusively established the status of materials in architecture, it has revealed a peculiar condition of materials in accounts of architectural production. In tracing the status of materials along the conceptual axes of *use/function, nature/intention, meaning/communication* and *desire/fetish,* it is evident that the role of materials always remains secondary to the human concerns of the architect. In all these representations materials are constantly defined through their use in serving universal human needs, or as reservoirs of meaning for intersubjective communication. They are further subjugated to human categories of experience or fetish to reveal their nature, or merely to address a human category of desire. Even when they are seemingly free of direct individual human dominion, like in the arguments of textuality, they are nevertheless subject to a seemingly mental and intersubjective language game. This subordinate position of architectural materials is exacerbated by the tendency to describe these as seemingly inert participants in the socio-cultural process of architectural production. In the various descriptions to serve universal unconscious needs, intentional expression, intersubjective communication or mere fetish, the materials are dependent on architects to be implicated into the realm of action. They serve to support or resist these human categories, but never participate actively to change the social condition of architectural production.

This peculiar status of materials, where they are both subordinate to and dependent upon the human architect to be involved in architectural production, is the result of an epistemological condition that separates the human realm of the architects from the objective realm of materials along the axis of activity and passivity in social action.[91] The constant reference to the mental and physical divide, which we have witnessed during the course of this chapter, is the function of this same dualist paradigm of subject and object. The distinction of subject and object is inherently a heuristic category and does not impose a bias. However its subsequent usage over the past few centuries has generated a pattern of thinking in which activity is available to the subjective realm and the objective realm constantly remains passive in social production. Within such a

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[91] See argument in Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, Mass.: Harvard University Press, 1999).

paradigm, the objective realm of materials can only be afforded the roles of supporting or resisting other categories of social action that are actually explained as human constructs. Or simply, the condition of materiality remains incommensurate with social action. Here we are witness to a similar asymmetry that Robert Vischer observed over a century ago in 1873, when he remarked,

> *A pure and complete union between the subjective and objective imagination can take place only when the latter involves another human being. [...] With that – notwithstanding the mute protestations of our own feelings – we banish from the world of feeling every inanimate objective form.* [92]

Much like Vischer's observation the current situation limits the description of architectural production to the "intersubjective" domain and banishes the "inanimate objective form" from the realm of action. Well over a hundred years into the future and traversing through several changes in the realm of architectural thinking, we have not been able to explain the role of materials any better due to this epistemological condition. The role of materials may be afforded greater possibilities in architectural discourse as active constituents of form generation, and indeed we have witnessed this in the discussion of some of these thematic categories in their de-contextualized form. However, as long as this epistemological bias persists, these possibilities of an active engagement of materials will continue to be curtailed by a superimposition of different types of social categories. Within such a situation, then, any representation of the interaction of architects and materials will suffer the same problems highlighted by Vischer.

An attempt at historicizing the dialogue between Kahn and brick, thus, must first begin with a questioning of this epistemological bias, which results in the incommensurability of materiality with social action. Only when we have found a suitable alternative that can allow the material to be represented in an unbiased formulation within the narrative of architectural production, can a more holistic account of this encounter be generated. To address this epistemological problem, then, we turn to a discussion on the very realm of the *social* where this bias originates from. By addressing the problems available in the appropriation of social agency we can hope to find an alternative that transcends this epistemological bias inherent in all the paradigms of architectural thought discussed

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[92] Robert Vischer, "On the Optical Sense of Form: A Contribution to Aesthetics," in *Empathy, Form, and Space: Problems in German Aesthetics, 1873-1893*, ed. Harry Francis Mallgrave and Eleftherios Ikonomou (Santa Monica, CA: Getty Centre for the History of Art and the Humanities, 1994), 103-104.

above. In the following chapter, then, we return to the more theoretical question of the *agency of materials* in the realm of the *social*, before seeking its appropriation in a *narrative* of architectural production.

In the previous chapter we witnessed that the representation of the relationship of architects and materials in architectural production is restricted by the epistemological stance which finds the condition of materiality incommensurate with the idea of social action. The notion of society itself, perceived as a consequence of the actions of heterogeneous entities, might not necessarily exclude materials from the realm of activity. However, the developments in the definition of the alleged *hard* and *soft* scientific disciplines, which assumed force during the early nineteenth century, posed a challenging condition.[1] The rise of the *hard* natural sciences and their success in defining the alleged natural phenomena of the physical realm transformed the scope of the *soft* social sciences, which remained distinct in their responsibility for explaining that part of the realm of activities which natural sciences could not. Further, as the taxonomy of disciplines multiplied the *social* became a causal explanation of everything the natural sciences could not explain.[2] To uphold the rigour of the scientific method in explaining social phenomena, the unexplainable was reduced to its smallest common denominator – the human aspect. The already prevalent epistemological divide between the human realm of the *subject* and the material realm of the *object* was, then, codified in yet another dualism – that of *social* and *natural*.[3] Within such an exclusive definition

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[1] The terms *hard* and *soft* sciences is often used to refer to the methodological rigour of the corresponding fields of *physical* and *social* sciences. Although this formulation is available in numerous accounts that debate these divergent methodological paradigms, the arguments offered here directly reflect the observations offered by Bruno Latour in his attempts to trace the changing definition of the term *social*. See specifically Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory*, Clarendon Lectures in Management Studies (Oxford: Clarendon, 2005).

[2] Latour, *Reassembling the Social*, 4-5.

[3] A relevant discussion regarding the methodological variation of the social and natural sciences is available from Hans-Georg Gadamer, *Truth and Method* (London: Sheed & Ward, 1975). Here Gadamer warns against a "naive faith" in objectivity, attributing it as a methodological peculiarity of the natural sciences in dealing with the subject/object distinction. Gadamer notes that the natural sciences are merely concerned with extracting the "typical" and "predictable" in objects and are therefore unable to acknowledge their contribution to the process. See Gadamer, *Truth and Method*, 322.

of the *social,* which was dependent only on the human aspects to explain everything in its purview, materials were banished from the realm of action. The natural sciences sought to explain the world of materials within its methodological framework of *objectivity,* while the social realm could only assume materials in the ancillary role of supporting or resisting human categories.[4]

It may be argued, however, that within the second half of the last century there has been an ongoing trend in philosophical and sociological thought that can provide an alternate understanding of the *social,* and the status of materials within it.[5] This trend stems from the constant struggle in both philosophical and sociological discourse to overcome the limits of existing explanations of social phenomena, by revaluating the members that constitute the realm of action. Accordingly, theoretical arguments since the post-war period have continuously pursued the question of the limit of both the material and human agency in explaining social phenomena. While on one hand, the agency of the material realm has been constantly expanded, on the other hand, the agency of the human actor has been correspondingly constrained. A quick look at the arguments offered by this trend can, then, offer the possibility of resolving the problems posed by the natural-social divide, and generate a better understanding of the nature of social action.

This tendency to revise the conception of social action can be traced at least as far back as the arguments of Martin Heidegger, in his formulation of what is now better recognized as the "philosophy of things." The transformation in Heidegger's thought represented by the shift from the term *object* to the term *thing* in his writings can be argued as challenging the limits of the material object itself. Heidegger's turn from a revised definition of the *object* as something that was only available through "dealings," that is an "object-in-hand," to a "gathering" *thing* which "reveals the world" is a clear indication of the expanding agency afforded to the material object in his thought. On the

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[4] Latour argues that within such a paradigm there are only three roles given to things: "to exert a determinate and obstinate blind force, to be there as the mere support for human fanciful ingenuity, or simply to offer some resistance to humans." See Bruno Latour, "The Promises of Constructivism," in *Chasing Technoscience: Matrix for Materiality,* ed. Don Ihde and Evan Selinger (Bloomington, Indianapolis: Indiana University Press, 2003), 27.

[5] For a preliminary basis for this assertion, see Andreas Reckwitz, "The Status of "Material" In Theories of Culture: From "Social Structure" to "Artefacts"," *Journal for the Theory of Social Behaviour* 32, no. 2 (2002). Also see Andreas Reckwitz, "Toward a Theory of Social Practices: A Development in Culturalist Theorizing," *European Journal of Social Theory* 5, no. 2 (2002).

other hand, a similar questioning of the limits of human agency can also be observed in the work of social theorists who continually focused on the limit of the actor. In the second half of the century, theorist like Anthony Giddens and Pierre Bourdieu, and later Theodore Schatzki, worked towards revising the definition of the role of the actor by constantly focusing on its limit. In these theories the role of the human actor is continuously diminished within an ever expanding realm of the *social*, which includes new categories of social structure like *discourse* and *field* to make up for this lost agency. This tendency to reduce the agency of the human actor can be seen as being commensurate with the parallel tendency to expand the agency of objects (as expounded by Heidegger), in its desire to generate a definition of the *social* where the natural and social divide, indeed the very Kantian formulation of subject and object, is dissolved, and a more comprehensive definition of social action can emerge.

Finally, as this thesis explores, these two parallel tendencies can be seen as coming together in the arguments of contemporary social theorist Bruno Latour. Through a subsequent convergence of the ideological seed sowed by Heidegger's *philosophy of things* and the growing feeling of discontent towards a social theory that relied heavily on the agency of the human subject, Latour formulates a more symmetric account of the *social*. In Latour's conception of the social realm as a "collective of humans and non-humans," the *actor* is finally transformed into an *actant* and the privilege afforded to the human realm in explanations of social action is ultimately discarded completely.[6] Within this conception, then, materials can be reinstated as symmetric *actants* alongside their human counterpart in action, and a dialogic interaction between the two becomes possible.[7]

OBJECTS TO THINGS

Martin Heidegger is most widely acknowledged for his seminal essay on the ontological considerations of *being* in his 1927 publication *Being and Time*. The impact of Heidegger's work on twentieth century philosophical thought is undeniable and his

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[6] Bruno Latour has consistently developed this theoretical argument for a shift from *actors* to *actants* in his work over the last decade, and this will be discussed in detail further in the chapter. For a well developed early account of this argument as well as an allusion to a "collective of humans and non-humans" see specifically Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, Mass.: Harvard University Press, 1999).

[7] Latour notes that, "Since in English "actor" is often limited to humans, the word "actant," borrowed from semiotics, is sometimes used to include nonhumans in the definition." Latour, *Pandora's Hope*, 303.

arguments on ontology have inspired a massive corpus of literature in their wake. Considering the expansive scope of that literature the present study makes no attempt to reread it comprehensively. However, since Heidegger's philosophical ideas were also widely engaged in architectural theory and criticism in the second half of the twentieth century, some of the arguments have become commonplace in architectural discourse.[8] It is through a more targeted discussion of these appropriated concepts that we can discern a revealing oversight in the process of this appropriation within architectural discourse. Several essential concepts of Heidegger's earlier thought relating to a *primordial* process of *dealing* with *objects*, as well as a later established critique of *technology* through the notion of *enframing* and a passionate definition of a *gathering thing*, have already become a part of twentieth century architectural discourse. However, since architectural discourse engages these theoretical constructs in relative isolation, the shift in Heidegger's thought from *objects* to *things* has largely gone unnoticed. Therefore, here we posit some of the arguments for *objects* in his earlier works against the arguments for a *thing* which developed over the post-war years, to show that this shift from *object* to *thing* is indicative of a desire to transcend the subject/object divide by expanding the agency of the material realm.

Heidegger's oeuvre is replete with conceptions of a material reality or "entities within-the-world," and throughout his career the notion of encounter with the material world remains a central concern. An early explanation of the process involved in the encounter of humans and materials is available in his arguments for *dealings*, which finds its mention as early as 1919, and has been often appropriated in architectural discourse.[9] This conception of the human encounter with the material world as *dealings* is indicative of Heidegger's early phase which was directly influenced by a Husserlian phenomenology. In Husserl's conception, the object or material reality is appropriated

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[8] Heidegger's philosophical works find a continuous reference in architectural literature and some of these have been mentioned in the previous chapter. For an introduction to this trend, see David Seamon, ed. *Dwelling, Seeing, and Designing: Toward a Phenomenological Ecology* (Albany: State University of New York Press, 1993). For a recent account that builds upon some of these now commonplace references, see Adam Sharr, *Heidegger for Architects*, vol. 2007 (London: Routledge, 2007).

[9] In appropriating Heidegger's arguments for architectural discourse, authors have often tended to focus on the aspect of his work concerned with this idea of *dealings*, and best identified as "tool-analysis". This conception finds wider appeal amongst architectural theorists as it allows for a framework to explore the most easily identifiable architectural concept of *archi-tectonics*, which is in turn philologically connected to Heidegger's later exploration of *techné*. For instance see Robert Mugerauer, "Toward an Architectural Vocabulary: The Porch as a Between," in *Dwelling, Seeing, and Designing*.

through a mental construct of *essences*.[10] This appropriation is achieved through a *phenomenological reduction* of the object to universal essences or *phenomena*, which the mental *schema* can then absorb. Husserl was particularly concerned with the increasing difficulty in achieving this phenomenological reduction in an environment of *socialized* experience or with a naïve faith in *objectivity*, and issued the famous call for a return "to the things themselves." Heidegger's early works, which were in accordance with such a return "to the things themselves," sought to explore the possibilities of a *primordial* encounter with the material world which would bridge the yawning gap between objects and essences.[11] His explanation of *dealings* is, then, conceived as part of such an intellectual heritage, and perpetrates the same humanistic bias that was evident in Husserl's reduction of material phenomena to mental constructs.

Heidegger argued that, in our daily engagement with objects we do not need to be concerned with the objects themselves, and should instead focus on the *dealing*. Outlining the quest for a *primordial* encounter he advocates that, in order to achieve a "phenomenological access to the entities" we must "thrust[] aside our interpretive tendencies."[12] This is because, if we were to concern ourselves with the object, we would have, in coming to the object, lost our "pre-phenomenal basis," and "tacitly anticipated their ontological character."[13] Therefore, in allowing for a *primordial* engagement we should divert our focus towards the act of *dealing* itself, allowing us to encounter the object as *equipment*. Explaining this conception of the object as *equipment*, Heidegger further stated that in our daily engagement with the world we can only perceive the object through concerns of "usability" or "manipulability" where it is available to serve an "assignment" or an "in-order-to." This recognition as *equipment* allows the object to serve the *assignment* which is the ultimate purpose of the *dealing*. It should be clarified that such an *assignment* is not an intended project, but the unconscious process of our *primordial* engagement with the world itself, allowing for

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[10] See Edmund Husserl, *Ideas: General Introduction to Pure Phenomenology*, trans. William Ralph Boyce Gibson (New York: Macmillan Co., 1931) and ———, *Logical Investigations*, , trans. J. N. Findlay, International Library of Philosophy and Scientific Method (London: Routledge and K. Paul, 1970). Also see the later reflections in Edmund Husserl, *Cartesian Meditations: An Introduction to Phenomenology*, trans. Dorion Cairns (The Hague: Martinus Nijhoff, 1960).

[11] Heidegger appropriates this maxim of "to the things themselves" as a "virtual slogan" for Husserl's phenomenology in his highly influential *Being and Time*. See Heidegger, *Being and Time*, trans. John Macquarrie and Edward Robinson (Oxford: Basil Blackwell, 1967), 50.

[12] Heidegger, *Being and Time*, 96.

[13] Heidegger, *Being and Time*, 96.

its subsequent disclosure. Since the object is ontologically predisposed to the revelation of the world, it finds its ontological purpose in withdrawing itself from the realm of immediate perception to further the process of "in-order-to." As Heidegger notes, then, "dealings with equipment subordinate themselves to the manifold assignments of the 'in-order-to'" and thereby become invisible."[14] This subjugation to the larger context of work stems from the condition that, "the work bears with it that referential totality within which the equipment is encountered."[15] Heidegger explains this complex theoretical construction through the example of hammering, or *dealings* with a hammer.

> *The hammering does not simply have knowledge about the hammer's character as equipment, but it has appropriated this equipment in a way which could not possibly be more suitable. In dealings such as this, where something is put to use, our concern subordinates itself to the 'in-order-to' which is constitutive for the equipment we are employing at the time; the less we stare at the hammer-Thing, and the more we seize hold of it and use it, the more primordial does our relationship to it become, and the more unveiledly is it encountered as that which it is – as equipment.* [16]

This conception of the encounter with the material world as *dealing* allowed Heidegger's philosophy to reach the condition of *primordial* encounter that it had sought since Husserl. In the process of withdrawing itself from immediate perception, the object was now recognized as "ready-at-hand" as opposed to the "present-at-hand" of the previous condition. Being "present-at-hand" the object was subject to a mental process of *schematization*, and this was in turn affected by the processes of *socialization* or a desire for *objectivity*. In its new conception as "ready-at-hand," the object was encountered by the human subject at a primordial level without being mediated by this mental process. Therefore, the process of *dealing* allowed Heidegger to transcend the mental conception of the object as "present-at-hand," and return it to the realm of *primordial* encounter through the experiential categories of an object "ready-at-hand." However, even as this *dealing* with the object as *equipment* might have released the perception of objects from the confines of socialized experience or objectivity by allowing for a more *primordial* encounter, we can easily identify in this conception a continuing subordination of the material object to the human subject. In Heidegger's

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[14] Heidegger, *Being and Time*, 98.

[15] Heidegger, *Being and Time*, 99.

[16] Heidegger, *Being and Time*, 98.

conception, the material object continues to be subordinated to a human capacity of *manipulation*, where it must be appropriated by the human subject as *equipment* to allow for the realization of its ontological potential. As Heidegger explicitly claimed, then, "Equipment can genuinely show itself only in dealings."[17]

There is no doubt that in Heidegger's early works, and especially the arguments for *dealing* discussed here, there is a humanistic bias that kept him bound to the legacy of the subject/object divide he had inherited from Husserl's phenomenology. However, within his discussions of the object as *equipment* Heidegger analysed a particular condition that would serve as the basis of his future arguments for a revised understanding of the *object* as *thing*. After presenting his arguments for *dealing*, where the object as equipment is available as "ready-at-hand," he turned to the special condition where the said equipment breaks down. Heidegger maintained that in the instance when human assignment is interrupted by the *breakdown* of the equipment, entities show themselves as the "present-at-hand". This breakdown is, however, not an anomaly but an essential part of the process of *revealing* of the world. Heidegger claimed that,

> anything which is un-ready-to-hand in this way is disturbing to us, and enables us to see the **obstinacy** of that which we must concern ourselves in the first instance before we do anything else. With this obstinacy the presence-at-hand of the ready-to-hand makes itself known in a new way as the Being of that which still lies before us and calls for our attending to it. [18] [Emphasis in original]

This display of *obstinacy* is extremely important for Heidegger as it has "the function of bringing to the fore the characteristic of presence-at-hand in what is ready-to-hand."[19] It should be noted that the method, however, relies on this *unusability* to "present itself," so as not to disturb our "pre-phenomenal basis" in going directly to the "thing." Heidegger explains that "we discern its unusability, however, not by looking at it and establishing its properties, but rather by the circumspection of the dealing in which we use it."[20] This special condition of the *breakdown* of equipment, then, allowed

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[17] Heidegger, *Being and Time*, 98.

[18] Heidegger, *Being and Time*, 103-104.

[19] Heidegger, *Being and Time*, 104.

[20] Heidegger, *Being and Time*, 102.

Heidegger to redeem his philosophy from a thorough going humanism by affording the object a possibility to "present itself," albeit in a limited way.

During his later years, Heidegger offered an account of encountering the world of objects that stepped away from the tacit humanism of his earlier works.[21] In the late 1940s, after the world war, Heidegger attempted his new "Philosophy of Things" with his lengthy *Einblick in das, was ist* (Insight Into What Is), and then through his later essays, including *The Question Concerning Technology*, and more directly *The Thing*.[22] With the arguments put forward in *The Question Concerning Technology*, Heidegger achieved the first step in rejecting the earlier subordination of the material realm of objects to the human *dealings*. He maintained that, when we encounter the world through a process of *dealing* we tend to limit ourselves to the conception of the object merely for its "usability" or "manipulability." Here he recognized this process as the result of a "technological mode" of thinking entrenched in the condition of *Enframing*. *Enframing*, he explained, restricts our interaction with the world to the purpose of an *ordering* by "demand[ing] that nature be orderable as a standing reserve."[23] He further acknowledged that such an attitude creates the illusion that "everything man encounters exists only in so far as it is his construct."[24] Expressing his distaste for such a restricted interaction with the world he claimed that, in viewing the world as such a human construct, much like in the scientific assumption of objectivity, we can only achieve an exclusive and restricted view of reality fashioned by the constraints of this technological lens. He went further to claim that, in the process of *Enframing* we tend to treat the world like a "standing reserve" and fail to acknowledge ourselves as "being spoken to." It is this acknowledgement of "being spoken to," which echoes the earlier acknowledgement of the possibility of the object to "present itself," that releases the *object* from the tacit humanism of his early works, and brings it into the realm of becoming a *thing*.

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[21] For argument of a "profound humanism" in Heidegger's work see Beatrice Hanssen, *Walter Benjamin's Other History: Of Stones, Animals, Human Beings, and Angels*, Weimar and Now 15 (Berkeley, Calif.: University of California Press, 1998), 22.

[22] *Einblick in das, was ist* is a lesser known work that generated the latter set of spin-offs. As cited in Graham Harman, "Heidegger on Objects and Things," in *Making Things Public: Atmospheres of Democracy*, ed. Bruno Latour and Peter Weibel (Cambridge, Mass.: MIT Press, 2005), 269.

[23] Martin Heidegger, *The Question Concerning Technology and Other Essays*, trans. William Lovitt (New York: Harper & Row, 1977), 23.

[24] Heidegger, *The Question Concerning Technology*, 27.

Heidegger now proceeded to distinguish the notion of the *object* of his earlier process of dealings from the notion of *thing*, which can exist in its own right outside the confines of a human *manipulation*. Heidegger was already aware of the limitations of phenomenology to construct a mental schema of the object, where the *essences* needed to be recognised from the outside through an appropriation of *phenomena*.[25] With the failed attempt at bridging the gap between the material object and the human subject by a more primordial appropriation of dealings, Heidegger finally acknowledged that any attempt to define the object through human perception always remains limited. Rejecting all the previous attempts at reaching out to the object as a scientific/technological appropriation he argued that "Science makes the jug-Thing into a non-entity in not permitting things to be the standard for what is real."[26] Here he distinguishes the *object*, which becomes the object of human perception, from the *thing*, which continues to have a life of its own and is not available to human categories. To clarify this new distinction of the *thing* as against the *object*, he explains, "no representation of what is present, in the sense of what stands forth and of what stands over against as an object, ever reaches to the thing qua thing."[27] With this, Heidegger rejected the humanistic bias implicit in his previous attempts, and offered that, while an *object* might be perceived, a *thing* exists.

With this rejection of a human basis of accounting for things, Heidegger now returned "to the things themselves," revealing them once again through passionate accounts of the being of jugs and bridges engaged in the world as themselves. Particularly with the essay entitled *The Thing* Heidegger established a clearer account of what he now referred to as a *thing*. Elucidating the revised perception of the complex relationship of humans and things and the *world* through one of his famous examples of a jug he stated,

> *The jug's presencing is the pure, giving gathering of the onefold fourfold into a*
> *single time-space, a single stay. The jug presences as a thing. The jug is the jug as*
> *a thing. But how does the thing presence? The thing things. Thinging gathers.*
> *Appropriating the fourfold, it gathers the fourfold's stay, its while, into something*

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[25] See Martin Heidegger, *The Basic Problems of Phenomenology*, Studies in Phenomenology and Existential Philosophy (Bloomington: Indiana University Press, 1982).

[26] Martin Heidegger, "The Thing," in *Poetry, Language, Thought* (New York: Harper & Row, 1971), 170.

[27] Heidegger, "The Thing," 168-169.

that stays for a while: into this thing, that thing. The jug's essential nature, its presencing, so experienced and thought of in these terms, is what we call thing.[28]

In this conception, we can clearly see that the *thing* is no more dependent upon the "technological mode" of thinking of the human realm to reach its ontological purpose. In Heidegger's revised account, unlike the previous construction of the hammer which could only find its ontological purpose in hammering, the jug does not need to be recognized in a process of dealing such as pouring, and "The jug is the jug as a thing." This recognition of the *thing* as a thing in itself, not only releases the material world from the confines of a humanist categorization as an inert unattainable object, but actually allows for a more active engagement of the thing through what Heidegger describes as a process of *gathering*.

Before we can discuss this revised conception of the *thing*, let us first clarify Heidegger's construction of the concept of *gathering*, which is further dependent on his acknowledgement of the fourfold of *sky, earth, mortals* and *divinities* that constitute the *world*. In Heidegger's conception, the world is composed of four structural elements that he identifies as the *sky, earth, mortals* and *divinities*. At any instance, however, the four are indistinguishable and constitute a unitary existence. He notes, "Earth and sky, divinities and mortals – being at one with one another of their own accord – belong together by way of the simpleness of the united fourfold."[29] These four elements are further involved in an existential dance or *mirror-play* where "each of the four mirrors in its own way the presence of the other"[30] and constitutes the *world*. Although the four elements are identified separately, this mirror-play blurs the boundaries between them as they are always indistinguishable in the construction of the *world*. In Heidegger's world, then,

> *none of the four insists on its own separate particularity. Rather, each is expropriated, within their mutual appropriation, into its own being. This expropriative appropriating is the mirror-play of the fourfold. Out of the fourfold, the simple onefold of the four is ventured. This appropriating mirror-play of the simple onefold of earth, sky, divinities and mortals, we call the world.*[31]

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[28] Heidegger, "The Thing," 174.

[29] Heidegger, "The Thing," 179.

[30] Heidegger, "The Thing," 179.

[31] Heidegger, "The Thing," 179.

This bringing together of the fourfold into a onefold, "to stay for a while" and exist as *world*, he attributes to the process of *gathering*.

Now, returning to the revised conception of the *thing*, we can identify the greater status afforded by Heidegger to the material realm as a *gathering thing*. We know from above that, in Heidegger's construction of the world the fourfold of sky, earth, mortals and divinities require to be *gathered* into a unitary existence for the reality of the world to be constituted and for them to exist. Heidegger entrusted this vital act of *gathering* to the *thing*, where the unitary existence of reality can only be allowed when the *thing* gathers and thereby brings them into *presence*. We may, then, say that *gathering* is the process whereby the four distinct constituent elements of reality come into presence for an instance and are recognized as a *thing*. "The thing stays – gathers and unites – the fourfold. The thing things world. Each thing stays the fourfold into a happening of the simple onehood of the world."[32]   The material world is thus recognized here as providing for the possibility of the mirror-play, and in this possibility it becomes more than just a mere *object* and connects to the fourfold of the world raising it to the level of the *thing*. This possibility of gathering is, however, not conceptualized as a latent potential in an inert object, but instead as an active process of *gathering* attributed to the *thing*.

In Heidegger's construct, the thing is now involved in an *active* process of *revealing* the world to the human realm by allowing for a *gathering* of the fourfold. He afforded the word thing with the quality of a verb as he developed it into the act of *thinging*, when he explained,

> *the jug is a thing insofar as it things. The presence of something present such as the jug comes into its own, appropriatively manifests and determines itself, only from the thinging of the thing.*[33]

The *thing*, now, is no more a mere *object* available for interpretation through *phenomena*, but is actively engaged in the creation of the *world* through *gathering*. We can thus argue that in this shift, Heidegger provided a solution to the problem of socialization or objectivity that he had set out to resolve, by expanding the agency of the material object and recognizing it as a *gathering thing*. This formulation allows the

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[32] Heidegger, "The Thing," 181.

[33] Heidegger, "The Thing," 177.

thing to transcend the subject/object divide and engage with the *world* outside the subject/object divide. With this transition Heidegger claimed his place as a philosopher of things, and opened the door for a possible understanding of the material world which we will explore further in the reassessment of late twentieth century theories of social action.

ACTORS TO ACTANTS

While the post-war decades were a witness to the shift in Heidegger's philosophical ideas, aimed at an ontological reconsideration of the material world, the discontent with the recent world events had also prompted a rethinking of the social realm. The obvious opposition to the structuralist arguments of the early twentieth century, aimed at rescuing the agency of the individual from a "thorough going determinism" of an underlying structure, resided in a return to the conscious abilities of the individual human *actor*.[34] However, in the subsequent development of these post-positivist theories, this "unqualified freedom" of subjectivity afforded to the individual human actor also came into question.[35] In the search for a new model of the *social*, then, social theorists not only had to contend with the problems of an invisible social *structure* governing the acts of the individual agent, but also the unrestricted and conscious capabilities of this individual human *actor* to redefine the social structure. This focus on redefining the limits of the human actor can be argued to be a constant feature in the development of social theory over the final decades of the last century. From Anthony Giddens's *Structuration Theory* to the latest arguments of a *Practice Theory* in the works of Theodore R. Schatzki and Karin Knorr-Cetina, then, we can observe a constant "decentring" of the human subject by introducing new theoretical categories into the revised realm of the social.[36] These successive attempts at defining a social theory where the role of the human *actor* is consistently restricted, are identified here as

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[34] See Bert N. Adams and Rosalind A. Sydie, *Contemporary Sociological Theory* (Thousand Oaks, CA: Pine Forge Press, 2002).

[35] For a discussion of the post-positivist trends in social theory that followed the war years see David Held, *Introduction to Critical Theory: Horkheimer to Habermas* (London: Hutchinson, 1980), and Richard Kilminster, *Praxis and Method: A Sociological Dialogue with Lukacs, Gramsci and the Early Frankfurt School*, International Library of Sociology (London: Routledge & Kegan Paul, 1979).

[36] Practice Theory cannot yet be defined as a coherent and unified theoretical movement, but for an introduction to the theoretical approach that may be identified as such see Theodore R. Schatzki, Karin Knorr Cetina, and Eike von Savigny, eds., *The Practice Turn in Contemporary Theory* (London: Routledge, 2001).

a theoretical trend which finds its culmination in the arguments of Bruno Latour, where the individual agent is finally considered as an *actant* not necessarily belonging to the human realm.

Anthony Giddens's *Structuration Theory* was an attempt to formulate an explanation of the agency-structure relationship that would transcend the deterministic arguments of the structuralists.[37] Here Giddens argued for a rethinking of the nature of *social structure* through what he refers to as the "duality of structure". In such an explanation, the "structure is both medium and outcome of the reproduction of practices."[38] By focusing on the realm of *practice*, which constitutes the context of action rather than the agency or the structure that drives it, Giddens was able to transcend the dilemma of awarding primacy to the structure. Furthermore, such a theoretical stance actually allowed the structure to be subordinated to the context of action by claiming that "structure is reconstituted in each instance where a pervasive and enduring procedure is produced."[39] This argument is particularly relevant as it allowed for the realm of the social to be rescued from the positivist arguments, which had continued to deny the importance of the empirical on ideological or trans-historical grounds. However, this subordination of the *structure* to the realm of *action*, now brought the agency of the conscious human *actor* to the fore. Here Giddens warned against deconstructing the actor, and argued that the individual human subject cannot be considered as having the possibility to construe and apply the semantic and normative aspects of a procedure in the same way across different practice situations.[40] This first limitation of the human actor dismisses any arguments for the human actor as a knowing subject. Giddens further countered any arguments for a conscious "motivation" or "rationalization" as a basis for explaining social action and offered that *action* is a result of a "practical

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[37] Key sources include Anthony Giddens, *New Rules of Sociological Method: A Positive Critique of Interpretative Sociologies* (London: Hutchinson, 1976), ———, *Central Problems in Social Theory: Action, Structure, and Contradiction in Social Analysis* (London: Macmillan, 1979), ———, *The Constitution of Society: Outline of the Theory of Structuration* (Cambridge: Polity Press, 1984), ———, *Social Theory and Modern Sociology* (Cambridge UK: Polity & Blackwell, 1987), ———, *Modernity and Self-Identity: Self and Society in the Late Modern Age* (Cambridge: Polity, 1991). For an overview of Giddens's work see Philip Cassell, ed., *The Giddens Reader* (Stanford, CA: Stanford University Press, 1993).

[38] Giddens, *Central Problems in Social Theory*, 5.

[39] Ira J. Cohen, *Structuration Theory - Anthony Giddens and the Constitution of Social Life*, ed. Anthony Giddens, Contemporary Social Theory: Theoretical Traditions in the Social Sciences (London: Macmillan, 1989), 46.

[40] See Giddens, *Central Problems in Social Theory*, 44-45. Also see Giddens, *The Constitution of Society*.

consciousness" that is born of "mutual knowledge," and which the actor needs to be "only tacitly aware" of.[41] This further dismissal of the notions of conscious motivations, intentions and rationalizations, finally restricted the agency of the human actor within the limits of "unacknowledged conditions" and "unintended consequences" of action.[42]

Here, Giddens continued to formulate a new understanding of the agency of the human actor by reintroducing the arguments for the "duality of structure." He argued that the duality of structure supposes a link between the "unacknowledged conditions" and "unintended consequences" of action through a "reflexive monitoring" by the actor. In this process the actor is involved in a collaborative generation of context with other agencies, which nevertheless continues to occur tacitly on the level of practical consciousness. "Reflexive monitoring" allowed the actor to become the source for the reconstitution of the structure, but did not necessarily afford it the conscious agency to do so, as the process "often occurs in a continuous flow rather than as a punctuated series of moments of attention."[43] Therefore, as Cohen encapsulates:

> *Indeed lay agents ... may have no conception whatsoever that their participation in social routines contributes to social reproduction in the duality of structure by re-enforcing their awareness, and the awareness of others, that this is how social life in given circumstances is carried out.[44]*

This conception of the *social* which is identified through a series of social actions constituting and reconstituting both agency and structure during the course of its continuous flow, then, does not rely on the agency of the human actor to explain social phenomena. Furthermore, since social action takes place within such tacitly monitored conduct the actor is no more the knowing subject of the Kantian formulation but merely a "transformative capacity" in the realm of action.[45]

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[41] For refutation of *motivation* as prerequisite for action see Giddens, *The Constitution of Society*, 6. For further discussion on the concept of *mutual knowledge* see Giddens, *Central Problems in Social Theory*, 73, 84, 251-3.

[42] On discussion of this stratified model of the agent see Giddens, *Central Problems in Social Theory*, 56 and Giddens, *The Constitution of Society*, 5, 12-14.

[43] Cohen, *Structuration Theory*, 49.

[44] Cohen, *Structuration Theory*, 54.

[45] As Cohen notes, "agency in structuration theory is equated with transformative capacity." Cohen, *Structuration Theory*, 24.

The arguments formulated by Giddens have no doubt spawned a generation of writings on sociology, and continue to inform the works of present day theorists who engage in defining a practice theory. The focus on the realm of action afforded by this redefinition of practice as a middle ground between agency and structure is central to post-positivist sociological thought and will be discussed a little later, but for now we shall return to the question of the human actor. In the sociological literature that followed from Giddens, this intent to delimit the agency of the human actor continued on a course of further diminishing the role played by the actor in the realm of the social. Giddens had already reduced the agency of the actor to a mere "transformative capacity." Here the new theories can be seen as further limiting this capacity by introducing newer elements into the purview of the social, which share this space with the actor and constantly vie for an ever larger piece of the action. Sharing the realm of action with these newer members of the social realm, then, diminishes the role played by the actor into a further *restricted* transformative-capacity. A pertinent example of such theorizing can be found in the popular arguments for *fields* and *habitus* postulated by Pierre Bourdieu.[46]

In Bourdieu's account of the social, the active constitution of social life is presented as a game.[47] The actor as a player in this game is continuously engaging with other actors in a competitive realm of action, which is therefore constantly in a state of flux. The social space itself is constituted of such *fields* of play which hold these actors together within specific positional configurations in the realm of action.[48] It must be clarified that the limits of such a field are not defined and can be constantly reconfigured into a restricted or extended field depending on the context of action and the number of players

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[46] Key sources include Pierre Bourdieu, *Outline of a Theory of Practice*, Cambridge Studies in Social Anthropology (Cambridge, NY: Cambridge University Press, 1977), ———, *Distinction: A Social Critique of the Judgement of Taste* (London: Routledge & Kegan Paul, 1984), ———, *In Other Words: Essays Towards a Reflexive Sociology* (Stanford, CA: Stanford University Press, 1990), ———, *The Logic of Practice* (Cambridge, UK: Polity Press, 1990), ———, *Practical Reason: On the Theory of Action* (Cambridge: Polity, 1998), ———, *Pascalian Meditations* (Oxford: Polity Press & Blackwell, 2000), Pierre Bourdieu and Susan Emanuel, *The Rules of Art: Genesis and Structure of the Literary Field* (Cambridge, UK: Polity, 1996), Pierre Bourdieu and Randal Johnson, *The Field of Cultural Production: Essays on Art and Literature* (Cambridge UK: Polity Press, 1993), Pierre Bourdieu and Loic J. D. Wacquant, *An Invitation to Reflexive Sociology* (Cambridge: Polity Press, 1992).

[47] For a quick overview of this notion of social life as a game, see Hélène Lipstadt's explanation of "Bourdieu's game" in Hélène Lipstadt, "Can 'Art Professions' Be Bourdieuean Fields of Cultural Production? The Case of the Architecture Competition," *Cultural Studies* 17, no. 3/4 (2003).

[48] See specifically Bourdieu and Johnson, *The Field of Cultural Production*.

involved.[49] In this conception of the social realm, the agency of the actor is restricted by the *position* it commands on the field, which is primarily a function of the unequal distribution of different forms of *capital*.[50] Even the agency afforded to the actor in defining such a position through the act of *position taking* is further restricted through the presence of *illusio*. An *illusio*, which can be best described as "a belief in the game," is a sometimes unconscious and irrational factor that governs the actions of the actor by generating a tacit adherence to the foundational values inherent in the field - *doxa*. The actors involved in the field are then guided by this *illusio* towards a collective commitment or *collusion* in the realm of action.[51] This notion of tacit adherence whereby the actor in inextricably tied to a normative body of knowledge can be likened to the condition already discussed in Giddens's arguments for a "practical consciousness." This restricted agency of the human actor is further subject to the contextual categories of the *habitus* and *field*, which though constantly reproduced through the actor's engagement in action, nevertheless govern the entire basis of the mental *schema* on which he/she may operate. Here Bourdieu can be seen to be mirroring the arguments for the *duality of structure* where he himself claims that these categories constitute "a structuring and structured structure."[52]

Bourdieu's arguments, which can be seen as restricting the human actor much in the same way as Giddens's *Structuration Theory*, go a little further in delimiting this role through such a redistribution of social agency. We have already witnessed that in this formulation the actor needs to contend with an ever increasing number of agents, who are equally governed by the *illusio* in their engagement in an unrestricted definition of the *field*. It is the conception of this *field* in Bourdieu's theory that delimits the human actor even further. Even though the *field* is constituted of the material and temporal context within which actors perform social actions, it is not considered as an inert enclosure that merely holds these innumerable agents. Instead, the *field* is recognised as

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[49] For a discussion on the inverse relationship of the extended and restricted fields see Bourdieu and Emanuel, *The Rules of Art*, 202, 211. Also see Pierre Bourdieu, "The Field of Cultural Production, or: The Economic World Reversed " *Poetics* 12, no. 4-5 (1983).

[50] Although Bourdieu tries to revitalise it by casting it as social, economic, or cultural capital, the notion of capital in Bourdieu's work borrows heavily from the word's previous definitions and therefore remains limited by it. See Pierre Bourdieu, "The Forms of Capital," in *Handbook of Theory and Research for the Sociology of Education*, ed. John G. Richardson (New York: Greenwood Press, 1986).

[51] For a discussion of the concepts of *illusio*, *collusion* and *doxa* see specifically Bourdieu, *Pascalian Meditations*.

[52] Bourdieu, *The Logic of Practice*, 56.

a dynamic entity in the social realm which equally partakes in the realm of action.[53] Further, as Bourdieu notes, the larger the *field* the stronger is the belief or *illusio* governing the action of the agents within it. Such a situation can reach a condition of "false transcendence," where the role of the agent can be argued to be completely consumed by the intervention of the field.[54] To distinguish such a condition from structuralist determinism it must be considered that as "a structuring and structured structure" the *field* is nevertheless subject to subsequent reconstitution. The increasing power accorded to the *field* itself, and the subsequent contestation of different fields in Bourdieu's theory, then, serves to further constrict the agency of the human actor in the realm of the social, where it now has to contend with this new material dimension of sociality in the course of action.

The definition of the *field* in Bourdieu's theory is not only significant for its impact on delimiting the agency of the human actor, but also for the agency it affords to the material realm in the course of social action. Even though the material and temporal context are only said to engage with the actor in the form of capitals that the actor engages in the process of position taking, they also form an inseparable part of the definition of the field. With the autonomy awarded to the field at a comparable or even greater level than that afforded to the human actor, a minute share of its agency also spills over to this material context. Thus, we can argue that the definition of the *field* allows a special inclusion of the material realm into the explanation of social action. This perspective is particularly relevant, because in Bourdieu's definition of the field we can observe that the solution to the problem of "unqualified freedom" of subjectivity is offered through a renewed focus on the material realm, which had heretofore remained outside the purview of social action. We have already discussed the subject/object divide instituted in the mind-body split, where the internal realm of the mind is considered as distinct from and incommensurate with the external realm of the body, as a major barrier to any such inclusion of the material realm into the description of social action. Here, Bourdieu explicitly offers that the notion of the *field* is the key to

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[53] See specifically Bourdieu, *The Logic of Practice*, and Bourdieu, *Practical Reason: On the Theory of Action*.

[54] See Bourdieu's discussions of the field of artistic production and the work of art as fetish in Bourdieu and Emanuel, *The Rules of Art*. These ideas have also been expounded upon in Niels Albertsen and Bülent Diken, "Artworks' Networks: Field, System or Mediators?," *Theory, Culture and Society* 21, no. 3 (2004).

transcending this internal-external divide.[55] With this renewed perspective on the social realm, we can further observe the development of a pattern where the human actor is continuously and progressively supplemented by the material realm in the explanation of social action.

The subsequent developments in social theorising that address these concerns laid out by Giddens and Bourdieu can be divided into two separate sets. Using opposing strategies to address the problem of the mind-body split these divergent trends offer an explanation of social action as *discourse* or a bodily constituted *practice* respectively. While the first allows for a greater inclusion of the material realm into the scope of the mental through its recognition as *text*, the second resorts to a focus on the materiality of the human actor to redefine the limits of the physical realm.

In Giddens's *Structuration Theory,* the notion of "practical consciousness," which works at a tacit level, is supplemented by another category of "discursive consciousness." This discursive consciousness includes another form of association between the agents which does not necessarily have to be tacit, but still does not afford it complete conscious control over the realm of social action.[56] This is primarily because Giddens observes a distinction "between the rationalization of action and the discursive accounts of reason that agents provide."[57] Therefore in Giddens's account, the discursive act is merely another form of social action that aids the process of reflexive monitoring in the reconstruction of the structure. The realm of discourse has a comparatively stronger role afforded to it in Jurgen Habermas's theory of communicative action.[58] While Habermas maintains that social discourse forms an inextricable part of a larger realm of language as an entity, he also offers that it is this connection with language that can afford the possibility of a structured and conscious connection of the entire mankind. An ideal projection of this social discourse, then, becomes the basis for the human agent to affect conscious control over social change. In either conception of the role of discourse in the social realm, however, the notion of

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[55] Bourdieu and Emanuel, *The Rules of Art*, 288.

[56] See Giddens, *The Constitution of Society*, 4-7. Also see Giddens, *Central Problems in Social Theory*, 57, 73.

[57] Cohen, *Structuration Theory*, 54.

[58] See Jürgen Habermas, *The Theory of Communicative Action* (Boston: Beacon Press, 1984). Also see Craig J. Calhoun, *Habermas and the Public Sphere*, Studies in Contemporary German Social Thought (Cambridge, Mass: MIT Press, 1992).

language was employed as an intersubjective communication. With the linguistic turn in social theory, following from the impact of Derrida and his arguments for *textuality*, this penchant for social discourse as a mode to explain social action took on a different guise. From Michel Foucault to Niklas Luhmann, the subsequent social theories that explain social phenomena as a part of a network or system of social codes, engage the notion of *discourse* as an autonomous realm of "knowledge" (in Foucault's sense) or "communication" (in Luhmann's sense) that serves as the playground for all social action.[59] Within such a model of the social as a realm of *discourse*, the human actor is undoubtedly limited by the discursive field, but more importantly material objects become involved in the process by becoming an integral part of this field as *embodied text*.[60] This understanding of social action as *discourse*, then, allows the material realm to become a stronger part of social action by transcending the mental-physical divide and being included in the otherwise mental realm of *language*.

In more recent arguments of *Practice theory* as formulated by Theodore Schatzki, we can witness a parallel attempt at transcending the mind-body split which is focused on the materiality of the human subject. For Schatzki's definition of the social there is a clear antecedent in Giddens, where the explanation of the social stems not from the agency or structure but the site of social action – practice. But Schatzki takes the definition of practice to a different level of situatedness. In Schatzki's theory, the notion of practice is no more limited to the abstracted realm of social action, but actually focuses on the human bodily practice – as "a performing or carrying out of action."[61] Here, Schatzki notes that practice "designates the continuous happening at the core of human life qua stream of activity and reminds us that existence is a happening taking the form of ceaseless performing and carrying out."[62] This redefinition of the notion of practice focused on the human body, is yet another attempt at transcending the mind-

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[59] For instance see Michel Foucault, *Language, Counter-Memory, Practice: Selected Essays and Interviews* (Ithaca, NY: Cornell University Press, 1977), ———, *Power/Knowledge* (New York: Pantheon, 1980), and Niklas Luhmann, *Social Systems*, Writing Science (Stanford, CA.: Stanford University Press, 1995).

[60] For the appropriation of the notion of text in social theories of the late twentieth century as an extra-mental proposition see Reckwitz's discussion on "Culturalist Textualism" in Reckwitz, "Toward a Theory of Social Practices." For yet another argument that serves a similar purpose see Geertz's idea of "thick descriptions," in Clifford Geertz, *The Interpretation of Cultures* (New York: Basic, 1973).

[61] Theodore R. Schatzki, *Social Practices: A Wittgensteinian Approach to Human Activity and the Social* (New York: Cambridge University Press, 1996), 17.

[62] Schatzki, *Social Practices*, 90.

body split in the explanation of the social. Since the social realm is constituted through practices and these practices defined in turn through the "folding and unfolding of human bodily activity," the notion of mind/action that serves as the site for the institution of the social is reduced to this physical dimension of action.[63] This attempt at developing a new social theory, then, allows for the subjugation of the mental realm, which seemingly constitutes the social dimension, to the physical dimension, which had remained divorced from the realm of social action. This attempt can, therefore, be seen as continuing with the tendency to deny the agency of the actor as a knowing subject, by shifting the focus to its material dimension of bodily activity.[64]

In this constant struggle to question the limits of the agency of the human actor, as outlined above, we can observe that a potential alternative is provided by rethinking the possibilities afforded by the material realm; first in an abstract sense of *field*, then as *text* in a discursive understanding, and finally as *bodily activity*. This trend is furthered in the recent works of Bruno Latour, where he argues that the *social* needs to be defined through a complete rejection of, not only the various dualities of natural/social, mental/physical, mind/body etc., but the very Kantian divide that is behind its formulation – the ontology of subject and object. By taking this stance, he develops a new understanding of the social realm as a *collective* of various *human* and *non-human* entities involved in the realm of *action*. Since the human actor is not the sole player in this new definition of the social action, it shares this field symmetrically with other non-human agents. To further dissolve this distinction of the human and non-human when explaining social phenomena, Latour argues for a shift from the term *actor* to *actant*, which does not privilege the human realm and allows for a *symmetric* and *active* inclusion of all forms of entities into the explanation of the *social*.

MATERIALS IN ACTION

The philosophical arguments of Heidegger entrenched in the shift from *objects* to *things*, or the tendencies identified in the development of social theory over the second half of the last century, both express a desire to transcend the limitations posed by the social/natural divide on the explanation of phenomena. Indeed, the dissatisfaction expressed by Heidegger in regards to the scientific or technological mode of thinking

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[63] Schatzki, *Social Practices*, 88, 131.

[64] As Schatzki claims, Practices "should not be thought of as 'in the minds' of individual participants." See Schatzki, *Social Practices*, 105.

when engaging with the world of objects, is a criticism of this epistemological divide, which does not allow for the *thing* to be understood in all its complexity. On the other hand, the constant struggle of sociologists to delimit the agency of the human actor and supplement it with an ever expanding array of new social categories, expresses the need for the social to break out of its confines of defining everything as a function of human aspects. This desire for the collapse of the natural/social divide is finally achieved in the works of Bruno Latour, whose sociological theory has opened up different avenues to approach this problem. After nearly three decades of chasing the problem posed by the natural/social divide and formulating his theoretical perspective, Latour finally published a more consolidated account of his social theory in 2005 entitled *Reassembling the Social*. The appropriation of this sociological account, which is premised on a more inclusive definition of the social, may, then, serve to generate a less biased understanding of materials in the realm of social action.

Bruno Latour's early works in Science Studies (also Science and Technology Studies or STS) had already put him in an advantaged position to transcend the natural/social divide in the understanding of the social. With a research question that was focused on the social inquiry of "scientists in action," Science Studies placed Latour in the middle of this divide between the natural and social sciences.[65] The peculiarity of the problem case brought the problems of this epistemological divide to the fore, and the arguments coming out of his early works continued to blur the boundaries between the objectivity of the scientific method and subjectivity of the social sciences. Throughout his earlier works Latour finds the social networks of scientists constantly overlapping the construction of scientific and objective truth, bringing the exclusivity of both into question. In the context of where Science Studies places him, it would be relevant to note his observation that "according to tradition, the work of sociologists begins and ends with socially relevant topics," not true for the Science Studies practitioners, who continue their investigations "without taking the boundary between matter and society as a division of labour between the natural and the social sciences."[66] This methodological stance allowed Latour to go beyond the general sociological method of

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[65] For examples of this early work see Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, Mass: Harvard University Press, 1987), Bruno Latour and Steve Woolgar, *Laboratory Life: The Social Construction of Scientific Facts*, Sage Library of Social Research (Beverly Hills: Sage Publications, 1979).

[66] Bruno Latour, "When Things Strike Back: A Possible Contribution of 'Science Studies' to the Social Sciences," *The British Journal of Sociology* 51, no. 1 (2000), 108.

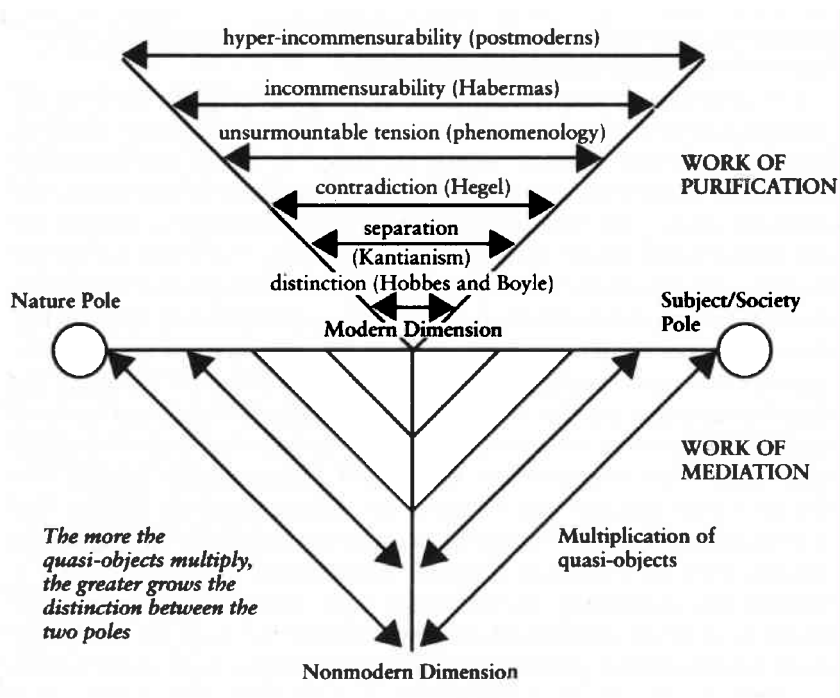merely looking at human networks, and achieve a blurring of the "boundary between matter and society."

Fig. 2.1. The Modern Paradox.
(*Source:* Latour and Porter, *We Have Never Been Modern*, 58.)

On the basis of his experiences in Science Studies Latour codified the problem of incommensurability of social sciences and natural science into what he refers to as the *Modern Paradox.* (Fig. 2.1) Latour explains that the condition of the *Modern Paradox* is such that although it first divides the realm of reality into the dichotomy of Natural and Social poles it nevertheless continues to transgress this divide through specially designed exceptions. He clarifies that, in the first instance, in explaining reality from the Nature pole it is apparent that "it is not men who make Nature; Nature has always existed and has always already been there; we are only discovering its secrets."[67] On the other hand when approaching a phenomenon from the Society pole, the phenomena, though natural, may be substituted "by the functions of society which they were both hiding and impersonating."[68] He then establishes that these seemingly distinct realms are given specific instances to overlap and control each other. To explain this he gives the example of a laboratory condition where "even though we construct Nature, Nature is as if we did not construct it." Similarly when considering actors mediated by social forces,

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[67] Bruno Latour and Catherine Porter, *We Have Never Been Modern* (New York: Harvester Wheatsheaf, 1993), 30.

[68] Latour, "When Things Strike Back," 109.

such as laws, it may seem that "even though we do not construct Society, Society is as if we did construct it." Latour further argues that such a paradoxical and contradictory construction can only stand as long as "there shall exist a complete separation between the natural world (constructed, nevertheless, by man) and the social world (sustained, nevertheless, by things)."[69]

This paradoxical condition is also visible in our foregoing discussions of the theoretical arguments offered by Heidegger and late twentieth century social theorists. In their separate endeavours to resolve the dilemma posed by the natural/social divide both generate further categories of exceptions without actually dissolving the divide. In the attempt to expand the agency of the material object, Heidegger merely argues for a special condition of agency where the material object understood as a *thing* is involved in the *gathering* of the world without actually partaking in mundane activities of daily engagement as an active member. On the other hand, in the attempt to delimit the agency of the human actor, social theorists end up introducing other abstract, but nevertheless social formations, of *discourse* or *field* to share this agency without comprehensively engaging the material context. This condition, just as the very function of the *Modern Paradox*, stems from the problem that these attempts are nevertheless contained within disciplinary limits that are guided by the subject/object paradigm. Latour argues that to resolve this condition of the *Modern Paradox* we not only have to dissolve the disciplinary divide between the natural and the social but indeed abandon the very subject/object distinction that feeds it. He, therefore, generates a more inclusive argument which simultaneously incorporates the activity accorded to things by Heidegger with the observations of late twentieth century sociology on the limits of the human actor, to address the problem, not of the material or social realm but, of "reality." He thereby develops a new definition of *collective* where both *humans* and *non-humans* are symmetrically involved in social action as *actants*.[70]

In generating this new account of a social "reality," Latour first provides a reappraisal of the material object in the context of daily engagement. He argues that the true constitution of the object remains invisible to us in the course of customary experience

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[69] Latour and Porter, *We Have Never Been Modern*, 31.

[70] Latour notes that, "Since in English "actor" is often limited to humans, the word "actant," borrowed from semiotics, is sometimes used to include nonhumans in the definition." Latour, *Pandora's Hope*, 303.

due to a conceptual process of *blackboxing* that renders the object usable.[71] A blackbox, as applied in systems analysis, renders the complexity of a system opaque so that it may be appropriated in a predefined configuration, and Latour argues that in the course of daily engagement it is such a *blackbox* that is most easily recognized as an *object*. This conceptualization of the object is initially very similar to Heidegger's arguments for *equipment*, where the *equipment* renders itself invisible in the course of *dealings*. However, for Latour the nature of the object holds a more complex picture of reality that can only be revealed through a reopening of these blackboxes. In order to re-open them and reveal the hidden truth about objects, Latour engages another argument that echoes Heidegger's stance. Latour offers that the full recognition of the object can only be achieved by looking at the special condition of its *breakdown*. This condition of breakdown has a dual significance for Latour.

Firstly, like Heidegger's observation of *obstinacy* of the *equipment*, the condition of breakdown allows Latour to put forward an argument for the agency of the material object, by recognizing what he refers to as its *recalcitrance*. Latour does not restrict the notion of *recalcitrance* to the appropriation of tools for human projects, as in Heidegger's case, but extends it to all objects as an essential part of their definition. He argues that even in the case of the natural sciences, where the method of objectivity only allows for recognition of the object as a passive receptacle of universal laws that humans persevere to uncover, such a condition of recalcitrance is evident. Here he claims that "Natural objects are naturally recalcitrant, the last thing that one scientist will say about them is that they are fully masterable."[72] Through a discussion of the etymology of the word *object* Latour further argues that "Objectivity does not refer to a special quality of the mind, an inner state of justice and fairness, but to the presence of objects which have been rendered 'able' (the word is etymologically so powerful) to *object* to what is told about them."[73] In this recognition of *recalcitrance* as a power *to object*, Latour affords the object with an agency in a manner similar to Heidegger's argument for the use of the word *thing* as a verb, where a "thing things."[74] However,

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[71] Although the notion of *blackboxing* finds a mention in Latour's discussion of "Opening Pandora's Black Box" in Latour, *Science in Action*, 4, for a more thorough appropriation see Latour, *Pandora's Hope*, 183. On a separate note, the notion of black-box has also been employed in architectural discourse by Reyner Banham.

[72] Latour, "When Things Strike Back," 116.

[73] Latour, "When Things Strike Back," 117.

[74] Heidegger, "The Thing," 174.

Latour maintains that this quality of the *thing* that *things* is not a special condition, but is commensurate with the way we acknowledge objects in daily use of language. He recognizes that in daily construction of language "… kettles 'boil' water, knifes 'cut' meat, baskets 'hold' provisions, hammers 'hit' nails…"[75] With this argument, Latour brings this possibility of an agency of objects down from the exotic definition conceptualized in a *gathering thing* to the level of daily and mundane activities. Here, Latour dismisses the subject/object dichotomy which "distributed activity and passivity in such a way that whatever was taken by one was lost to the other," and argues that "on the contrary, the more activity there is from one, the more activity there is from the other."[76] This argument for affording the object the notion of *activity*, however, does not complete Latour's reappraisal of material objects in the context of daily engagement, and he finds in the process of breakdown yet another feature that allows him to go beyond Heidegger's attempt.

As a second consequence of the process of breakdown, the *blackbox* is rendered open, and the real constitution of the object becomes available. Latour argues that when the object breaks down we are not only made aware of its importance to a human project (like a Heideggerian assignment), but are literally able to account for its constitutive parts. Here, we can recognize that any particular object is not only that object, which is rendered recognizable by its individual definition, but also a multitude of other objects that serve as its parts and command their own individual definitions. Latour argues that in the context of daily engagement, when we employ the entire configuration of objects that serve as these constitutive parts repeatedly in the same *assemblage*, this multitude of objects acquire a revised definition as another object – blackboxed. Now focusing on this codified *assemblage* of parts, he offers that the constitutive parts recognized as material objects do not by themselves make up the redefined object of engagement, but are put in place by a set of social processes which are also encoded within this *blackbox*. Therefore, the object encountered in the context of daily engagement is not only a material object with several constitutive parts, but also a *blackbox* of social processes. In the context of activity as discussed above, the agency of the object should not be thought of as applying only to a material object but an object as a complex social construct, or in Latour's words, a *substance*. Within such a perspective, Latour offers a

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[75] Latour, *Reassembling the Social*, 71.

[76] Latour, *Pandora's Hope*, 147.

redefinition of this object or *substance* as "what gathers together a multiplicity of agents into a stable and coherent whole."[77] If this formulation sounds a lot like a *gathering* attributed to the *thing* in Heidegger's conception, it is because there is strong link between the two arguments which will be discussed later. For now, however, it is relevant to note Latour's assertion that *all* agents that are involved in the realm of daily activities – not just material objects – "began as attributes and *ended up being a substance*, a thing with clear limits, with a name, with obduracy, which was more than the sum of its parts."[78] [Emphasis in original]

The re-opening of the *blackbox,* and subsequent recognition of the object as a gathering or *assemblage* of a multiplicity of agents, is what allows Latour's formulation to transcend the possibilities afforded by Heidegger's arguments. In its final conception, Heidegger's *thing* is distinct from the *object* in the way it interacts with the human world. The *thing* exists in a process of *gathering* the world, which is its ontological purpose, and is not available to human categories, while the *object* is disposed to human *perception* in its daily engagement with human *projects*. Heidegger further offers that, what is available to the realm of *perception* within the phenomenological paradigm is never the *object* itself but only a limited set of *phenomena* that is recognized as the object.[79] This partial definition of the object as a codified mental schema Heidegger recognizes as an "intermediary object" – a *Quasi-Object*. Clearly then, the Quasi-Object is a construct of the human mind while the *thing* exists out there in the world. Latour engages Heidegger's arguments for the *thing* – that is the *thing* that is involved in a process of *gathering* – outside such a subject/object divide, and formulates another conception of the Quasi-Object. Drawing from Heidegger's later arguments Latour concludes that since the process of gathering attributed to the thing is temporal in nature the object at any point can be recognized as an *unfinished gathering*.[80] Therefore the object itself is a Quasi-Object and is not dependent on its mental perception to be recognized as such. Furthermore since the object is a blackbox of both material objects as well as human social constructs, as a *quasi-object* it is constantly involved in a

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[77] Latour, *Pandora's Hope*, 151.

[78] Latour, *Pandora's Hope*, 151.

[79] See, Heidegger, *Being and Time*.

[80] Bruno Latour, "Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern," *Critical Inquiry* 30, no. 2 (2004), 246. Also see Bruno Latour, *Politics of Nature: How to Bring the Sciences into Democracy* (Cambridge, Mass.: Harvard University Press, 2004).

process of social becoming. (Fig. 2.2) The prime advantage of such a formulation is that since the world is constituted outside the mental and physical divide such a definition is applicable to all entities within it and they are simultaneously recognized as Quasi-Object and Quasi-Subject.[81] Applying this theoretical construct back to the discussion of the *breakdown,* which exposes the interrelationship of objects and humans in the process of *blackboxing,* we can understand that in Latour's construct the notion of *substance* refers to both human and non-human entities that partake in the realm of action. In the realm of social action then they both serve the role of *actants*.
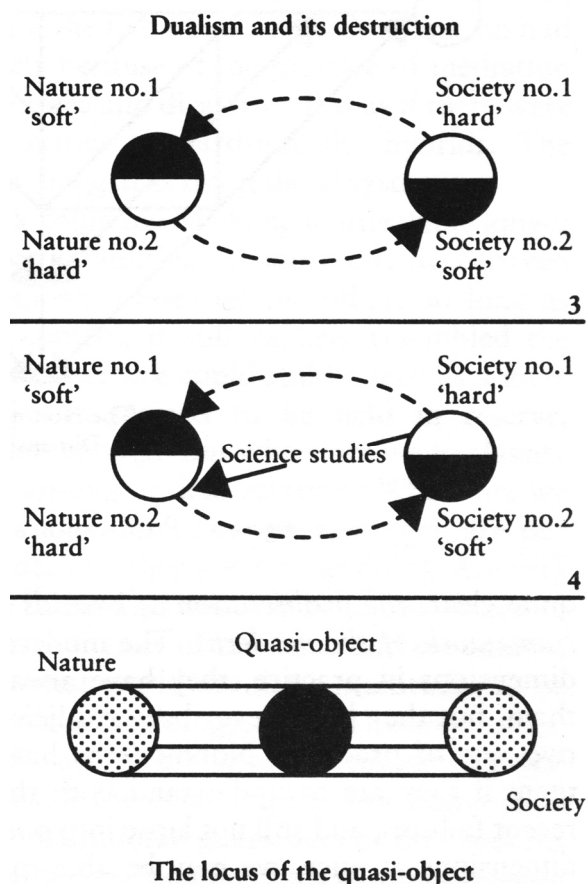
Fig. 2.2. The locus of the quasi-object.
(*Source:* Latour and Porter, *We Have Never Been Modern*, 52.)

As a second onslaught on the problems posed by the *Modern Paradox,* Latour simultaneously engages the questions of the limits of the human agency. Much like the sociologists of the late twentieth century, Latour recognizes the limitations of the human

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[81] This definition of *quasi-subject* is commensurate with Heidegger's arguments for the *Dasein* as a temporally unfolding subject. See discussion on "What is a Quasi-Object?" in Latour and Porter, *We Have Never Been Modern*, 31.

actor as well as the agency-structure format itself.[82] He acknowledges that the actor is hard to define, and that according to the theoretical construct described above there is indeed no actor and only a *quasi-subject* involved in action with other such social entities. Furthermore, the agency-structure format to explain social action is inadequate within the theoretical context of *blackboxing*, since the blackboxing creates the condition similar to those argued in the "duality of structure." But here, Latour differs from the previously offered alternatives of *discourse* and *field* to explain social action. Latour believes that by creating these new epistemological categories we are only trying to retain the subject/object divide by affording the notion of social agency to these abstract formulations. He argues, that the object of inquiry cannot be treated exclusively within the epistemologies of naturalization or socialization or even deconstruction, and must be approached as, to use Heideggerian terms, a 'thing *qua* thing.'[83] He contends that these human categories keep us from understanding the true nature of the thing which is "*simultaneously real, like nature, narrated, like discourse, and collective, like society.*"[84] The problem of approaching objects from these predefined epistemological standpoints, he believes, is that it continues to create two radically opposing views which cannot be reconciled in a singular reality. He offers an alternate solution to the problem of supplementing the agency of human actors, by recognizing that the social realm need not be divided into actors and structures at all but be only composed of *actants* which hold within its complex definition the possibilities of both the agency and the structure.[85] Latour recognizes that the problem of assuming such a radical conception of the social realm is opposed by the notion of *mastery* that comes with the subject/object divide, and to understand the distinction between actor and actant we must let go of this notion of mastery and recognize action as a *fait faire*.[86] As Latour

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[82] For a consolidated and focused sociological argument see the more recent Latour, *Reassembling the Social*.

[83] On how this differs from the position adopted by the likes of E.O. Wilson, Pierre Bourdieu and Jacques Derrida see discussion on "The Crisis of the Critical Stance" in Latour and Porter, *We Have Never Been Modern*.

[84] Latour and Porter, *We Have Never Been Modern*, 6.

[85] This line of argument is most significantly introduced in Latour's works that deal with the Actor-Network Theory (ANT). Since the current project is only concerned with the philosophical basis of Latour's stance these have not been discussed here in detail. However, for a quick overview of Latour's reading of the ANT, see Bruno Latour, "On Recalling ANT," in *Actor Network Theory and After*, ed. John Law and John Hassard (Oxford: Blackwell Publishers/The Sociological Review, 1999).

[86] See discussion on "Action and Mastery" in Latour, *Pandora's Hope*, 280-283. The term *fait-faire* is not precisely translatable into English and can be best describes as "making-do." As Latour explains "Action

notes then, "In order to render [objects] usable by sociological theory we must modify on the one hand the objective nature of objects and on the other hand the concept of action."[87]

Action, Latour believes, cannot be attributed to a single actor. He claims that any actor must be considered within a field of forces that are activated by it and therefore enable it in action. Therefore the action itself brings together several actors aligned together in assemblages towards a unified goal. The relationship between these actors is, therefore, not based on the definition of a primary or secondary mover, but instead a realization that "When one acts, others proceed to action."[88] In such an understanding, it becomes impossible to designate a unitary actor as a starting point of explaining an event as "One can only share in the action, distribute it with other actants,"[89] and never be the primary cause of action. Here, Latour finally extends the realm of action to "all beings which interact in an association" through the use of the term *actant* as against *actor*. This shift from the actor to the actant finally opens up the realm of action to the world of objects according them a "social life." The power that Latour has afforded to *action* itself is "simply a recognition of the fact that we are exceeded by what we create," and does not mean that the actant is subordinate to the action.[90] The actant is still actively shaping the realm of action within the conception that "to act is to mediate another's action," and not merely to actualize an *a priori* potential.[91]

With such a simultaneous engagement of both philosophical and sociological arguments, where he appropriates the process of both Heidegger on one end and the twentieth century social theorists on the other, Latour finally formulates a sociological theory that can claim to transcend the *Modern Paradox* and generate an account of the social where materiality is not incommensurate with social action. Here Latour suggests that, we should acknowledge our existence as not limited to a *society* of humans but a

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is not what people do, but is instead the "fait-faire," the making-do, accomplished along with others in an event, with the specific opportunities provided by the circumstances." Latour, *Pandora's Hope*, 288. This is not unlike Schatzki's notion of *Zusammenhang* or "state of held togetherness," which he uses to describe the idea of s*ocial practice*. See Schatzki, *Social Practices*, 14.

[87] Bruno Latour, "On Interobjectivity," *Mind, Culture and Activity* 3, no. 4 (1996), 237.

[88] Latour, "On Interobjectivity," 237.

[89] Latour, "On Interobjectivity," 237.

[90] Latour, "On Interobjectivity," 237.

[91] Latour, "On Interobjectivity," 237.

collective of humans and non-humans. The aim of this new formulation, Latour argues, is "*to avoid using* the subject/object distinction *at all* in order to talk about the folding of humans and non-humans" and to capture "the moves by which any given collective *extends* its social fabric to *other* entities."[92] In the realm of social action, we have already argued that we need to look beyond the boundaries of the "only two ontological species" of subjects and objects. With the possibility of *folding* human and non-humans into each other – within the understanding of *collectives* – not only does this distinction disappear, but we are not restricted by only two types of actors/actants anymore. The realm of activity can now be granted to an endless series of actants which translate the action through an assemblage of actants, or a *collective*. As Latour notes "actor-actant symmetry force us to abandon the subject/object dichotomy, a distinction that prevents the understanding of collectives."[93] With the collapse of this divide and recognition of the new realm of *collectives,* social action takes on a new definition. In this new realm of *collectives* then, social action can be explained, "using any expedient at hand, in the cracks and gaps of ordinary routines, swapping properties among inert, animal, symbolic, concrete and human materials."[94]

ENCOUNTER OF HUMANS AND NON-HUMANS

We now return to our initial concern with the encounter between humans and materials in the realm of architectural production. Supporting some of the conditions we have witnessed in the discussion of architectural materials, Latour offers that in the general circumstance an event involving a human and a non-human agent can have two possible interpretations, namely a *materialistic* and a *sociological* one. The *materialistic* argument offers the realm of power to the non-human object, arguing that the artefact triggers a potential social role in the human agent, compelling them to act in a certain way. On the other hand, the *sociological* argument treats the material object as a neutral carrier of the intentions of the human subject, who projects their will to achieve a goal onto the object. As Latour notes, "Materialists thus make the intriguing suggestion that our qualities as subjects, our competences, our personalities, depend on what we hold in our hands," while on the other hand, "sociologists make the troubling suggestion that we can master techniques, that techniques are nothing more than pliable and diligent

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[92] Latour, *Pandora's Hope*, 194.

[93] Latour, *Pandora's Hope*, 180.

[94] Latour, *Pandora's Hope*, 190.

slaves."[95] Declining both these possibilities as being confused by the subject/object paradigm, Latour offers an alternate explanation of the encounter. He believes that in the process of such an encounter, which he terms *technical mediation*, Humans and Non-Humans get folded into each other to generate *hybrid* actants.[96] He explains, that the interruption in the process of achieving a goal for one agent, namely human, requires her/him to fall back on the second agent resulting in a fusion of the two. This *hybrid* entity then may proceed to achieve the goal intended by the first agent, or resort to the goal of the second agent, or, completely abandoning both, strive towards a new goal that "corresponds to neither agent's program of action."[97] This transformation of *agents* and *goals* he terms as *translation* and accords to the folding of humans and non-humans in the process of technical mediation.[98] (Fig. 2.3) Latour, therefore, establishes himself against the previous two explanations, claiming that "The twin mistake of the materialists and the sociologists is to start with essences, those of subjects or those of objects. [...] If we study [them] as propositions, however, we realise that neither subject nor object (nor their goals) is fixed. When the propositions are articulated, they join into a new proposition. They become "someone, something" else."[99] This argument for a *hybrid* formulation of the *subject-object*, a "someone, something," then allows for an explanation of the encounter between humans and non-humans to be developed without resorting to the qualities of either the subject or the object as the basis of such an explanation, and thereby helps transcends the problem of affording primacy to either one of the two.

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[95] Latour, *Pandora's Hope*, 177-178.

[96] See discussion on "Folding Humans and Non-Humans into Each Other" in Latour, *Pandora's Hope*, 176-193.

[97] Latour, *Pandora's Hope*, 178. In a separate definition of "Programs of Action" Latour notes, "Each device anticipates what other actors, humans or nonhumans, may do (programs of action), but these anticipated actions may not occur because those other actors have different programs-antiprograms from the point of view of the first actor." Latour, *Pandora's Hope*, 309.

[98] This idea of *translation* will be engaged repeatedly through out the thesis to refer to such a transformation of *goals* as well as *agents*, and all subsequent usage of the term needs to be understood as such. As Latour notes, translation "refers to all the displacements through other actors whose mediation is indispensible for any action to occur." And further, "in place of a rigid opposition between context and content, chains of translation refer to the work through which actors modify, displace, and translate their various and contradictory interests." Latour, *Pandora's Hope*, 311.
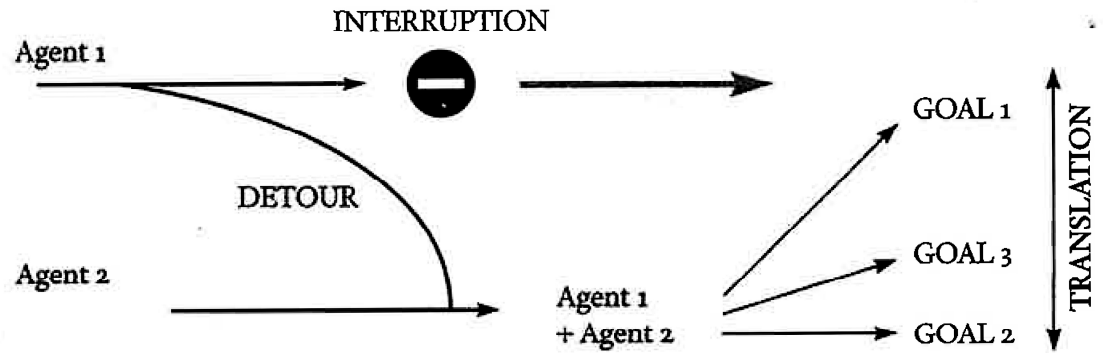
[99] Latour, *Pandora's Hope*, 180.

Fig. 2.3. Translation of Goals and Actants
(*Source:* Latour, *Pandora's Hope*, 179.)

This theoretical formulation of the encounter between architects and materials that results in an initial translation of goals, and a subsequent folding of the two into a *hybrid* entity, then affords a framework that can best address the aim of this thesis.[100] By engaging the dialogic encounter between Kahn and brick through such a formulation we can better assess the actual course of events and further explain the subsequent changes in the constitution of both Kahn and brick better. However, before we engage this theoretical construct towards a reinterpretation of the particular case of Kahn and brick, we still need to resolve the problems of historicizing the event of the dialogue. In the next chapter we continue with the discussion of the problems posed by the methodological assumptions of architectural historiography. These problems relating to the methodological constraints faced by the current project can now be addressed anew in the light of the theoretical framework formulated here.

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[100] In the interest of economy, the theoretical exegesis included here has specifically focused on Bruno Latour's conception of a *collective of humans and non-humans*. However, keeping in mind the objective of the current thesis, it would be worthwhile to note that Latour's arguments form a part of a larger attempt in recent theory to address the distinction between the 'natural' organism and the 'artificial' machine, which has become unavoidable in the wake of late twentieth century advancements in *artificial intelligence*. In resolving the dilemma faced by this condition, these theorists continue to expand the definition of *life*, which is in accordance with a similar trend in the nineteen century discussed before. For an introduction to this line of argument, see Donna Haraway, *Simians, Cyborgs and Women: The Reinvention of Nature* (London: Free Association, 1991).

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As a retrospective study of an event that is already in the temporal *past,* the project of rewriting the history of the encounter between Kahn and the brick can be defined as "Interpretive-Historical" research. As noted by Groat and Wang, such a project requires "investigations into social-physical phenomena within complex contexts, with a view toward explaining those phenomena in narrative form and in a holistic fashion."[1] Therefore, in order to develop its alternative account of the encounter, the current research is required to, first, collect and organize historical data pertaining to the event of this encounter, and then, offer an evaluation of the same through an interpretive stance which is focused on revealing the complexities of the relationship between the architect and the material in the process of architectural production. In defining its interpretive stance the thesis has already offered the theoretical arguments for the agency of materials within the disciplinary fields of philosophy and social theory as an alternative way of explaining this relationship. However, even as such an alternative framework allows us to transcend some of the conceptual/epistemological barriers outlined in Chapter 1, it does not completely resolve the problem of historicizing the event of encounter between Kahn and the brick. Here the project faces certain other barriers pertaining to the limitations and assumptions within the paradigm of architectural historiography itself. Therefore, before the thesis embarks on the construction of its historical narrative or even outlines the strategies and tactics involved in the research project, it must acknowledge certain methodological assumptions that need to be established to overcome potential problems faced by such a project.

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[1] Linda N. Groat and David Wang, *Architectural Research Methods* (New York: J. Wiley, 2002), 136.

FROM MENTALITIES AND MOVEMENTS TO MICRONARRATIVES

Architectural historiography, considered theoretically, has mostly been the playground of the *long-term* in history.[2] In an attempt to structure this nebulous expanse of history, the architectural historian is conventionally caught in a desperate search for an expression of avant-garde-ism, which might discern one epoch from another.[3] This legacy of the historian, whose roving eye can seemingly discern periods, movements and styles from an in-descript array of events, is a methodological affliction that architectural historiography has inherited from its predecessor – art history.[4] The discipline of art history on the other hand undoubtedly owes this syndrome to its Hegelian heritage of the suprapersonal will of history that spreads its inescapable will through the omnipresent *Zeitgeist*.[5] The methodological principles which are implicit in this approach to the historigraphical tradition constitute a framework within which potentially revealing contradictions inherent in the immediate evaluation of the production process continue to be suppressed to serve an ideological thematic of *creative evolution* and *progress*. As an affiliate of this tradition, then, architectural historiography too falls prey to the allure of the notion of *creation* to generate its accounts of architectural production. Therefore, if an account of architectural production has to be generated such that it can reflect the various processes involved in the encounter of the architect and the material outside this notion of *creation*, the project must first and foremost cast away this disciplinary bondage to the Hegelian art history tradition, and consider architectural historiography as a methodological problem best suited to address the subject of its own disciplinary focus – architectural production.

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[2] The expression *long-term* has been borrowed here from the works of historian Emmanuel Le Roy Ladurie and will be discussed further. See specifically Emmanuel Le Roy Ladurie, "The "Event" and the "Long Term" In Social History: The Case of the Chouan Uprising," in *The Territory of the Historian* (Hassocks: Harvester Press, 1979).

[3] For a discussion of such a trend in architectural historiography see Anthony Vidler's recent and insightful study in Anthony Vidler, *Histories of the Immediate Present: Inventing Architectural Modernism*, Writing Architecture (London: MIT Press, 2008).

[4] This idea has been often repeated but for instance see E. H. Gombrich, *In Search of Cultural History* (Oxford: Clarendon Press, 1974), as well as a reading of the same in Dana Arnold, *Reading Architectural History* (London: Routledge, 2002). Also see Alan Colquhoun, "Gombrich and Cultural History," in *On the Methodology of Architectural History*, ed. Demetri Porphyrios, *Architectural Design Profile* (London: Architectural Design & St. Martin's Press, 1981).

[5] For an overview of the Hegelian heritage in Art and Architectural history see Ernst Gombrich, "Hegel and Art History," in *On the Methodology of Architectural History*, ed. Demetri Porphyrios, *Architectural Design Profile* (London, New York: Architectural Design, St. Martin's Press, 1981). For Hegel's ideas on history see Georg Wilhelm Friedrich Hegel, *Reason in History: A General Introduction to the Philosophy of History*, The Library of Liberal Arts (Indianapolis: Bobbs-Merrill, 1953).

In discarding this allegiance to the art historical tradition and charting a new methodological course, the project primarily finds support from a debate in general historigraphical discourse that came with an attack on such a focus on the *long-term* in history. As early as 1973, the eminent historian Emmanuel Le Roy Ladurie expressed his discontent with a historiographical tradition that in its desire for the *long-term* continues to transcend the *event*, which is consequently "digested" by such a structuralizing effort.[6] Such a historiographical trend, that purported to analyze the underlying structures rather than relate the events, had been firmly established since the initiation of the *Annales* school by Lucien Febvre and Marc Bloch in the 1920s. For the champions of such a tradition, like Fernand Braudel, the importance of the individual event had remained subservient to the processes corresponding to longer time cycles of *medium* and *longue durée*, which spanned over a hundred years and dictated the event in an almost deterministic mode.[7] The resentment towards such a deterministic use of processes that span over a longer time period to undermine the value of the event is apparent in Ladurie's argument for reassessing the value inherent in the individual event. Ladurie's arguments return the event back into the focus of the historian as being important in its own right and not subservient to an overarching structure. This is not to say that Ladurie serves as an advocate for the return of a *histoire événementielle* or "event history" that purports to describe without claiming any interpretive bias or analyzing intent. It would indeed be naïve to argue that the event can exist without the structure that surrounds it and offers it the matrix for a meaningful existence. But it is important to acknowledge in Ladurie's arguments the idea that the event when regarded in itself can generate a complex picture of such a matrix where competing structures are engaged in a non-deterministic advance of history. Such a methodological stance that intends to focus on the complexities of the event rather than look for a discernable structure guiding it has a particular advantage over the art historical method in the context of this project.

In generating a historical account of the encounter between the architect and the material in architectural production, the architectural historian is conventionally restricted by the art historical method to approach it either through a monographic art

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[6] Le Roy Ladurie, "The "Event" and the "Long Term" In Social History," 113. (Even though this English translation dates from 1979, the original publication in French was in 1973).

[7] Braudel's most significant work looks at the Mediterranean in such a broad geographical and temporal context, see Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II* (London,: Collins, 1972). For a more consolidated account of his theoretical premise see Fernand Braudel, *On History* (London: Weidenfeld and Nicolson, 1980).

historical study focused on the architect or a typological comparison of several such encounters discernable through the architectural object.[8] This is because, as Demetri Porphyrios has noted in his "Notes on a Method," *"the notions that allow architectural history to bracket into unities the material it investigates, are those of architecture as 'object' and the architect as 'author'."*[9] Porphyrios further offers that, for an account of architectural history generated within this paradigm,

> *the coherency of the architectural object – its cleverly hidden consistency – is nothing else but the expressive projection of its actual, living architect. Such an architect/author, easily bracketed between two dates and empirically grasped by means of an exhaustive biography, is marked always by a deep individual coherency, by a unity of thought which rises to a charismatic uniqueness.[10]*

This assumption of *coherency* of the architect and indeed the very categories of architecture as *object* and architect as *author* is yet another legacy of the Hegelian theoretical bedrock that serves as a foundation of the art historical tradition. Porphyrios argues that employing the Hegelian couple of *representation* and *Idea*, the architectural object becomes for the architectural historian – like the work of art for the art historian – little more than a "representation of the Idea."[11] Such an argument is further supported by the jargon of *creation* that seemingly "visits from time-to-time certain charismatic minds," and whereby,

> *It is such an architect/author, always incarnating, expressing, translating, reflecting, rendering etc. his individual vision in the sensuous corporeality of the architectural object, thus endowing it with an analogical coherency, whom the architectural historian will set out to resurrect.[12]*

Therefore, in generating a historical account of the encounter between the architect and the material in architectural production within this Hegelian tradition of art historical methods, the architectural historian is bound not to seek the process of encounter itself but the hidden intentions of the architect within such an encounter.

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[8] For a commentary on various existing approaches to writing architectural history, see Marvin Trachtenberg, "Some Observations on Recent Architectural History," *Art Bulletin* 70, no. 2 (1988).

[9] Demetri Porphyrios, "Notes on a Method," in *On the Methodology of Architectural History*, *Architectural Design Profile* (London, New York: Architectural Design, St. Martin's Press, 1981), 98.

[10] Porphyrios, "Notes on a Method," 98.

[11] Porphyrios, "Notes on a Method," 96.

[12] Porphyrios, "Notes on a Method," 98.

In discussing the conceptual and epistemological barriers to formulating such an account of encounter between the architect and the material, we have already come across a critique of such a dualist paradigm of the *inert object* and the *active human* in the previous chapters. Porphyrios offers a similar critique of the dualistic formulation of Idea/representation, and proposes that architectural historiography needs to separate itself from this Hegelian tradition and instead focus on the realm of *production*. He proposes that,

> *We are, thus, interested in a history of architecture which describes the functioning not of the thematics, formalisations, stylistics or ideologies surrounding architecture, but the functioning of the problematic which in the first place allows such thematic, formalisations, stylistics or ideologies to be formulated.[13]*

The focus on the *production* proposed by Porphyrios is also evident in the methodological stance offered by Ladurie, where the narrative is not concerned with the "thematics, formalisations, stylistics or ideologies" that guide the event but the complexities of the event itself. Further, as Porphyrios claims,

> *Once we grasp the relationship of architecture and society not as one of result/cause, effect/origins, form/content, representation/Idea, etc, but as one of production, then, we have freed ourselves from all the categories of the Hegelian model.[14]*

Therefore, by focusing on the event of the encounter between the architect and material the thesis can allow for the development of a methodological model that allows architectural historiography to transcend this Hegelian art history tradition. In the search for a methodological precedence, then, we return to Ladurie's attack on the long-term in history and the debate that it sparked within historiographical discourse for an alternative historiographical tradition.

The discontent with a structuralizing history expressed by Ladurie was a sentiment shared by many eminent historians of the period, and bore such an impact that even before the dawn of the next decade Lawrence Stone had already claimed the end of an era.[15] Stone's influential article *The Revival of Narrative: Reflections on a New Old*

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[13] Porphyrios, "Notes on a Method," 101.

[14] Porphyrios, "Notes on a Method," 99.

[15] Lawrence Stone, "The Revival of Narrative: Reflections on a New Old History," *Past and Present*, no. 85 (1979).

History where he outlines the arguments against the deterministic traditions of a "scientific history" has subsequently sparked a historiographical debate which aims to reinstate the narrative at the heart of the historiographical tradition.[16] As historians continue to debate the merits of this shift from the analytical to the descriptive mode, there are two things that have served as the fundamental characteristics of every subsequent argument in this debate, and which continue to echo the observations of Stone almost thirty years hence.[17] Firstly, as Stone noted, this regained interest on the descriptive mode nevertheless produces a narrative that is "directed by some "pregnant principle," and which possesses a theme and an argument."[18] This argument or *theme* is, however, not distilled from a large body of historical events through some formulaic attempt at recognizing similarity. Instead, the argument is a reflection of the interesting conditions that define and are available through a thorough reading of a complex event. Here Stone identifies the second principle as being that of limiting the temporal and geographical scope of the project to generate a more complex narrative, to the extent of limiting it to a single event. As Ladurie too noted, "by concentrating on a "micro-region" the historian can go over it with a fine toothcomb and identify the factors that really count."[19] These two underlying methodological principles, then, define what has now increasingly become an established historigraphical tradition of *micronarratives*.[20]

Although the appeal for a micronarrative tradition of history is assuming control as a legitimate methodological stance in recent historiographical projects, it is largely denied in architectural historiography due to the latter's art historical heritage. This tradition of micronarratives, however, is the ideal model for the intended project of this research. The two principles of a thematic narrative and the limited focus on a single event are commensurate with the project of writing the history of the event of encounter between

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[16] Stone's article generated much controversy and response, and the idea for "the revival of narrative" is now commonly acknowledged. For an overview of the debate and some subsequent perspectives see Mark Phillips, "The Revival of Narrative: Thoughts on a Current Historiographical Debate," *University of Toronto Quarterly* 53, no. 2 (1983), Peter Burke, "History of Events and the Revival of Narrative," in *New Perspectives on Historical Writing*, ed. Peter Burke (Cambridge: Polity Press, 1991).

[17] For some other perspectives on the narrative tradition in historiography, see W.J.T. Mitchell, ed. "On Narrative," special issue, *Critical Inquiry* 7, no. 1 (1980). Also see William H. Dray, *On History and Philosophers of History*, Philosophy of History and Culture, V. 2 (Leiden ; New York: Brill, 1989), ————, *Perspectives on History* (London ; Boston: Routledge and K. Paul, 1980).

[18] Stone, "The Revival of Narrative," 4.

[19] Le Roy Ladurie, "The "Event" and the "Long Term" In Social History," 117.

[20] See observations in Burke, "History of Events and the Revival of Narrative," 241. For some important reflections on this still developing historiographical tradition, see Ewa Domanska, *Encounters: Philosophy of History after Postmodernism* (Charlottesville: University Press of Virginia, 1998).

the architect and the material. First, the alternative theoretical stance which allows for the *symmetric* agency of the material to be included into the account provides the "pregnant principle" for the narrative. On the other hand, the account of encounter between the architect and the material offered by this thesis is focused on a particular encounter of Kahn and brick. By adopting this stance, the thesis assumes that the task of the architectural historian is not to act as a distiller of certain structuralizing factors that constitute and seemingly guide all architectural production in a period, but to relate the event of architectural production in its full complexity so as to allow the reader to discern the forces in action and generate his or her own picture of the process. Historical accounts from Ladurie's own study of *Montaillou* to historian Carlo Ginzburg's *The Cheese and the Worm*, which Stone identified as the pioneering efforts of this tradition, then serve as methodological models for the present thesis.[21]

HISTORICIZING A DIALOGUE WITH A MUTE

In applying this methodological model to the particular historical case of this thesis we once again return to the arguments of Emmanuel Le Roy Ladurie on the nature of *event* in history. In expounding the merits of returning the focus of the historical narrative on the event Ladurie nevertheless does not dismiss the role of the structure. Here Ladurie argues for a relationship between the *event* and *structure* which reverses the unilateral causal link traditionally drawn from the structure to the event, and allows the event to play an equally important role in the narrative. Ladurie further defines this new relationship and its methodological application through what he calls the *structure-event-structure* procedure. In evaluating the work of Paul Bios as an example of such an approach, Ladurie summarizes that it involves a

> *journey from present-day ideology to the [...] event which gave it its origins; then from this event to the pre-existing conditions which, if they did not altogether determine it, certainly coloured and informed it; from these conditions, we return[] to the event in order to make a better estimate of its significance through our increased knowledge.[22]*

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[21] Stone, "The Revival of Narrative," 17. Apart from these, Ladurie's more recent explorations in *The Beggar and The Professor* also serve as a model for the narrative account attempted by this thesis. See Emmanuel Le Roy Ladurie, *The Beggar and the Professor: A Sixteenth-Century Family Saga*, trans. Arthur Goldhammer (Chicago: University of Chicago Press, 1997).

[22] Le Roy Ladurie, "The "Event" and the "Long Term" In Social History," 128.

We have already identified that the primary concern of this research project deals with the relationship of architects and materials in the process of architectural production. We have also discussed that a significant ideological representation of this relationship in present day discourse is offered through the dialogue between Kahn and the brick. This dialogue, then, serves as what may be considered an *ideological starting point* in Ladurie's procedure, and whose origin the project must trace back to an *event* of encounter between Kahn and brick.[23] The journey then continues backwards from such an event, which constitutes this encounter between the two protagonists, to understand the conditions that preceded it.   What these conditions may be or what their causal relationship is with the event is not the aim of this research. Instead, the project will focus on these preceding events as a narrative thread which reveals (within its historical context) why this particular event becomes significant to the understanding of the relationship between the architect and the material in present day ideology. The narrative thus constructed will be able to offer a revised account of this event of encounter as a descriptive historical narrative, which incorporates within this *retrofitting* of history the ideological position that the event offers in the present. But even as we have established a methodological procedure to be followed, it still remains to resolve certain other theoretical barriers to the project, which make it difficult to define the exact nature of such an *event*, as well as write about it.

The historiographical project outlined here is prone to two serious limitations that must be overcome before the strategy and tactics of the historical research can be defined. The first limitation stems from the nature of the dialogue between Kahn and brick as a historical event worthy of inquiry. As the brick is not capable of acts of locution such a dialogue cannot be conventionally justified as an *objective* historical event. To resolve this problem we return to yet another champion of the micronarrative tradition that was identified by Stone – Carlo Ginzburg. In his 1976 masterpiece *The Cheese and the Worm*, Ginzburg showed the way for historians who chose to turn away from a history of "great deeds", by revealing the wealth of information that could be accessed through a historical inquiry of *myth*.[24] Myth, as Ginzburg recognized, allowed for the "the jesting inversion of all values and established orders,"[25] and thereby revealed those

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[23] For further discussion of Ladurie's theoretical stance, see Emmanuel Le Roy Ladurie, *The Mind and Method of the Historian* (Brighton: Harvester, 1981).

[24] Carlo Ginzburg, *The Cheese and the Worms: The Cosmos of a Sixteenth-Century Miller*, trans. John Tedeschi and Anne Tedeschi (London: Routledge & Kegan Paul, 1980).

[25] Ginzburg, *The Cheese and the Worms*, xvi.

aspects of history that are marginalized by conventional representations. Extolling the virtues of tracing such an enquiry of the myth Ginzburg further claimed that "The fact that a source is not "objective" does not mean that it is useless."[26] With the success of *The Cheese and the Worm* Ginzburg went on to formulate these arguments into a methodological stance which was explicitly defined a decade later in his *Clues, Myths and Historical Method,* where he claims that a historigraphical attempt can be guided by a desire to study a seemingly a-temporal phenomenon in the search for increasing the purview of history and to "permit the comprehension of a deeper, otherwise unattainable reality."[27] The dialogue between Kahn and the brick, then, must be treated in a similar light where, in spite of its limitations in being recognized as an objective historical event, it can potentially offer an insight into the process of architectural production that remains suppressed in traditional forms of writing architectural history.

With the publication of the more recent *History, Rhetoric and Proof*, Ginzburg further paves the way for including such a dialogue into the scope of historical narrative. Traditional representations of this dialogue between Kahn and brick continue to discard it from the purview of historical narrative as mere *rhetoric* which forms yet another part of a body of rather esoteric teachings associated with the figure of Kahn. In formulating his stance on a rejection of the so-called rhetoric from the realm of historiography, Ginzburg had already argued in *The Cheese and the Worm* that "Anything with a strong rational element should not be discarded as mere mentality."[28] He takes this line of argument further in *History, Rhetoric and Proof*, where he challenges the notion of *proof* in the historian's search for an objective truth and argues for *rhetoric* to have a fair playing field in the realm of historiography. [29] While Ginzburg might be verging on the Nietzschean claim that all truth is merely "a movable host of metaphors, metonymies, anthropomorphisms ... illusions which we have forgotten are illusions," he does offer much in embracing Rousseau's observation that,

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[26] Ginzburg, *The Cheese and the Worms*, xvii.

[27] Carlo Ginzburg, *Clues, Myths, and the Historical Method*, trans. John Tedeschi and Anne Tedeschi (Baltimore, MD: Johns Hopkins University Press, 1989), 101.

[28] Ginzburg, *The Cheese and the Worms*, xxiii.

[29] Carlo Ginzburg, *History, Rhetoric, and Proof*, Menahem Stern Jerusalem Lectures (Hanover, NH: University Press of New England, 1999).

experience always exists simultaneously as fictional discourse and as empirical event and it is never possible to decide which one of the two possibilities is the right one.[30]

In the light of these arguments the "fictional discourse" represented by Kahn's dialogue with the brick can lay an equal claim on the event of their encounter as an identifiably objective historical event. Therefore, considering Ginzburg's arguments, which allow for rhetoric to move into a realm of the probable in history, the dialogue between Kahn and brick can serve as a probable event that serves as the focus of this historiographical attempt. Furthermore, the possibility that historicizing this probable event could reveal something significant about the relationship of architects and materials in the production process makes it a worthy subject for the current project.[31]

Here we return to the second limitation faced by such a project, which stems from the rhetorical and linguistic barriers that any historiographical project must contend with. As a process of developing a historical account, any historiographical project, even those defined before as scientific and structural in nature and intent on analyzing historical events rather than describing it, are subject to the rhetorical and linguistic problems of generating a narrative. As outlined by the historian Hayden White, these *metahistorical* elements are present throughout the narrative and form an integral part of the paradigm "by which historians prefigure their field of study."[32] White's theory of *tropes*, where he classifies these rhetorical and linguistic brackets, has come under some criticism, and it is not the intent of this thesis to either critique such a taxonomy or classify itself within these *tropes*. However, it is relevant to note that the need to challenge the uncritical and unreflective use of narrative, as argued by White for all historiographical projects, has special relevance in the case of the present project. We have already established in Chapter 2 that within a subject-object paradigm the two protagonists of Kahn and brick cannot share history equally. But, while we have adopted a theoretical model that allows us to transcend this epistemological divide in the realm of social action, we still have to contend with its persistence in linguistic

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[30] Ginzburg, *History, Rhetoric, and Proof*, 19.

[31] This stance is in further conformity with Ginzburg's arguments for a "conjectural paradigm" that breaks through the burden of a structuralizing history and allows for qualitative disciplines like history to probe its questions outside the confines of an "antianthropomorphic" natural science. See Carlo Ginzburg, *Clues, Myths, and the Historical Method*, 108.

[32] See Hayden V. White, *Metahistory: The Historical Imagination in Nineteenth-Century Europe* (Baltimore: Johns Hopkins University Press, 1973), ———, *The Content of the Form: Narrative Discourse and Historical Representation* (Baltimore: Johns Hopkins University Press, 1987).

categories. Much like the epistemological condition discussed before in the case of the social, then, the construction of sentences follows a similar pattern where *activity* and *passivity* are distributed along this division between the world of humans and materials. Within such a paradigm, it becomes challenging to write a historical account where the material agency is treated as *symmetric* and *active*. Therefore, in the process of offering a descriptive analysis of the event of encounter, the current project is doomed to reflect the same bias against the realm of materials that it aims to resolve, as a function of the language it adopts.[33]

To overcome this limitation, the thesis will attempt what can be best described as a *narrative of materials* which, although it cannot entirely transcend this linguistic bias, can nevertheless try to minimize its impact on the project.[34] Following from the arguments set up by Igor Kopytoff in the construction of *The Cultural Biography of Things*, the thesis proposes a strategy of emplotment that offers a focused reiteration of the historical context of the material protagonist, brick, where the material is offered as the prime actant.[35] This narrative of the material is not aimed at claiming that the material actually does serve as the primary agent in the process (in fact the arguments of Chapter 2 have explicitly argued against it), but instead offers a parallel and symmetric account of the history of the material as is already available and established for the human protagonist. In the case of this project, then, such a narrative of material will hope to generate a historical account of brick that can symmetrically match the historical account of the human protagonist Kahn. The exact process of generating such a narrative of materials will become clearer in the following discussion of emplotment strategies. For now, however, it must be clarified that since the thesis does not purport

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[33] The idea that language has structuralising properties which affect the development of a cultural perspective has been a topic of much discussion throughout the twentieth century explorations of the Philosophy of Language, and is commonly accepted in the postmodern era. For instance see Michel Foucault, *Language, Counter-Memory, Practice: Selected Essays and Interviews* (Ithaca, N.Y: Cornell University Press, 1977).

[34] The idea of a *narrative of materials* is not well defined, and will be developed over the course of this thesis. However, it is predicated on the understanding that since language generates a common category to be shared by both human and non-human existence, a human narrative can only reveal a part of this shared reality. As Walter Benjamin notes, "There is no event or thing in either animate or inanimate nature that does not in some way partake of language, for it is in the nature of all to communicate." See Walter Benjamin, "On Language as Such and on the Language of Man," in *Reflections: Essays, Aphorisms, Autobiographical Writings*, ed. Walter Benjamin and Peter Demetz (New York: Harcourt Brace Jovanovich, 1978).

[35] Igor Kopytoff, "The Cultural Biography of Things: Commoditization as Process," in *The Social Life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (Cambridge, UK: Cambridge University Press, 1986).

to develop new linguistic models it can merely attempt such a narrative by challenging the limits of existing grammatical structures, albeit without resorting to absurdity. It is hoped, therefore, that the reader will bear with this and rationalize any reflex desire to reject what may seem as an unorthodox construction of sentences. In fact, such a support is expected from the reader throughout the course of the historical narrative, where the notion of an *active* and *symmetric* agency of materials will continuously pose such linguistic challenges.

<u>EMPLOTING THE STRATEGIES</u>

Having established the methodological stance, and defined the theoretical assumption and limitations involved in the development of this historiographical project, we now return to the process of outlining the strategies and tactics for its historical enquiry. As an Interpretive-Historical research project that has already established its interpretive stance, the first requirement is to identify the sources for collection of data which will be evaluated in accordance with such an interpretive stance. Subsequently, a strategy of emplotment needs to be delineated, which will yield an appropriate narrative for explaining the defined historical phenomena in accordance with the interpretive stance adopted.

As outlined in the discussion of the *event-structure-event* procedure, the historical project assumes the rhetoric of Kahn's dialogue with the brick as its ideological starting point which needs to be contextualized through a process of historicizing. Through an inquiry into the existing literature on this rhetoric, it then identifies a probable event that corresponds to the origin of this rhetoric. As available from the verbal account of Louis Kahn himself, which serves the basis for the development of this rhetoric, such an event is identified with Kahn's interactions with brick during the early 1960s while working on the project for the Indian Institute of Management (IIM) in Ahmedabad.[36] Following the *event-structure-event* model the project then launches into a historical inquiry of the conditions that precede this event of encounter. Since the focus of the project is vested in the encounter of its two protagonists, the preceding context relevant to such an encounter is identified in the individual histories of Kahn and brick. This inquiry into the historical context of Kahn and brick is primarily dependent on a survey of secondary

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[36] Louis Kahn, "Louis Kahn defends: Interview, Indian Institute of Management, Ahmedabad, India, May 31[*sic*], 1974," in *What will be has always been: The words of Louis I. Kahn*, ed. Richard Saul Wurman (New York: Rizzoli, 1986), 252.

literature that deals with these protagonists as the subject of their corresponding inquiry. The historical details relating to Kahn are available from several existing monographs as well as typological studies focused on the life and architectural works of Louis Kahn.[37] The secondary literature on brick is somewhat limited to technological representations of the physical and chemical properties of the materials. However, certain attempts at contextualizing brick within the social production of architecture and especially the recent study by James Campbell aimed at generating a world history of brick serve as the significant base for appropriating a historical context of this material protagonist.[38]

After the evaluation of the secondary literature relating to Kahn and brick, the project advances to the next step of identifying the micro-region that it must assess, to borrow Ladurie's term, "with a fine toothcomb" in order to extract the relevant historical factors. It has already been offered that the probable event of encounter corresponds to Kahn's engagement with the Indian Institute of Management project (hereafter, IIM project) of the early 1960s. The current research project, then, includes within its purview a survey of literature that corresponds to this particular architectural project. The secondary literature on the architectural project of the Indian Institute of Management (IIM) is limited and in most circumstances overlaps with historical literature already engaged in the evaluation of the agencies of Kahn and brick. Here, the existing literature on other topics such as the post-colonial architecture of India, or even in other disciplines like those involved with the socio-cultural development in the region of Gujarat, which engage the construction of this project in their argument serve the basis for generating a historical context of the encounter. Indeed, the literature which identifies the features of this socio-cultural region as an architectural site, by

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[37] Amongst the literature available on Kahn, recent studies that consolidate and build upon previous attempts are offered by Carter Wiseman, *Louis I. Kahn: Beyond Time & Style*, A Life in Architecture (London: W.W. Norton & Co., 2007), Sarah Williams Goldhagen, *Louis Kahn's Situated Modernism* (New Haven, CT: Yale University Press, 2001) and Thomas Leslie, *Louis I. Kahn: Building Art, Building Science* (New York: George Braziller, Inc., 2005). This is in addition to the rigorous account of Kahn's life already offered in David B. Brownlee and David G. De Long, eds., *Louis I. Kahn: In the Realm of Architecture* (New York: Rizzoli International Pub., 1991).

[38] The history of brick is available from numerous sources that specifically discuss the architecture of a particular time period, looking at both stylistic elements and construction practices. However, a more recent consolidation of many of these accounts is available from James W. P. Campbell, *Brick: A World History* (London: Thames & Hudson, 2003). Dependant on historical literature that is primarily focused on the developments in Western architecture, Campbell's account too remains limited on the perspective it offers for the developments within the Indian subcontinent. It, nevertheless, serves as a valuable resource in recapitulating this lengthy historical journey of brick.

dealing with the natural and social context of the construction industry, also informs the development of this context of encounter.

In addition to the types of secondary research identified above, the intensive focus on the micro-region of the event of encounter is achieved through significant primary research in the form of archival research and personal interviews. The archival research is primarily focused on the details of the development of the Indian Institute of Management as an architectural project, which was jointly developed by Louis Kahn's architectural office in Philadelphia and the National Institute of Design in Ahmedabad. Owing to this particular arrangement of joint authorship, the documentation of this project is divided between the Louis I. Kahn Collection, University of Pennsylvania and Pennsylvania Historical and Museum Commission (hereafter, Kahn Collection) and the archives at the National Institute of Design, Ahmedabad, India, (hereafter, NID Archives) in no particular order. The archival research, then, involves a consolidation of available information from both archives to generate a coherent picture of the chronological developments during the course of the production of this project. In such a scenario, apart from the undeniable relevance of the drawing documentation corresponding to the project, the innumerable correspondences between the two architectural agencies also prove to be a valuable resource. The resources at the Kahn Collection have been meticulously organized and further allow for a more in-depth evaluation of the proceedings in Kahn's life that were contemporaneous with, or immediately preceded, the events corresponding to the IIM project. While, on the other hand, the lack of an actual structured archive at the National Institute of Design has posed considerable tribulations in terms of time and effort to extract relevant information. In addition to these extremely relevant resources, the Publications Department of the Indian Institute of Management (IIM) is yet another archival resource that has been exploited.

The primary information afforded by the archival research is further augmented by personal interviews with people who were involved with the development of the architectural project for the Indian Institute of Management (IIM). Having been constructed in the early 1960s the project is now almost half a century old, and many of the players involved with the development of the project have since passed on. However, this historical investigation consolidates the oral recollection of several of the surviving members, towards generating a more informed account of the context of the

encounter between Kahn and brick. The identified participants do not only include members of the design team from the National Institute of Design and the associated local architectural firm of Vastu Shilpa Architects, but also other members of the construction team, who have been overlooked in previous accounts of this project. In addition to several members of the construction firm and the on-site engineers, oral accounts of masons and brick suppliers have also been obtained and taken into account. Conducting and consolidating results of personal interviews across such a varied demographic, which extends from academic professionals to illiterate labourers, is a tricky task, since each group corresponds to a different socio-economic bracket and harbours biases based on their language and cultural affiliations. However, it must be remembered that these accounts only serve to supplement the information already assembled from the extensive primary and secondary research outlined above.

The outcomes of this historical enquiry are then presented in a narrative which offers a revised account of the encounter between Kahn and brick in accordance with the interpretive stance of a symmetric and active agency of materials. Even though, as a consequence of the methodological stance of providing a descriptive account rather than an analytical one, such a narrative is bound to follow a simple chronological model, a basic strategy of emplotment is identified to aid comprehension. The narrative begins with an introduction to the moment of encounter of the two protagonists enshrined in the rhetoric of the dialogue. From this point onwards the narrative is divided into three parts where the first two symmetrically deal with the background of the two protagonists, namely Kahn and brick, before their arrival at the scene of the encounter, while the third concentrates on the event of the encounter itself.

While the first part offers a more conventional narrative outlining the historical development of Kahn, the second part, which deals with the historical context of brick, is a manifestation of the *narrative of materials* argued before. Here, the history of brick is offered as a condensed narrative which recounts the historical course of this material through various architectural collectives and concentrates on the role played by the material within these architectural collectives as its primary concern. The linguistic barriers associated with such a project have already been identified and the reader is expected to extend some latitude in the narrative's appropriation of available grammatical structures. However, such an attempt at developing a condensed account of the history of brick also poses the problem of distilling, from the vast expanse of time

traversed by such an agency, the relevant associations that bear on the particular case. The account, then, includes both the chronological and configuration dimensions of narrative and supplements this brief recounting of the history of brick with accounts of certain social partnerships that are most relevant in informing its agency in the dialogic encounter with Kahn. In order to maintain the argument of symmetry across the historical accounts of both Kahn and brick, the first part, which concentrates on the history of Kahn, then reflects this narrative structure to include certain associations in Kahn's development in similar detail. This conscious effort to offer a symmetrical narrative structure for both protagonists has also resulted in the decision not to include personal oral accounts provided by Kahn in any significant detail.[39]

In the third and final part of the narrative, the historical account returns to the site of the encounter with the IIM project, and offers a detailed descriptive account of the processes involved in this micro-region of architectural history. The primarily chronological narrative begins with an account of the events that directly preceded the moment of encounter between Kahn and brick, outlining the context of the initial developments of the IIM project. It then offers a detailed account of the event of the encounter itself, before proceeding with a discussion of the impact of such an event of encounter on the process of architectural production that followed. This micronarrative account of the coming together of Kahn and brick at the IIM project does not provide a comprehensive picture of either Kahn or brick as an architectural agent, or even the history of the IIM project in its entirety. Instead, in offering its revised account of the events at the Indian Institute of Management (IIM), the narrative continues to retain its focus on the dialogue between Kahn and brick, which it started from and in which it already recognizes, to borrow Kermode's words, "a sense of ending."[40]

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[39] This decision to minimise the role of the personal accounts provided by Kahn in understanding his agency within the event of the encounter is also in accordance with Anthony Giddens' observations on *discursive consciousness* introduced in the previous chapter. As Giddens notes, there is a distinction "between the rationalization of action and the discursive accounts of reason that agents provide," and this needs to be acknowledged in any historiographical project.

[40] See Frank Kermode, *The Sense of an Ending: Studies in the Theory of Fiction* (Oxford: Oxford University Press, 2000). Also see Frank Kermode, "Secrets and Narrative Sequence," *Critical Inquiry* 7, no. 1 (1980).

PART 2

KAHN-BRICK AT IIM

It was a cold winter evening in December of 1964. As Kahn retired to the comfort of his hotel room at the prestigious Cama Hotel in Ahmedabad he quietly recollected the events of the day. The morning visit to the building site had been full of hope and excitement, as this was his first opportunity to see the design take shape since the construction for the Indian Institute of Management (IIM) began a few months ago[1]. Indeed, he had flown in from Philadelphia for a quick two week visit especially to endorse the ongoing works before he had to return by the year end.[2] On the visit to the site he had been surrounded by the usual bunch of graduate students from the National Design Institute (NDI) and the supervisors from the construction firm of Gannon Dunkerley, who were just as eager to get his approval. Walking amongst the heaps of construction material, laid haphazardly across the site, and the dhoti clad labourers scurrying out of the way, he had caught a glimpse of the imposing brick buttresses that constituted the partially finished dormitory buildings. Even with this limited and distanced view a sentiment of disappointment had descended upon him. The structure was nothing like what he had envisioned sitting in his office in Philadelphia; and this brought the whole exercise into question [3]

Two years earlier, when he had been asked to serve as the consulting architect for this project, it had come as a once in a lifetime opportunity.[4] Not only had it been the largest project of his three decade long struggle as an architect in America, but it also gave him a chance to establish an international presence by sharing the stage with the likes of the French master Le Corbusier. The new district of Ahmedabad, which currently lay across the river from his hotel room window, had in recent years attracted the attention of both Frank Lloyd Wright and Le Corbusier and the IIM project brought with it an opportunity to enter this new arena of a post-colonial and socialist vision of the free world. Having just

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[1] Construction of the IIM project started in October 1964. Letter, Doshi to Chandrasen Kapadia (in Philadelphia), November 2, 1964, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Louis I. Kahn Collection, University of Pennsylvania and Pennsylvania Historical and Museum Commission (hereafter cited as Kahn Collection).

[2] Travel itinerary, "National Design institute: Incidentals (tickets, etc.)," Box LIK 113, Kahn Collection.

[3] Balkrishna Doshi, *Architectural Legacies of Ahmedabad: Canvas of Modern Masters* (Ahmedabad: Vastu-Shilpa Foundation for Studies and Research in Environmental Design, 2000), 19.

[4] Kahn was invited to serve as the consulting architect for the IIM project in June 1962. Letter, Vikram Sarabhai to Kahn, June 1, 1962, "IIM – Sarabhais Correspondence (Vikram-Gautam)," Box LIK 113, Kahn Collection.

finished work on the Salk Institute project, Kahn was ready to take on this new challenge and extend his own architectural vocabulary to the farthest reaches of the globe. Unfortunately, however, much like today, the last two years had proven to be an uphill struggle in trying to get his architectural statement realized in this alien land. It wasn't that the people were uncooperative. In fact, if anything, the unfaltering reverence offered by the local collaborator Doshi and the students at NDI, and even the support from the members of the highly respected Sarabhai and Lalbhai families, was beyond any he had experienced in America. Yet, to reconcile an architectural ideal developed in the atmosphere of the industrialized West with the context of a developing third world nation just wasn't proving easy. Since the beginning of the project Kahn had already had to make numerous changes to the design to satisfy the climatic and construction needs of his Indian clients. At its most extreme this had resulted in having to resort to a brick vocabulary for the project instead of the initially intended concrete one. Having reconciled with the construction traditions in Ahmedabad, he had finally recast his original intent into an architectural solution that seemed appropriate for this new project. Today's visit to the site was, then, merely meant as a routine check on the progress of the construction work. But what he had seen at site had sent his hopes crashing.

Thinking over the activities of the day, Kahn recalled how at first a customary debate had taken place with the supervisors from the construction company. While the company representatives continued to provide justification for their work there had seemed no doubt in his mind that the problem lay in their negligence. Eventually, once it became clear that this battle of words would not help the situation at hand, Kahn had walked away to consider the situation on his own. By the evening he had discussed the problem with other members of his team present at the site and still hadn't found a way to resolve it. Finally, dejected and desperate, he had turned to a brick and asked "What do you want, brick"[5] The solution that the brick had offered was greatly inconsiderate of cost and effort and Kahn had tried reasoning with it. Despite initially agreeing with the highlighted problems the brick had continued to repeat the impractical proposition until, frustrated, Kahn pleaded "Well now, why be so stubborn, you know."[6] When the insolent brick had responded by invoking the theoretical notions of 'being' to dismiss any argument for pragmatics of construction, Kahn finally withdrew from the conversation and left. Now, as he lay in his bed recollecting these events and still struggling to find a solution, the dialogue with the brick repeated itself endlessly in Kahn's mind. He soon came to realize the importance of embracing the brick in a mutually generated architectural solution. Suddenly the answer became clear to him – he would heed the desires of the brick and start the construction of the Experimental Arch tomorrow.

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[5] Louis Kahn, "Louis Kahn defends: Interview, Indian Institute of Management, Ahmedabad, India, May 31[*sic*], 1974," in *What will be has always been: The words of Louis I. Kahn*, ed. Richard Saul Wurman (New York: Rizzoli, 1986), 252.

[6] Louis Kahn quoted in Alessandra Latour, *Louis I. Kahn: Writings, Lectures, Interviews* (New York: Rizzoli, 1991), 288.

The foregoing account of the processes that led to the events of December 1964, where the entire workings of the IIM project were transformed, seems less than plausible. Indeed this may be because of the choice of narrative which recounts a thought process and thereby seems better suited to the genre of *non-fiction novel* rather than a work of history. Yet the bigger concern here stems from the very possibility of a dialogue with a mute object. Within the existing epistemological and linguistic paradigm, that may define the limits of any historiographical project, the possibility of a reciprocal encounter with an inanimate object remains highly suspect. Therefore, even though it is Kahn's own recollections that form the basis of this account, it nevertheless remains unacceptable as a work of objective historiography. This dilemma, it may be argued, stems from the ambiguous nature of experience itself. As Rousseau notes

> *experience always exists simultaneously as fictional discourse and as empirical event and it is never possible to decide which one of the two possibilities is the right one.*[7]

It is entirely feasible then that considering the epistemological bias of his audience, Kahn found it easier to recount his experiences with brick as a *fictional discourse*.[8] Unfortunately for the architectural historian the ongoing quest to adopt a "fictional technique for factual work" cannot be settled so cheaply, and we are forced to ask: what then constitutes the *empirical event* that corresponds to this *fictional discourse*? Or further still, what exactly are the possibilities of an encounter between the architect and the material in the process of architectural production? To answer these questions and to better understand the events of 1964 we need to probe deeper into the very nature of the protagonists involved in such an encounter. Therefore, here we proceed by first investigating, in the event of an encounter between Kahn and brick, what exactly constituted *Kahn* and *Brick*?

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[7] Rousseau quoted in Carlo Ginzburg, *History, Rhetoric, and Proof*, Menahem Stern Jerusalem Lectures (Hanover, NH: University Press of New England, 1999), 19.

[8] For a detailed exploration of this idea, see Amit Srivastava, "In Dialogue with a Brick: Materials, Narrative and Architectural Historiography," in *Panorama to Paradise: Proceedings of SAHANZ XXIV Annual Conference, Adelaide, September 21-24, 2007*, ed. Stephen Loo and Katherine Bartsch, (Adelaide: SAHANZ, 2007).

The name Kahn conjures up, for most of us, the image of an older man with white hair and an esoteric wisdom about the ways of architecture. Much as his daughter notes, then, we have "difficulty imagining him as young and inexperienced ... lacking the mystique that enveloped him in later years."[1] Therefore, what we first need to acknowledge is that *Kahn*[2] cannot be understood as a singular character out there whose actions can be predictably determined and whose role easily identified. Or in more theoretical terms, to borrow Latour's words, what we refer to as *Kahn* too "began as attributes and *ended up being a substance*."[3] The desire to see *Kahn* as an enduring and essential core that lies beneath both the young and inexperienced and the old and wise human form is merely a function of the humanistic myth. In fact, what we identify as *Kahn* has a complex history where it interacts within various social collectives – not merely "in the realm of architecture" – and whereby it acquires its innumerable and often contradictory set of attributes. From its humble beginnings with the birth of a baby boy in Estonia at the turn of the last century to the unexpected and sudden yielding to a failure of the biological structure some seventy-three years later, the historical journey frames and re-frames a different *Kahn* at every stage. Although no retrospective biographical effort could ever achieve a reconstruction of all the nuances of this complex history, or determine conclusively what *Kahn* stood for in our fateful meeting with the brick, the following account attempts to reflect on some of the more identifiable events that might help us in appreciating the complex nature of the engagement of our first protagonist in the 1964 encounter.

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[1] Alexandra Tyng, preface to *Beginnings: Louis I. Kahn's Philosophy of Architecture* (New York: Wiley, 1984).

[2] In this italicised form the word *Kahn* refers to the *substance*, and will be differentiated from the regular understanding of Kahn as an architect over the course of the chapter.

[3] Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, Mass.: Harvard University Press, 1999), 151.

More so than a mere architect exercising his technical mastery, the events of 1964 involve Kahn as a complex human being questioning and engaging with his material environment. The biographical account that follows is, thus, not restricted to engaging the events that laud Louis I. Kahn as an architect but chronicle the becoming of a multifaceted human being.[4] Here Kahn's life has been divided into four separate phases of development, from his imperfect even traumatic childhood, subsequently finding solace in the world of arts through his early and professional education, to a young, responsive and engaged member of society fighting for the cause of communitarian ties, and an eventual struggle for the coming of self incorporating a need for individuation. While all these phases represent different pictures of Kahn during different times in his life – with a single or limited set of attributes most easily identifiable at a particular time – we must remember that all such associations eventually become an integral part of a complex becoming. In any subsequent interaction, then, Kahn may not only be guided by an identifiable attribute indicative of that particular phase in his life, but any of these multiple facets of the complex *substance* of *Kahn* may come into play in an intricate and often contradictory course of unfolding of events.

KAHN: A CULTURAL BIOGRAPHY OF THE HUMAN *SUBSTANCE*

The exact details of the origin of Kahn have been hard to trace and this has remained a matter of some debate.[5] Indeed, the human baby who was born in a small town of Russian-controlled Estonia in early 1901, and was to eventually grow up to become Louis Isadore Kahn, began his life as Leiser-Itze and was born to the Schmuilowsky family.[6] The title of Kahn and an upbringing in the cultural context of being a refugee in the free world were gifts of an American immigration, which came by in 1906. But it was the events of the first five years of his life, which Leiser-Itze spent in his native Estonia, that would considerably shape the course of his initial becoming on American

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[4] While there is an enormous corpus of literature available on Louis Kahn, most publications are concerned with his architectural projects. Unless identified separately the biographical account developed here mostly reflects the rigorous accounts already provided in David B. Brownlee and David G. De Long, eds., *Louis I. Kahn: In the Realm of Architecture* (New York: Rizzoli International Pub., 1991), and more recently Carter Wiseman, *Louis I. Kahn: Beyond Time & Style, A Life in Architecture* (London: W.W. Norton & Co., 2007).

[5] The term "cultural biography" used here has been appropriated from Igor Kopytoff, "The Cultural Biography of Things: Commoditization as Process," in *The Social Life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (Cambridge UK: Cambridge University Press, 1986).

[6] The details of Louis Kahn's birth have long been shrouded in mystery owing to the dearth of proper documentation. However, for the most recent findings of the details of Kahn's birth as well as his infancy in Estonia, which serves as the basis of this account, see Wiseman, *Louis I. Kahn*.

soil. Born as a healthy human baby, the initial days of cognitive and ambulatory development would have been relatively trouble free, and Leiser-Itze was potentially destined for a regular life. But a childhood accident at the age of three that left him with severely scarred face and hands was to profoundly change the way this little boy would appropriate and react to the world around him.[7] Disfigured and identifiably different from the other children, his childhood experiences took a different turn than most of his peers. Therefore, while identifying Kahn as a human protagonist we might not regard him as potentially different from others of his kind, acknowledging him in this avatar as an insecure child can reveal the nuances that set him apart within the course of his own human becoming. It is through the lens of this atypical interaction with his fellow humans that we will try to recount the early social interactions of Kahn's life.

The initial years of Kahn's childhood were testing times for the Schmuilowsky family who, within four years of their marriage, had decided to leave Estonia by 1904. That year Kahn's father, Leib Schmuilowsky, was to travel to Philadelphia, where he would make arrangements with the help of previously immigrated relatives before bringing the rest of the family over. This departure came soon after the accident where Kahn suffered massive burns and barely managed to survive. Leib, who reportedly considered that his son would have been better off dead than disfigured, left a recovering Kahn in the care of his mother in the hope that they would soon join him in America. However, the arrival in America did not provide the miraculous transformation of circumstances that Leib had hoped for, and he was pushed into greater financial trouble, forced to work as construction labour. As a result, he could not bring his wife and children over for another two years and the young and injured Kahn spent the formative years of his life in unenviable circumstances worsened by the absence of his father. These two years of Kahn's life where his mother was forced to manage an impoverished household in her husband's absence while taking care of three young children in the already testing conditions of Estonia must have been extremely difficult.[8] Their subsequent arrival in Philadelphia in 1906 did not particularly change things, either. Kahn's mother, Bertha, arrived in Philadelphia with the three children to find that her husband had suffered a massive and incapacitating injury to his back and was struggling with extreme financial

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[7] According to family members' accounts, Kahn was fascinated by the glowing coals in the fireplace and scooped the coals into his apron, burning his hand and face in the process. See Wiseman, *Louis I. Kahn*, 14.

[8] In 1904 Kahn was merely three years old and had two younger siblings: a two year old sister Sarah (Schorre) and a new born brother Oscar (Oscher). Wiseman, *Louis I. Kahn*, 13.

shortage. As Bertha supplemented the family income through minor knitting assignments the family struggled to establish their roots in this new and alien land.

Kahn's subsequent childhood was spent in the immigrant district of Northern Liberties on the edge of the city, where his initiation into the American social context began. These early years of development of a self identity were marred by certain circumstances that led to an introverted childhood and an introspective disposition. The first couple of years after their arrival saw the family lead a nomadic existence moving up to seventeen times due to their inability to pay rent. During this unsettled period Kahn, who was old enough to start his schooling, contracted scarlet fever and was forced to delay the commencement of his studies until the age of seven. Even as he started to attend school the older and still recovering Kahn faced ridicule at the hands of his schoolmates due to his scarred appearance – being taunted as "scarface" – and became shy and socially withdrawn. Unable to identify with the other children, Kahn developed a self-conscious and introspective disposition that would resist taking anything for granted.[9] For much of his subsequent life, then, Kahn remained fiercely suspicious of, yet inquisitive about, the nature of the most commonplace and mundane of relationships. It is this need for a constant reappraisal of the surrounding context that made Kahn resort to an intuitive connection with the world. The lack of an effortless belonging and social ease and a subsequent recourse to intuitive comprehension, however, had a more favourable impact as it saw Kahn find solace in the world of arts. Kahn's early abilities in drawing would eventually become his ticket to social belonging, allowing him to turn around his standing amongst his peers and become a coveted acquaintance.

Yet another aspect to consider about the initial phase of Kahn's life is the effect of community support and his growing sense of gratitude. Although the recourse to art as a support mechanism was born of his personal experiences, the passion for artistic pursuit required a financial backing that was not feasible for his family to provide. Here Kahn was immensely aided by what Brownlee and De Long identify as "Philadelphia's old-fashioned but benevolent art community."[10] This community support was more obvious

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[9] Kahn's scarred appearance and its impact on his early development have been mentioned in several sources but have not been expounded as a thorough psychoanalytical study. For some early interpretations by his daughter based on personal exchanges with Kahn, see Tyng, *Beginnings*, 3.

[10] Brownlee and De Long, *Louis I. Kahn*, 20. Also see their general comment on Philadelphia's art community.

in the schooling system where his skills for drawing were lauded and won him an opportunity to pursue his passions at the Public Industrial Art School, but he was also continually aided by individuals who fuelled his parallel desire for music. "Piggybacking" on piano lessons for his neighbour's daughter, Kahn showed such a keen talent for the instrument that the director of the Graphic Sketch Club, which Kahn was a member of, presented him with an old piano.[11] Kahn spent much of his teen years using his talent for the arts and the support of the community to provide financial assistance for his family. Even the financial burden of his future education was potentially alleviated by the offering of scholarships from the generous members of Philadelphia's art community. The introspective disposition afforded by his early school experiences must have made Kahn acutely aware of the importance of this community support in allowing for a way of life for his family which stood in sharp contrast to his early years in Estonia. The realization that it was the nurturing nature of the community that had helped him resolve his initial identity struggle had a considerable impact on Kahn and would eventually direct him in his early career as an architect to passionately try to give back to the community.

We can say, then, that through his early years Kahn formulated a definition of self that was disjointed yet undeniably connected to the social collective. This was not a relationship of effortless belonging but a sense of gratitude that would find a release in his later community building efforts - an idea that community needed to be forged to support those that did not belong normally.

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The next phase of this becoming involves the period of Kahn's higher education and an introduction to the world of architecture. This period particularly allows for the definition of the *substance* of Kahn to develop outside the non-specific realm of a *human* existence and be recognized as a member of a specific disciplinary field – that is, an *architect*.

As a furtherance of his publicly funded education, Kahn continued to pursue his final years of schooling at the Central High School where his interests in visual arts brought

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[11] Wiseman, *Louis I. Kahn*, 19.

him into contact with William F. Gray.[12] Gray, who was the head of the art department, also had a keen interest in architecture and his courses in art history were replete with references to architectural landmarks. In his final year of schooling in 1919 Kahn finally attended a course in architectural history taught by Gray and was taken by the thought to pursue architecture as a career.[13] With the encouragement of Gray, then, Kahn declined scholarships he had been awarded to pursue both music and painting, and sought to take up architecture as his chosen field of pursuit. The financial burden posited by this decision was not minor and his siblings had to forgo their education to support Kahn's admission into what was considered one of the strongest architecture programs in the country at that time, at the University of Pennsylvania.[14] By 1920, then, working harder than ever before to repay the debts he had incurred to pursue this educational path, Kahn was surely and steadily on his way to becoming an architect.

Having taken up architecture on a whim, Kahn did not really have any previous experience with design and continuously struggled throughout his days at the university to make sense of this process. His early education under his first design teacher John Harbeson proved somewhat simpler, as the teaching method adopted by Harbeson focused on the basic elements of design and Kahn excelled in the watercolour and freehand drawing exercises. However, his skills in drawing did not make the later task of architectural design any easier and Kahn could not approach the task with the intuitive ease exercised by others.[15] Kahn was pushed to reconsider the notion of design itself, and worked harder to approach through rational means that which he was unable to grasp intuitively. As a result, he took more strongly to the French Rationalist tradition that was the basis of the university's pedagogical commitment to the Beaux-Arts method. The program at the University of Pennsylvania was based on the French Beaux-Arts tradition and teachers of Kahn such as John Harbeson and Paul Philippe Cret were themselves former students of the École des Beaux-Arts in Paris. Thus Kahn, though stationed in America, eventually became a carrier of the associations of the French Rationalist School. As Frampton notes, "Kahn was to assume the full spectrum

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[12] For a discussion of the impact of William Gray on Kahn's architectural education, see Joseph Burton, "The Aesthetic Education of Louis I. Kahn, 1912-1924," *Perspecta* 28 (1997).

[13] Kahn recollected this in an interview later in his life. See Patricia McLaughlin, "'How'm I Doing, Corbusier?' An Interview with Louis Kahn," *Pennsylvania Gazette* 71 (December I972): 19.

[14] In order to support Kahn's education his sister Sarah had to leave school and become a seamstress. For further discussion of the financial impact of this decision on the family, see Wiseman, *Louis I. Kahn*, 21.

[15] See discussion in Brownlee and De Long, *Louis I. Kahn*, 21.

of the French Rational-Classical legacy, ranging from the methods of Elementarist composition to the sublime preoccupations of the Greco-Gothic ideal."[16]

Under the guidance of his design teacher in the final years of the University of Pennsylvania program, Paul Cret, Kahn took to an understanding of the design process that was laden with arguments of eminent French architectural theorists from Durand to Labrouste.[17] Since Claude Perrault, whose distinction between positive and arbitrary beauty had deprived Classicism of its authority by relegating Vitruvian orders to the "culturally circumstantial," the quest for a universal aesthetic based on essential notions of precision and richness had become the entire basis of this French tradition.[18] The Structural Rational arguments of Viollet-le-Duc and Anatole de Baudot that follow from this have already been argued as being central to the architecture of Kahn.[19] Although there is no denying the importance of these, it is important to remember that the introduction to a somewhat radical classicism of Durand's permutative system also left a considerable impact on Kahn. As a result, while Kahn continued to be swayed by the "syntactical percepts of Structural Rationalism," he never completely abandoned the reference to historical forms for the Modernist functionalism of the International Style. Through his teacher Cret, Kahn was also introduced to the works of other French theorists like Choisy and Piranesi, whose evocative renderings stuck with Kahn throughout his career, as well as Laugier and Ledoux, which afforded Kahn with a more approachable design strategy of a "functionally arbitrary play with geometrically absolute form."[20]

While an effort to see Kahn as a carrier of the entire French architectural tradition and making direct connections across time and space is not entirely unjustified, and this has indeed been attempted by other authors,[21] it must be emphasised here that these

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[16] Kenneth Frampton, "Louis Kahn and the French Connection," *Oppositions* 22 (1980): 27.

[17] Further discussion of these French theorists and their impact on Kahn's architecture is available from, Frampton, "Louis Kahn and the French Connection," and Kenneth Frampton, "Louis Kahn: Modernization and the New Monumentality, 1944-1972," in *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, ed. John Cava (Cambridge, Mass.: MIT Press, 1995). The connection to the French theoretical tradition has not been explored here in great detail because the agency of these associations is limited towards the arguments of this thesis. Furthermore, these associations have already been discussed in great detail in existing literature on Kahn.

[18] Frampton, "Louis Kahn and the French Connection." 30.

[19] Frampton, "Louis Kahn and the French Connection," 27.

[20] Frampton, "Louis Kahn and the French Connection," 38.

[21] Apart from the works of Kenneth Frampton already cited above, see Colin Rowe, "Neo-'Classicism' and Modern Architecture II," in *The Mathematics of the Ideal Villa, and Other Essays* (Cambridge, Mass:

theoretical notions nevertheless reached Kahn through a filtering of his teacher Paul Cret. Cret, who had been invited by the university from France in 1903, had trained at the Ecole des Beaux-Arts under Julien Gaudet himself and was considered the university's most distinguished member.[22] After his initial years of struggle with the process of design, it was under the guidance of Cret that Kahn finally managed to come to grips with this process. More so than loading Kahn with a bevy of theoretical notions, Cret provided him with some insights into the process that were distilled from this French tradition by Cret himself, and would become the basis of Kahn's engagement with the process of architectural design. The most important of these were a reliance on the *intuitive* connection with the problem and a measure of *humility* to achieve it. From the Beaux-Arts tradition Cret had already adopted the *esquisse* method where an immediate and intuitive solution to the problem would continue to serve as the entire basis of the design as it was subsequently elaborated upon.[23] Indeed this process of creating a quick defining sketch as the source of the design solution remained part of Kahn's strategy in his later years as an architect. However, Cret also emphasised that this intuitive response could not be based on an infliction of a personal desire onto the problem but had to be considered through an attitude of humility that honours the problem itself. Using arguments from French theorists like Labrouste, referring to the 'spirit' of steel and stone,[24] Cret argued for the task of an architect to be that of a collaborator whose humility allowed him to address the problem in its entirety. It is the result of this line of thought that prompted Cret to eventually formulate a stance which was to distinguish his approach from the orthodox modernists when he claimed "The Architect as Collaborator of the Engineer."[25] Kahn as an architect then continued to

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MIT Press, 1976), and Joseph Mascheck, "Kahn: The Anxious Classicist," in *Building-Art: Modern Architecture under Cultural Construction*, (New York: Cambridge University Press, 1993).

[22] That Cret was the most distinguished member of the faculty at University of Pennsylvania is readily repeated in many university publications, but is also stated in accounts dealing with Kahn's education cited before.

[23] See Kahn's comment on his Beaux-Arts training and the "intuitive sense of appropriateness" of the *esquisse* method, in William Jordy, "Kahn on Beaux-Arts Training," *Architectural Review* 155 (June 1974): 332.

[24] The use of the term "spirit" here could be seen in the Hegelian sense which Vadouyer and Labrouste made use of for their arguments. This would have then percolated through the mentoring process from Labrouste to Gaudet, and Gaudet to Cret, to finally end up with Kahn. See Frampton, "Louis Kahn and the French Connection," 23.

[25] His publication came in 1927, merely 3 years after Kahn's graduation, and the ideas would have been under development during Kahn's final years at university. For a collection of Cret's writings see Theophilus Ballou White, ed., *Paul Philippe Cret: Architect and Teacher* (Philadelphia: Art Alliance Press, 1973). Also see discussion in Frampton, "Louis Kahn and the French Connection," and Burton, "The Aesthetic Education of Louis I. Kahn."

demonstrate and argue for this humility and intuitive connection to the context until his final moments.

In this phase of Kahn's development we can observe a clear distinction from the childhood days as the insecurity in social situations born of his physical appearance was replaced by a new found confidence in his artistic skills. This is clearly evident in Kahn's resolve to pursue architecture on a personal impulse in spite of the social and economic problems it posed for the family. Thus, with an introduction to the realm of architecture, we can observe in the *substance* of Kahn a growing recognition of an individual notion of self in spite of the overwhelming presence of a social situatedness. However, Kahn's subsequent struggle with the rational yet intuitive process of design, and the reliance on his teacher Cret to interpret it, still kept the notion of gratitude that he had developed during his childhood alive, as he came to channel it as a sense of humility towards the other members of the architectural collective.

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Soon after finishing his architectural education at the University of Pennsylvania, and a few early jobs in local architectural firms, Kahn left for a tour of Europe in 1928 which was meant to complete his professional transformation. It was upon his return from this year long trip in April of 1929 that Kahn entered the next phase of his life. Over the period of the next year Kahn secured a job with his former teacher, Paul Cret, and rekindled his relationship with Esther Israeli, a girl he had courted briefly before his Europe trip, in the hopes of embarking on a normal life. However, the onset of the Great Depression had a different role in store for him, and only a month after his marriage to Esther, Kahn lost his job at Cret's office pushing the newly-weds into severe financial hardship. Kahn spent the next four years living with Esther's parents and being supported by her. Although Kahn would not assume the role of the primary breadwinner in the family for the next two decades these first four years must have served as a harsh reminder of his childhood experiences. As a result Kahn abandoned all notions of an artistic and aesthetic pursuit, which he had assumed during his university years and the subsequent trip to Europe, and turned his attention to the problems of community. Consequently, Kahn postponed his plans to travel to Europe to study under Gropius, and assumed a different role that characterised this phase of his life as a *social activist*.

Kahn was already aware of the importance of community support owing to his childhood experiences with the generosity of the benevolent community members. With a regained focus on the problems of a needy society in a time of great social demand Kahn vowed to direct his professional capabilities to the end of helping the community that had once helped him. Having little professional experience, Kahn faced problems in contributing directly through design assignments and turned to theoretical pursuits through publications and research associations. Through an initial involvement in a minor capacity with the *T-Square Club Journal of Philadelphia*, Kahn was introduced to ideas of theorists like Frank Lloyd Wright, Richard Neutra, Le Corbusier, Philip Johnson and Buckminster Fuller who had contributed to the publication. This further bolstered his ties to the intellectual circles half way across the globe and the rising influence of Modernism. Closer to home, this involvement with the *T-Square Club Journal* allowed Kahn's architectural social network to extend beyond his university associates to influential figures like George Howe, who funded the publication and whose design for Philadelphia's Savings Fund Society Building was "America's most visible contribution to International Modernism."[26] Kahn eventually teamed up with Dominique Berninger and about 30 other unemployed architects on the Philadelphia circuit to form the Architectural Research Group (ARG) and further pursue the theoretical engagement of these socially responsive ideas to the problems of housing. The limited interaction with project work meant that the engagement with publications became more thorough and the transfer of ideas from the European continent gained in intensity. Although ARG did not succeed in securing any architectural projects, its focus on community issues and an in-depth understanding of the details of Modernism as it was being carried out in Europe is evident in some of its designs for housing schemes.[27] When the economic crisis receded and minor architectural projects became available the ARG was disbanded in 1934. However, Kahn still continued to be involved with his efforts to resolving the problems of community through architectural solutions by being involved in various housing and planning bodies throughout the next decade.

Carrying on from the experiences at ARG, Kahn's subsequent involvement in Philadelphia City Planning Committee, and eventually at the newly founded United States Housing Association (USHA) and its local equivalent the Philadelphia Housing

[26] Brownlee and De Long, *Louis I. Kahn*, 24.

[27] See details in Brownlee and De Long, *Louis I. Kahn*, 25.

Association (PHA), were aimed at providing housing as a solution to problems of the community. His years of effort in pursuing these housing research projects had provided him with a particular standing within the Philadelphia collective and when PHA announced a competition for a housing project in South Philadelphia, Kahn was recruited by George Howe, who he had known from his *T-Square* days, to work on the project. Kahn finally got a chance to employ in his own architectural design work ideas he had assimilated and imbibed over the previous years of theoretical pursuit. However, this was not to be and although the team of Howe, Kahn and Kenneth Day managed to attract federal funds for their proposal, the Mayor, with support from some members of the Southwark community, announced his opposition to the project calling housing an "untested social experiment."[28] Kahn was so deeply invested in the idea of an architectural solution to the problems of the community that he reacted very strongly to this denial of opportunity. He had already been exposed to the political nature of housing in his experiences with the Jersey Homesteads project where the East European and Jewish heritage shared by the project's propagator Benjamin Brown and the designer team of Alfred Kastner and Kahn was exploited by the *Philadelphia Inquirer* when it criticized the project as a "commune" headed by "a Russian-born little Stalin."[29] The recognition of the political motivations behind the comments of the Mayor finally broke Kahn out of a theoretical pursuit limited to the medium of architecture and into full fledged social activism. As Brownlee and De Long recognise "This setback contributed to Kahn's politicization. He had come to recognize that housing was more than a matter of architectural design and for the next decade he was an activist."[30]

This phase of Kahn's becoming, which witnessed a shift from a young architect swooned by the theoretical notions of an ideological movement taking place half-way across the globe to a vested member of the community focusing his energies on local problems, marked the coming of a full circle in his development as a communal being.[31] Consequently, Kahn dropped any pretentions of finding a solution through individual design exercise and started looking at community building as a holistic problem. His

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[28] Brownlee and De Long, *Louis I. Kahn*, 27.

[29] *Philadelphia Inquirer*, May 7, 1936, quoted in Brownlee and De Long, *Louis I. Kahn*, 26.

[30] Brownlee and De Long, *Louis I. Kahn*, 27.

[31] Kahn's desire for a deeper connection with the community could also have developed through the constant reminder of the Russian and Jewish heritage that he shared with many of his collaborators during this phase. However, this argument has not been pursued here in any detail and could serve as the basis of further research.

initial contributions came through public education campaigns like the preparation of illustrative pamphlets outlining the mission of USHA or the exhibition on "houses and housing" displayed at the MOMA in New York. But he soon eased off on even these tenacious links to a possible design solution and devoted himself to problems of funding. He subsequently diverted his efforts to fighting the opposition to federally funded housing in Philadelphia and brought together like-minded bodies such as Philadelphia Housing Guild, the PHA, the AIA, the Tenants' League and various trade unions to keep this battle going in the face of an indubitable coming of the war. Even with the onset of the Second World War, Kahn still managed to continue with his mission by diverting some of the early wartime funding such as the Lanham Act money towards community development. This constant involvement in the political aspects of housing and general social activism won Kahn a special place in the community, and he finally came to find a new definition for himself within the architectural collective – not as a designer but as a politically connected activist.

It was in this new role that Kahn set up his first architectural practice in 1941 when he once again forged a partnership with George Howe, this time to secure wartime government projects. Howe with his architectural credentials and connections, and now Kahn with his years of involvement in politicising housing for the masses, were the right face for a proposal to the government, and the partnership started amassing government housing projects. Kahn's contributions to the partnership came by the way of his social activism where he was further supported by the newest member of the office, Oscar Stonorov.[32] Stonorov was an avid social activist like Kahn, but also had valuable union connections that made him an ideal candidate for this cohort that Howe and Kahn were trying to develop.[33] The partnership proved itself with interesting solutions to projects such as the Pine Ford, Pennypack and the Coatesville housing projects which were realised only through an equal political lobbying effort by Stonorov, who apparently convinced his labour friends to "raise plain hell." As Howe left the practice soon afterwards in 1942, to take up the highest post in the Federal Government as the Supervising Architect of the Public Buildings Administration, the years of Kahn-Stonorov partnership ensued. This change in the office structure had

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[32] Kahn had worked with Alfred Kastner on the Jersey Homesteads project just before the war, and Oscar Stonorov was Kastner's previous partner from the days of the Carl Mackley houses project. See Brownlee and De Long, *Louis I. Kahn*, 25.

[33] As Brownlee notes, "Stonorov's activism and union connections transformed the shape of the practice." See Brownlee and De Long, *Louis I. Kahn*, 29.

started a shift in Kahn's role as he increasingly found himself responsible for the design side while Stonorov handled the political side, and this was to bring about the beginning of the next phase in Kahn's becoming. However, when a sudden decline in projects occurred during the final years of the war (1943-45) Kahn found himself very much still involved with the political aspects of housing and community building as he worked alongside Stonorov on new publications.[34] These years found a revival of the early connections with publishing houses and the media was exploited for imaginative post-war visionary work such as the neighbourhood planning booklets and articles advocating conservation and grass-root citizen participation. Even in the meagre architectural projects that the practice managed to acquire, the symbiotic bond forged with Stonorov gave Kahn a kind of support that would make it endure over the next few years, before the eventual coming of the next phase.

<p style="text-align:center">*.~.*.~.*</p>

As the war years drew to a close, Kahn entered yet another phase in his life. Over the last decade he had been extensively involved in making the central message of housing and community building a common reality as a social activist. However, since the arrival of Stonorov, Kahn had progressively lost the position that he once commanded in the partnership in this newly acquired role. Social activism, as Brownlee notes, "was more Stonorov's than Kahn's,"[35] and Kahn soon became aware of his limitations both in capability and desire to pursue this focus. Over the subsequent years, as he finally reached the limits of his desire for activism, the calling of his previous passions for artistic creation, which had been suppressed since the depression years, became stronger. Since the departure of Howe, Kahn had finally gotten a chance to shift his focus to architectural design and he chose to pursue his calling in this direction now. It was a phase where the disenchantment with a fervent attempt at defining a common identity had finally yielded to the search for an individual one. It is a telling comparison that Kahn joined the Howe-Kahn partnership serving much the same function that Stonorov took over after Howe's departure. In the previous partnership, Howe commanded the design side while Kahn was the ideal partner to bring his activism expertise into the mix. Subsequently as Howe left and Stonorov replaced Kahn as a better political connection, Kahn took over the gap left by Howe. This shift was not

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[34] For details, see Brownlee and De Long, *Louis I. Kahn*, 33.

[35] Brownlee and De Long, *Louis I. Kahn*, 33.

merely a shift in office structure but also a reflection of how Kahn's entire existence in the architectural collective as well the larger social collective took a turn towards individuation. In fact when Stonorov was inaccurately credited for the design of a certain project an argument broke out between Kahn and Stonorov and they went their separate ways.[36]

Of course this quest for individuation did not come about overnight, and the gradual changes that were taking place within the workings of the office over the final years of the Kahn-Stonorov partnership greatly affected this condition. As the war years were past them, the practice responded to the changing social conditions by gradually shifting focus from housing projects to individual houses. In the initial projects, which developed out of the war year experiments with the "post war home of the GI," older design concepts initially conceived for housing projects were recast and re-detailed for the new smaller scale. This shift in scale must have had a considerable impact on how Kahn viewed and approached architecture as he subsequently changed his focus from problem solving for the masses to the thoughtful detailing of the individual building. Just before the split, the partnership had come to focus almost entirely on single family units and additions to suburban houses.

This shift in the way Kahn viewed architecture, and consequently his search for a new role within the collective, was also affected by the arrival of a new member into the practice during these years – Anne Tyng. Anne Griswold Tyng, who was recruited to the Kahn-Stonorov partnership in 1945, was not merely another employee as she worked closely with Kahn and the relationship they shared during these years must have been more than mere collegial respect. With the subsequent split with Stonorov in 1947, Kahn continued to work with Tyng and his world grew consistently smaller as the professional and personal lives merged into a single quest for personal identity.[37] The new setup was not concerned with larger social issues any more, and purely focused on individual houses. The office itself was rather small and the nature of close quarters and

[36] The disagreement, which was over the accreditation of the Pennsylvania solar house project commissioned by Libbey-Owens-Ford Glass Company, took place in January 1947 and the split came soon afterwards in March 1947. The accreditation was not entirely incorrect as the partnership was consider by the publisher as having a single face, but Kahn's insecurity regarding Stonorov, who had previously replaced him in the partnership as a better political connection, made him feel threatened and they parted ways. For details see Brownlee and De Long, *Louis I. Kahn*, 37.

[37] Tyng had worked on the Pennsylvania solar house project that led to the final split of Kahn and Stonorov.

close artistic work fuelled the "growing romantic ties" between Kahn and Tyng.[38] It is clear, then, that these years witnessed in Kahn a search for a new identity as he not only broke old professional ties but also at some level disassociated himself from his wife of fifteen years and new born daughter Sue Ann, to develop new relationships in his personal life.

Kahn's growing association with Anne Tyng during this phase of his development has been acknowledged by many authors as having a profound impact on his turn towards a very individual pursuit of architecture as an object. This was further augmented by his entry into yet another type of collective when he took up a teaching position at Yale in 1947.[39] Within the university's academic circles Kahn was introduced to concepts that shifted him towards a more theoretical understanding of the design process. It was also here that he was reintroduced to some of the concepts of French theorists that he had encountered in his undergraduate years with Cret. Combining the influences of Tyng, which had opened Kahn up to the techno-futuristic efficiencies of Buckminster Fuller and the complex geometries of steel structures, with this re-found connection to the French tradition of Structural Rationalists Kahn embarked on the task of rethinking the architectural object.[40] His previous experiments with individual buildings now took on a grander scale as he dabbled in the possibilities of a new monumentality.[41] However, like most utopian ventures the projects never reached fruition and this turn towards monumentality remained a theoretical pursuit.[42] It was not until Kahn's return to Rome at the end of the decade and a visit to the ancient monuments of Greece and Egypt that he found a perfect balance between the past and the future that would shape his architectural vision. Once again, the impact of his Roman sojourn has been recounted

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[38] Brownlee and De Long, *Louis I. Kahn*, 38.

[39] The impact of this Yale collective on Kahn's development has been explored in the various sources cited before, but for a focused discussion, see William S. Huff, "Kahn and Yale," *Journal of Architectural Education* 35, no. 3 (1982). Kahn had been offered a position at Harvard a year earlier but had declined it.

[40] Fuller's connection also helped Kahn's consideration of an individual contribution to society in contemplating Fuller's assertion of "what one man can do." Fuller had previously also bought the *T-Square Journal* in 1932.

[41] Kahn's shift to *monumentality* is most generally identified with the publication of his article by the same name, which was included in a volume exploring "The Problem of a New Monumentality," alongside works of figures like Sigfried Giedion. See Louis Kahn, "Monumentality," in *New Architecture and City Planning*, ed. Paul Zucker (New York: Philosophical Library, 1944). This was followed by a phase of experimentation with monumental civic architecture rendered in tubular steel.

[42] For an exploration of Kahn's experiments with architecture during this phase which resulted in various competition entries that remained unbuilt, see Sarah Williams Ksiazek, "Critiques of Liberal Individualism: Louis Kahn's Civic Projects, 1947-57," *Assemblage* 31 (1996).

endlessly in the discussions of Kahn's subsequent civic projects, but this turn towards monumentality must also be recognised as a symptom of growing confidence and a coming of self for Kahn as a human *substance*.[43]

The period of half a decade since Kahn's return from Europe until his resignation from Yale in 1955 (which came as result of personal differences with change in management) saw an era of gaining force in this quest for individuality. With the increased recognition within the academic and professional circles that came with the Yale Art Gallery project Kahn had already come to recognise the possibilities of an individual identity in the pursuit of architecture. In addition to this, the close proximity with artists like Josef Albers at Yale prompted Kahn to explore the notion of a personal vocabulary in the theoretical pursuit of the artistic process.[44] Consequently his university teachings over these years show a constant struggle with abstract concepts of "order" and "design" to formulate a way of discerning individuality in artistic work.[45] By the end of his Yale term Kahn's notebook entries offer a firm recognition of the possibilities of an individual contribution to a field. In a specific entry in 1955 Kahn makes a comparison between the stylistic inputs of musical geniuses like Clementi, Beethoven and Wagner to those of Mies, Corbusier and Wright in architecture using this new vocabulary of order and form. This process that brought his personal passion in music to come around and inform his professional ideas of architecture shows the clear recognition of an individual exploration in artistic endeavours. Thus, by the end of this period Kahn's belief in an individual contribution was certain and he was to embark on a new ontological quest that would reflect this recognition of self. Interestingly, another 1955 notebook entry records the birth of the question of "what a building wants to be?" which would become the basis of the next phase of Kahn's becoming, reaching its epitome with the Indian experience.

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The *substance* of Kahn, whose cultural becoming we have traced this far as fluctuating between the need for individuation and a constant dissolution of the same out of a sense

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[43] The transformation brought about in Kahn's architecture after the Roman sojourn of 1950 has been discussed in all sources cited before. For yet another exploration of the same that summarises many previous sources see Robert McCarter, *Louis I. Kahn* (London: Phaidon, 2005).

[44] For a discussion of the impact that Joseph Albers had on Kahn's approach to architecture, see Sarah Williams Goldhagen, *Louis Kahn's Situated Modernism* (New Haven, CT: Yale University Press, 2001) 46-63.

[45] For details of notebook entries see Brownlee and De Long, *Louis I. Kahn*, 58-59.

of belonging towards the larger community, was to carry this ambiguous state of affairs to its obvious conclusion in a metaphysical exploration of being. The years before the arrival at Ahmedabad, thus, mark the beginnings of an ontological quest that was to reach its climax with the events of 1964. In the second half of the 1950s, after his departure from Yale, Kahn had become concertedly more philosophical about the process of architectural design. Since the Yale Art Gallery project, architectural commissions had once again become limited and Kahn's role as a university teacher assumed force in the late 1950s. Kahn became increasingly notional in his university teachings and eventually came to abandon the garb of *functionality* that he had once acquired through his penchant for Modernism. Although his association with figures like Auguste Komendant, who was invited by Kahn to work with him in 1956, kept him tied to the pragmatic side of construction his constant struggle with a deeper understanding of the self made him philosophical in his approach to architecture.[46] With his subsequent exposure to Robert Venturi in the same year and soon afterwards with Harriet Pattison, who he was introduced to through Venturi, Kahn finally broke away from the bounds of geometry and order that Tyng had brought with her.[47] The growing personal ties with Harriet Pattison further helped Kahn to abandon the crutches of Rationalism that were synonymous with Tyng and finally allow his ontological quest to assume full force.[48] It is in this context that Kahn arrived in India in early 1960s. His interactions of 1964, thus, need to be seen in the light of this complex history, where the constant struggle for an individual yet socially vested definition of *Kahn* is coloured by the sometimes rational and sometimes intuitive view of an engagement with the world, *Kahn*, so understood, worked to bring all that stood around him into question in an attempt to resolve the very dilemma of existence itself.

TRACING ASSOCIATIONS

It is obvious that generating a cultural biography is dependent on unpacking the networks in which our protagonist is situated. Recounting a lifetime of individual associations would generate a never ending series of interconnected networks that can

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[46] For an exploration of this constant struggle that plagued the long continuing relationship between Kahn and Komendant, see Komendant's account in August E. Komendant, *18 Years with Architect Louis I. Kahn* (Englewood, N.J: Aloray, 1975).

[47] The relationship with Harriet Pattison has not been a subject of much exploration but for the most detailed account of the same, see Wiseman, *Louis I. Kahn*.

[48] This shift towards recognition of a larger more situated existence also brought back references to an existential "spirit' in Kahn's writings, such as he had been introduced to by his teacher Cret.

barely be achieved by an extensive biographical project let alone this brief overview. Therefore, even though the foregoing historical account offers a glimpse into the many facets of a complex becoming of *Kahn* it remains limited as an overview to generate a rich enough picture. Yet another factor to consider is that the very format of a biographical account, focused on a single human subject, automatically generates an illusion of a linear progression that further restricts the recognition of the complexity of the *substance* in a single instance, where the entire gamut of associations that have preceded it may come into play. Here we turn to a different strategy and become, as Latour puts it, more "nimble" in tracing associations.[49] By connecting sites that simultaneously bring the local and global into play we can further unpack certain key networks that add to the layers of this complex substance of Kahn and help us understand the event of 1964 better. In the task of rendering these social assemblages bare (an opening of the blackboxes) we may begin here with certain individual actants that serve as the primary mediators for Kahn's engagement with these networks as well as the basis of an enduring association. The following account engages the figures of Lewis Mumford, Josef Albers and Jonas Salk, all of whom have been acknowledged as having a profound impact on Kahn's development, to reveal complex networks and their lasting impact on the becoming of *Kahn* before his arrival at Ahmedabad.

Kahn-Mumford

In considering the enduring impact on the substance of *Kahn* a relevant association to be traced is that of Lewis Mumford. There is no reason to suggest any considerable direct exchange between the figures of Kahn and Mumford, but the network of individuals that bore witness to the transformation of Kahn over the decade of the 1940s were part of a collective that had arranged itself around the social critique of Mumford.[50] While Mumford's ideas had a wide ranging impact during the 1940s, Kahn found a more direct link to Mumford through his contact with Catherine Bauer. Bauer, who was a fellow housing activist, had worked alongside Kahn on the USHA educational pamphlets. Since she also knew Kahn's partner Oscar Stonorov from

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[49] Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory*, Clarendon Lectures in Management Studies (Oxford ;: Melbourne: Clarendon, 2005), 222.

[50] Mumford was aware of Kahn's work as early as 1936 when he lauded the Jersey Homestead project as "the most adventurous, the most stimulating." See Brownlee and De Long, *Louis I. Kahn*, 26. Mumford would later join the faculty at the University of Pennsylvania and work in close proximity to Kahn, but the association explored here deals with an earlier network which included Catherine Bauer and Oscar Stonorov.

before, she had continued to be involved with the efforts spawned by their partnership in the early 1940s.[51] Eventually, on Stonorov's offering, Bauer even came to share office space with Kahn and Stonorov.[52] As a part of this network of social activists, both Stonorov and Bauer were deeply concerned with the communitarian arguments of Lewis Mumford. However, Bauer's connection with Mumford ran deeper. Mumford had met Catherine Bauer in the fall of 1929 during a period of marital problems with his wife Sophia. As result, they were involved in a brief affair and Bauer had continued to be by his side offering both professional and emotional support over the coming years.[53] Therefore, by the time Bauer reached the Kahn-Stonorov office she had spent over a decade collaborating with Mumford on the development of his ideas. It is through this link of Catherine Bauer, then, that a considerable impact of Mumford's ideas on the becoming of *Kahn* can be argued.

The claim that Kahn was an integral part of this network, and that Mumford had a considerable impact on Kahn's development in the 1940s is not a novel one. Indeed Kahn's connection to Mumford has been explored before to explain both his efforts as an architect and a social activist during this decade.[54] The ideas for social reformation that were propagated by Mumford are clearly commensurate with the community building efforts of Kahn during this period, and many authors have placed Kahn alongside Mumford as a key contributor to this movement.[55] The impact of Mumford has also been argued as providing the basis for the shift from a "housing reformer" to Kahn's "monumental civic projects" in the late 1940s. Discussing the entry for the Jefferson National Expansion Memorial competition of 1947, Sarah Ksiazek argues that "Kahn was using the competition to explore protocommunitarian ideals that he had absorbed from Stonorov, Mumford and Bauer."[56] However, in engaging Mumford as an association, these arguments remain limited to those aspects of Mumfordian thought

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[51] For details see Goldhagen, *Louis Kahn's Situated Modernism*, 15.

[52] Brownlee and De Long, *Louis I. Kahn*, 29.

[53] See discussion in Rosalind Williams, "Lewis Mumford as a Historian of Technology in *Technics and Civilization*," in *Lewis Mumford: Public Intellectual*, ed. Thomas Parke Hughes and Agatha C. Hughes (New York: Oxford University Press, 1990), 45.

[54] In literature focused on the architecture of Louis Kahn, this network has been consistently explored in the writings of Sarah Williams Goldhagen. For the latest publication that builds on various previous explorations, see Goldhagen, *Louis Kahn's Situated Modernism*. Also see Ksiazek, "Critiques of Liberal Individualism."

[55] In addition to the works of Sarah Willams Goldhagen, see Joseph Rykwert, *Louis Kahn* (London: Harry N. Abrams 2001).

[56] Ksiazek, "Critiques of Liberal Individualism," 62.

which directly correspond to the community developing efforts of Kahn synonymous with this phase of his development.[57] Kahn's association with Mumford can also be explored for other simultaneous influences that effect the future development of Kahn as a *substance*. In particular are Mumford's ideas on history and the relationship with the non-human world of machines that are best understood through his 1934 publication of *Technics and Civilisation*.[58]

Mumford's *Technics and Civilisation*, which was a pioneering work in the history of technology, came at a time when Western society in general was trying to come to terms with the impact of mechanisation. The theorists of the Modern movement were divided between the seemingly regressive stance of an organicism that valued traditional lessons and the rationalist and progressivist notions of embracing a techno-centric vision of the future, which was guided by the possibilities afforded by machines. Mumford was well aware and much affected by the problems of this divide.[59] The final solution that he deployed in his *Technics and Civilisation*, however, went beyond this dualist paradigm and provided a simultaneous resolution of the problems of both the status of machines and a regressive understanding of the past. During the period of 1929-30, when the major ideas for this project were consolidated, Mumford was experiencing an upheaval in his personal life and sought an answer that would offer a "correspondence between the personal and the universal drama."[60] As a result Mumford chose to address this problem of mechanisation by taking into account nearly everything that constituted the human condition. By bringing the whole gamut of human civilisation under his microscope, Mumford attacked the soft underbelly of Western thought itself and denied the possibility of such a dualist taxonomy born of a moralistic stance. His personal experiences which included his affair with Catherine Bauer, who was his research assistant for the project, had prompted him to break free of "conventional moral codes,"[61] and Mumford relentlessly extended this lesson to his theoretical project. *Technics and Civilisation*, then, not only offered an account that

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[57] This is most clearly evident in Goldhagen's arguments for a "situated modernism," which offers Kahn's interpretation of the Modernist project as serving the needs of the community. See Goldhagen, *Louis Kahn's Situated Modernism*.

[58] Lewis Mumford, *Technics and Civilization* (New York,: Harcourt Brace & Co., 1934).

[59] See discussion in Arthur P. Mollela, "Mumford in Historiographical Context," in *Lewis Mumford: Public Intellectual*, ed. Thomas Parke Hughes and Agatha C. Hughes (New York: Oxford University Press, 1990).

[60] Williams, "Lewis Mumford as a Historian of Technology," 46.

[61] Williams, "Lewis Mumford as a Historian of Technology," 46.

would "welcome machines into the cultural fold" but also reformulated the idea of history - outside the modernist rejection - as a "usable past" that was aware of its moral stance.[62]

In addressing the notion of human history through his specific lens of *technics*, Mumford initially engages Patrick Geddes's taxonomy of Palaeotechnic and Neotechnic to divide the history of civilisation into different periods. In this formulation, much as in Geddes's understanding, the term Palaeotechnic signifies a phase of mechanical subordination of the human mind to a chaotic and wasteful age of coal and iron while the Neotechnic marks the beginning of an era of a greater synthesis with cleaner and lighter technologies of electricity and light alloys.[63] At first, such a division seems to be in accordance with the Western ideas of dualism as well as the notion of linear progress in time. Here, Mumford's insertion of a third Eotechnic phase separates him in one single step not only from his legacy of Geddes but from the binds of the moralistic basis of Western thought that he was simultaneously fighting in his personal life. Mumford's third Eotechnic phase is not merely a linear precedent to the Palaeotechnic, as Palaeotechnic is to the Neotechnic, but displays an understanding of history that is outside of this Modernist bind of dualism, linearity and progress. In fact Mumford attacks the doctrine of progress in Western thought and claims that "this picture of a steady, persistent, straight-line, and almost uniform improvement throughout history had all the parochialism of the eighteenth century."[64] He further argues that the doctrine set up the myth of linear progress in such a way that "value was in fact *movement in time*" and that "to be old-fashioned or to be 'out of date' was to lack value."[65] Rejecting the idea of linear progress Mumford sought to address history as a cyclic process and offered an alternative in what he described as the "usable past."

Mumford recognised that history did not need to flow in a single stream from the worst to the best but was reliant on cycles to address the different aspects that constituted its complex whole. He argued that "plainly, by taking some low point of human development in the past, one might over a limited period of time point to a real

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[62] See Rosalind Williams, "Classics Revisited: Lewis Mumford's *Technics and Civilization*," *Technology and Culture* 43 (2002).

[63] See Patrick Geddes, *Cities in Evolution: An Introduction to the Town Planning Movement and to the Study of Civics* (London: Williams & Norgate, 1915).

[64] Mumford, *Technics and Civilization*, 182.

[65] Mumford, *Technics and Civilization*, 184.

advance,"[66] but that this picture of progress was only possible through rejecting yet another past that heralded another piece of utopia. Mumford's own formulation of the Eotechnic phase, which preceded the seemingly degenerate Palaoetechnic phase, betrayed such a utopian understanding of the past. This definition of the Eotechnic, as Rosalind Williams recognises, "gives *Technics* a second positive moral pole"[67] and frees history from the moralistic burden of linear progress. Mumford's account then breaks conventions by offering "two utopias: the futuristic *and* the retrospective."[68] By attacking the notion of progress Mumford did not only extend his purview to the furthest reaches of time but also space. He argued that the piece of utopia overlooked by a linear progressive account of history was also a resultant of overlooking potential utopias separated in space. As an example Mumford offers, then, that

> *In the name of progress, the limited but balanced economy of the Hindu village, with its local potter, its local spinner and weavers, its local smith, was overthrown for the sake of providing a market for potteries of the Five Towns and the textiles of Manchester and the superfluous hardware of Birmingham.*[69]

Thus Mumford's attempt in *Technics and Civilisation* formulated an idea of history that took into account both the extents of time as well as the spatial entirety of the globe. For Mumford then, as Williams recognises, "History is the stage on which is enacted a primal, ever-repeating moral drama of Life's balance, breakdown, and renewal."[70] What constitutes 'Life' will be discussed later, but for now it is relevant to recognise that through such an understanding Mumford was able to bridge the Modernist divide between a seemingly regressive past and a progressive future by embedding them into a cyclic existence. For Mumford, then, a resolution to the problem of mechanisation did not need to be divided between embracing history as an overpowering ancestral legacy of moral wisdom or rejecting it as a constraint to evolution but merely approaching it as a "usable past."

By eliminating the myth of linear progress Mumford had also eliminated the "drama of the machines" that had constructed the seemingly exclusive mechanist and organicist camps. In his formulation, attempted through *Technics and Civilisation*, he was now

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[66] Mumford, *Technics and Civilization*, 183.

[67] Williams, "Lewis Mumford as a Historian of Technology," 59.

[68] Williams, "Lewis Mumford as a Historian of Technology," 60. Emphasis in original.

[69] Mumford, *Technics and Civilization*, 228.

[70] Williams, "Lewis Mumford as a Historian of Technology," 45.

ready to assimilate machines into the cultural cycle of Life. [71] Mumford noted his observations in a letter to James Henderson in August 1933, shortly before the publication of his book, where he wrote:

> *Up to the neotechnic period technological progress consisted in renouncing the organic and substituting the mechanical: this reached its height around 1870. Since then the new trend, visible in technics as well as philosophy and social life, is the return to the organic by means of the mechanical: a return with a difference, namely, with the whole body of machines and analytical knowledge we have acquired on the way. This last aspect of my thesis was unnoticed by me until the facts thrust themselves into my face.[72]*

This argument for a "return to the organic by means of the mechanical," based on his cyclic understanding of history, allowed Mumford to bridge the divide between the two opposing factions of modern thought, and transcend the imposed duality.[73] The machine was no more out there, outside the cultural fold, determining human existence as a conniving villain of the technological drama, but was very much an integral part of the development of human civilisation. Mumford also extends this symbiotic existence of humans and machines to an almost Heideggerian appraisal of the tool, which he recognises as the pre-history of machines.[74] Here, Mumford notes,

> *The tools and utensils used during the greater part of man's history were, in the man, extensions of his own organism: they did not have – what is more important they did not seem to have – an independent existence. But though they were an intimate part of the worker, they reacted upon his capacities, sharpening his eye, refining his skill, teaching him to respect the nature of the material with which he was dealing. The tool brought man into closer harmony with his environment, not*

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[71] For same later arguments see Lewis Mumford, *The Myth of the Machine: Technics and Human Development* (London: Secker & Warburg, 1967).

[72] Letter, Lewis Mumford to James Henderson, August 8, 1933 quoted in Williams, "Lewis Mumford as a Historian of Technology," 59.

[73] This desire to resolve the dualism between organicism and mechanisation is also evident in Mumford's formulation of the "organic mechanism." See discussion in Mollela, "Mumford in Historiographical Context," 41.

[74] The use of 'tool' as opposed to 'machine' is particularly important as it allowed Mumford to extend the notion of history of technology to mundane objects like the 'jug', which theorists like Heidegger and Latour were to explore so passionately. Mumford noted: "In general, historians of technics have overestimated the role of tools and machines, the dynamic, mobile, masculine components . . . they have overlooked the more passive, static, feminine aspects . . . the role of the container and the internal transformer. . . . [c]ellars, bins, cisterns, vats, vases, jugs, irrigation canals, reservoirs, barns, houses, granaries, libraries, cities." See Lewis Mumford, "An Appraisal of Lewis Mumford's 'Technics and Civilization' (1934)," *Daedalus* 88 (Summer 1959): 529.

merely because it enabled him to re-shape it, but because it made him recognise the limits of his capacities. [75]

With this, Mumford furthers the notion of a symbiotic existence of humans and non-humans to an almost symmetric exchange between the two realms, denying any argument of the separation of the machines from the natural realm.

The recognition of the non-human world as developing 'symbiotically' alongside the human, is particularly telling in the terms of the arguments of 'Life' introduced before. The notion of Life in Mumford's thought directly relates back to his mentor Patrick Geddes who had, owing to his training as a biologist, employed a biological analogy to argue for an all-pervading conception of life through the "doctrine of life-insurgent."[76] For Mumford, then, Life as a permeating force, an existence-will if you may, drove history through the highs and lows of its moral drama unfettered by, and in fact always inclusive of, all that constitutes its being. This stance did not deny a moralising of history but recognised that a moral stance could not reject the historical inclusiveness of an undesirable event merely by amputating the seemingly corrupt, and needed to embrace it and resolve it through recognition of desirable values – render it "usable." In history, then, Mumford not only sought a history of humans but a history of Life itself. As eloquently put by Williams,

> *Mumford came to denounce the myth of the machine not because myth has no place in historical understanding, but for the opposite reason; myth is the key to historical understanding, and the myth of the machine is a false one which must be displaced by the true myth of Life.*[77]

The complexity of Mumford's stance, which continuously struggles with incorporating humans and machines into a single image of reality while simultaneously reinterpreting the entire theoretical bedrock of Western thought, is only matched by the grand aspirations to generate an all inclusive account of the history of civilisation. The ability of *Technics and Civilisation* to achieve this comprehensive reappraisal of human existence is a matter of debate, but the Pandora's box it opened by questioning the

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[75] Mumford, Technics and Civilization, 321.

[76] See discussion on "History as the Myth of Life Insurgent," in Williams, "Lewis Mumford as a Historian of Technology." For Patrick Geddes and the development of the biological analogy see Patrick Geddes, *Biology*, (London: Williams & Norgate, 1925).

[77] Williams, "Lewis Mumford as a Historian of Technology," 45.

nature of history and the relationship with the non-human world through its novel conception of Life is undeniable.

Whether Kahn took to these ideas directly through a reading of *Technics and Civilisation* is not clear. However, his close contact with Catherine Bauer, who as Mumford's research assistant on the project was situated at the very root of the personal circumstances that had prompted Mumford's introspective stance,[78] would have provided an insight into these questions by colouring the discussion on other issues. Indeed, several aspects of Kahn's later contribution can be traced back to the theoretical roots outlined above. Of these, the most obvious one is the link between the Modernist stance of rejection of history and the Post-modernist return to historical forms, that Kahn is often credited with introducing through his focus on reinstating history. In Kahn's later arguments for "wrapping ruins around buildings" as a means to bridge the divide between his Beaux-Arts training and the calling of Modernism, we can see a redressal of a utopia of antiquity through the utopia of modernism that is reminiscent of the Mumfordian stance. However, instead of reducing the impact of this association to yet another limited explanation of architectural endeavours, it would be best to recognise the possibilities that it afforded to the development of the *substance* of Kahn in its most complex formulation, that is, the possibility of reassessing human existence by questioning the nature of human situatedness, recognising it as being enabled by others in a continuous unfolding of Life.

Kahn-Albers

The next association considered here involves a more direct influence on the development of Kahn through his involvement with Josef Albers. Kahn had met Albers in 1948 when the latter was invited as a visiting critic to Yale. Kahn, who had started teaching at Yale a year earlier, soon became acquainted with Albers's work and eventually helped to bring him to Yale as the Chairman of the Program of Fine Arts in 1950.[79] Over a better part of the next decade, as Kahn evolved out of his period of social activism and entered a phase of greater individuation, he continued to be affected by his association with Albers. Albers's arrival at Yale was in line with the systematic changeover from the Beaux-Arts tradition that was initiated with the appointment of

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[78] Mumford saw "his own personal problems as a microcosmic example of the historical drama." See Williams, "Lewis Mumford as a Historian of Technology," 46.

[79] Goldhagen, *Louis Kahn's Situated Modernism*, 46.

Charles Sawyer as Dean in 1947. His association with Kahn, thus, prompted the development of a similar dialogue between Kahn's Beaux-Arts training and desire for Modernism that Albers was addressing with the Yale curriculum. These early years of association were particularly relevant as Kahn procured his first big commission for the Yale Art Gallery soon afterwards in 1951. The influence of Albers in the development of this architectural project and the formulation of what was to be a lasting formal vocabulary has already been argued.[80] However, Albers remained a strong source of inspiration throughout Kahn's involvement with Yale and forms an important link in understanding the crucial development of the *substance* of *Kahn* during this phase of an emerging individual identity.

Kahn's association with Albers is often invoked to explain the enduring tendency in Kahn's subsequent architectural endeavours for abstract geometrical forms and an overbearing presence of materiality. Indeed the influence of Albers in instilling a focus on abstraction is entirely conceivable considering his own artistic undertakings which had reached the epitome of this tradition. Albers's biggest contribution to the art world – *Homage to the Square* – can easily be seen as a parallel to Kahn's almost obsessive recourse to the square as the generator of all forms in his later work. Furthermore, during this phase, Albers's art had turned to an exploration of the materiality of his artistic medium of paint. His exploration with the artistic material also parallels Kahn's quest for an authentic, even unsettling, use of materials in his future projects. It is no wonder, then, that Kahn's connection with Albers is offered as the birth of an aesthetic language: "a language of apparently simple, almost dumb geometric forms that were animated by tactile and plastic surfaces in an emerging dialectic of intellectual restraint and sensual experience."[81] However, in focusing on the morphological analysis of Kahn's architectural *products* such attempts reduce this complex relationship to a mere set of formal borrowings, a mimesis of artistic styles. More so than any aesthetic, or even ethical, consideration of a Sartrean "authenticity" as argued by Goldhagen, Albers and his influences on the becoming of *Kahn* need to be considered in the light of Albers's own *Gestalt* leanings that he had acquired during his days at the Bauhaus.

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[80] For instance see Goldhagen, *Louis Kahn's Situated Modernism*, 41-63, and Brownlee and De Long, *Louis I. Kahn*, 46. Also see Huff, "Kahn and Yale."

[81] Goldhagen, *Louis Kahn's Situated Modernism*, 62-63.

Starting as a student at the Bauhaus school, Josef Albers was quickly promoted to a teaching position in the preliminary course.[82] During his subsequent years, both as a student and teacher at the Bauhaus, Albers came to imbibe the Bauhaus teachings and became an integral part of its pedagogy. In fact his subsequent recruitment at Yale was based on his experiences with such a pedagogical stance that allowed for an understanding of the process of artistic production as a collaborative effort. Charles Sawyer, faced with the task of extricating the school from the Beaux-Arts system as the new Dean of Yale, had sought to introduce the "collaborative problem" as a way to counter the formulaic approach to design.[83] This required studio problems to be drawn around a single project that would be addressed in parallel by students of different disciplines such as architecture, sculpture or painting to produce a single collaborative solution. Albers, then, became a part of the collective of the likes of expressionist painter Willem De Kooning, but also architects like Howe, Johnson and Fuller, who gave currency to the idea of dissolution of authorship in a collaborative production of the artistic product. The interest in the unfinished character of creative action and the focus on the artistic process rather than the creator is particularly evident in De Kooning's own work during this period.[84] Eventually this collective would be credited with adding to the debate of the "death of the author." However, the idea of "the death of the author" was already inherent in Albers's Bauhaus experience through a predilection for a *gestalt* theory that was shared by the members of its network.

In it simplest definition, *Gestalt* is based on an understanding of certain self-organising tendencies of a system where the whole starts to behave as being greater than the sum of its parts.[85] As a function of this tendency, the system is understood as being acted upon both from the inside, through its constitutive elements, and from the outside, through a self-organising recognition of the whole. This generates a microcosm-macrocosm relationship where the two affect the development of each other in a symmetric exchange, the likes of which we have encountered in Mumford's arguments for Life.[86] The theoretical notions of the *gestalt* may or may not have been related to Kahn directly

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[82] For an introduction to Josef Albers at Bauhaus, see Frank Whitford and Julia Engelhardt, *The Bauhaus: Masters & Students by Themselves* (London: Conran Octopus, 1992).

[83] Brownlee and De Long, *Louis I. Kahn*, 45.

[84] Goldhagen, *Louis Kahn's Situated Modernism*, 62.

[85] For an introduction see, D. Brett King and Michael Wertheimer, *Max Wertheimer and Gestalt Theory* (New Brunswick: Transaction Publisher, 2005).

[86] See discussion in Williams, "Lewis Mumford as a Historian of Technology."

by Albers, but what is pertinent here is its role in Albers's own development. Albers's quest for abstraction is often interpreted as a journey from the microcosm of the empirical and material form to the macrocosm of essential form. This is indeed true to some extent as his search for the abstracted and seemingly innate nature of form ran parallel to a search for the intrinsic property of materials in his early Bauhaus years. A recollection of Albers' instruction to students at the Bauhaus asking them to "respect" the "inherent characteristics" of the material by doing away with tools is a clear indication of this desire to discover the innate.[87] However, considered in the light of his *gestalt* leanings this journey from the microcosm to the macrocosm forms only one part of the process, and by the time of his arrival at Yale, and indeed during his Yale years, Albers's quest for abstraction was already exploring a return to the microcosm through recognition of the undeniably *material nature* of *abstract form*.

During his Yale years, instead of searching for the intrinsic qualities of both form and material, Albers sought to approach the work of art as a thing in itself. Even Goldhagen notes that during this period Albers sought to generate "paintings that were things, not signs."[88] This recognition of artwork as a *thing* further prompted the exploration of the "presentational aesthetics" of the abstract form for its material and situated nature rather than as an embodiment of the essential.[89] For Albers, abstraction was no longer a quest for the essential but a mere attempt at reducing the clutter of agencies in the process of artistic production to reveal the self-generative nature of the process. It is this process of recognition of the artwork as a self-generative process that best explains Albers's contribution to the debate on the "death of the author." Albers consequently took this understanding of abstraction to the ultimate level where he sought to deny the very necessity of human interpretation. This is particularly evident in Albers's paintings where he engaged the artistic medium of paint directly from the tube, without any layering, without any painting medium and more importantly "without any correction."[90] This existentialist interpretation of artwork as a self-generative *thing* and an indirect recognition of the material as a definite participant in the process rather than

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[87] Frank Whitford, *Bauhaus*, World of Art (London: Thames and Hudson, 1984), 135.

[88] Goldhagen, *Louis Kahn's Situated Modernism*, 49.

[89] For Albers account of this see arguments for shift from *abstract* to *presentational* in Josef Albers, "Abstract - Presentational," in *American Abstract Artists* (New York: Ram Press, 1946).

[90] Josef Albers, quoted in Goldhagen, *Louis Kahn's Situated Modernism*, 48.

a mere medium are, then, important contributions of Albers that came to affect the becoming of *Kahn*.

Invoking the association of Albers in the context of its *gestalt* connection is particularly important to dispel the myth of a Sartrean quest for authenticity in Kahn's attitude towards materials. While Goldhagen claims that "The best term to describe Kahn's aspirations in the New Haven Gallery is 'authenticity,' a concept introduced into twentieth-century philosophy by Martin Heidegger and later popularised by Sartre," she also herself notes that, "Kahn did not read Sartre" and that "Albers appears not to have been interested in Existentialism per se."[91] The desire to connect Kahn to this Sartrean notion of *authenticity* is, then, simply predicated on the recognition of the existentialist leanings, which could just as easily be attributed to a *gestalt* perspective.[92] Indeed both the Husserlian school of Existentialism, that Heidegger and Sartre came to be a part of, as well as the *gestalt* arguments of Christian von Ehrenfels share a common legacy in the works of Ernest Mach, and the similarities in their arguments are apparent.[93] However, by the 1950s Sartre's personal experiences with politics and literature had brought him to infuse his existentialist quest with a moral overtone.[94] In the light of his war-years political experiences Sartre was taken over by a vision of dissolution, and reduced the ontological quest to a moral problem highlighting the negative nature of the human condition.[95] Since the existentialist question, for Sartre, became reduced to the problem of human exchange, it is inadequate in explaining the ontological quest in Kahn's engagement with materials. An aesthetic of existentialism, as formulated by Goldhagen, is even more absurd considering that existentialism is an ontological quest not an epistemological stance and therefore cannot define a plan of action but only support an attitude based on the notion of self. Here, we may find that Albers and his

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[91] Goldhagen, *Louis Kahn's Situated Modernism*, 60-62.

[92] Kahn's existentialist leanings have previously been explored by Christian Norberg-Schulz, see Christian Norberg-Schulz, "Kahn, Heidegger and the Language of Architecture," *Oppositions* 18 (Fall 1979).

[93] See Kevin Mulligan and Barry Smith, "Mach and Ehrenfels: The Foundations of Gestalt Theory," in *Foundations of Gestalt Theory*, ed. Barry Smith (Munich: Philosophia, 1988).

[94] Sartre's literary works of the 1940s are characteristic of this trend. For instance see Jean Paul Sartre, *No Exit, and Three Other Plays*, trans. L. Abel (New York: Vintage Books, 1955), and ———, *Nausea*, trans. Robert Baldick, Penguin Modern Classics (Harmondsworth, Eng: Penguin, 1965).

[95] For Sartre's own account of the post-war politics in France and its effect on both him and fellow phenomenologist Maurice Merleau-Ponty see Jean Paul Sartre, *Situations* (Paris: Gallimard, 1947). Also see Jean Paul Sartre, *Politics and Literature*, (London: Calder and Boyars, 1973). This shift is even recognised by Bruno Latour, who laments "the excessive stress given by phenomenologists to the human sources of agency." See Latour, *Reassembling the Social*, 67.

gestalt predilections offer a better explanation for the attitude that Kahn came to adopt towards materiality.

The impact that the Albers connection had on Kahn's outlook on materiality gains particular relevance when seen in the context of Kahn's previous association with Mumford. It is evident that Albers's exploration of the relationship between the artist and the artistic medium harbours a similar existential quest as attempted by Mumford in his investigation of the human engagement with machines. But more importantly, the solution offered by Albers, through his *gestalt* approach, is clearly compatible with Mumford's solution of a Life (-insurgent) which ran as an undercurrent through the entire existence and connected the microcosm and macrocosm into a massive self-generating whole. Within such an all-encompassing theoretical framework, Mumford had already acknowledged that humans were continuously enabled by others, such as the world of machines, in a continuous unfolding of Life. By recognizing the artistic medium as a definite participant in the artistic process, Albers further extended this Mumfordian argument to the world of inanimate materials. Therefore, Kahn's predilection for materiality that came to signify his later work may be considered, beyond any application of an aesthetic or ethical rationale, as an exploration of such an all-embracing process of mutual becoming.

Kahn-Salk

As the last connection explored here we turn to a close associate of Kahn who has been cited in numerous biographical accounts as the source of many characteristic traits that came to define Kahn's professional relationships in his later years. Kahn met Jonas Salk, the inventor of the first effective Polio vaccine, in December of 1959 when the latter invited Kahn to design the campus for the Salk Institute of Biological Studies in La Jolla, California. The end of the decade was already witnessing a change in the *substance* of *Kahn,* and Salk's interjections did much to shape the direction of its future becoming. At the time of Salk's invitation Kahn was still working on the commission for the Richards Medical Research Building for the University of Pennsylvania, where he had taken up a teaching position in 1955 after leaving Yale. The Richard's Medical towers came as a culmination of the architectonic consideration of the Yale years, and were recognised by critics as the emergence of a synthesis, "one that seemed to derive partly from Mies van der Rohe and the International Style, partly from Le Corbusier,

and partly from Frank Lloyd Wright, but with an individual quality uniquely its own."[96] It was this recognition as a synthesiser of different schools of thought that attracted Salk to Kahn, and would serve as the basis of a new vision for educational institutions that both of them worked together to achieve at the Salk Institute. The next few years saw an influx of architectural projects, but the experiences that Kahn acquired through his dialogic relationship with Salk, and their collaboration at the Salk Institute, had a lasting impact that surpassed any other.[97]

Kahn's interactions with Jonas Salk over the construction of the Salk Institute of Biological Studies are most widely recognised as being indicative of an architect-client relationship that Kahn often sought in his subsequent projects. In addition to this, the project itself is regarded as the origin of Kahn's peculiar attitude towards the design brief, which he came to treat as little more than a thematic guideline. Indeed the developments along the course of the Salk institute project, where both Kahn and Salk continued to oppose each other till they reached a mutually acceptable scenario on the interpretation of the brief, stands testimony to this new format of client-architect interaction.[98] Therefore, it was individually Salk, who Kahn later recognised as his "most trusted critic," that set the standard for what Kahn came to expect from his clients in the future projects, as he continued to exploit what he perceived as the nebulous nature of the client's brief.[99] However, these aspects of Kahn's relationship with Salk are dependent on a deeper connection that both figures came to share regarding the nature of social existence. The connection sprang from a simple desire that Salk put forward as part of the brief and which, having found a resonance with Kahn, was extracted to serve as the sole basis for the design development. Salk's rather ambiguous-sounding wish for a space where a community of scientists could entertain Pablo Picasso was itself born of the "two cultures" debate sparked by C.P. Snow, and it is in this context that Salk's association with Kahn must be recalled here.[100]

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[96] Brownlee and De Long, *Louis I. Kahn*, 63.

[97] For a more detailed exposition of the bond shared by Kahn and Jonas Salk see discussion on "The Client Connection," in Wiseman, *Louis I. Kahn*, 106-113. Also see comments in Thomas Leslie, *Louis I. Kahn: Building Art, Building Science* (New York: George Braziller, Inc., 2005), 133.

[98] For a detailed discussion of the exchanges between Kahn and Salk over the initial stages of the Salk Institute project see Leslie, *Louis I. Kahn*, 134-144. Also see Daniel S. Friedman, "Salk Institute for Biological Studies," in *Louis I. Kahn: In the Realm of Architecture*, ed. David B. Brownlee and David G. De Long (New York: Rizzoli International Pub., 1991).

[99] Louis I. Kahn, "Remarks," *Perspecta* 9 (1965), 332.

[100] Brownlee and De Long, *Louis I. Kahn*, 95-97.

In 1959, the year Salk extended his invitation to Kahn, Sir Charles Percy Snow had delivered a lecture at Cambridge that came to institute a long and heated debate in intellectual circles regarded as the "two cultures" debate.[101] Snow's Rede Lecture outlined as its central concern a seemingly insurmountable divide that Snow perceived as having developed in the Western society between the so called "literary intellectuals" and the "scientists."[102] Snow argued that this epistemological divide between the humanities and the sciences had established itself throughout the fabric of the society, and had caused a rift to develop between individuals whose worldviews, as a function of these two cultures, seemed incommensurable. Snow's use of the word *culture*, though criticised for its oblique interpretation, was aimed at highlighting that this epistemological divide ran throughout the religious, political and economic concerns shared by either side and was thus operative at an unconscious level.[103] Having previously worked as both a research scientist and a successful novelist, Snow found himself in the middle of such an epistemological divide and in his new role as a "public figure" hoped to find a solution to bridge this gap.[104] The concern itself was not new and had figured in the works of several recent authors as well as Snow's own literary works and articles, but the publication of the lecture as a pamphlet entitled *Two Cultures and the Scientific Revolution* allowed for a far reaching impact and the idea of the "two cultures" gained worldwide currency.[105] In the subsequent years the idea, as Collini notes, "became the basis for a minor industry of comment and controversy,"[106] and intellectuals like Jonas Salk right across the globe found themselves swayed by the problem it had raised.

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[101] Snow's lecture attracted a lot of attention over the next few years including severe criticism from F.R. Leavis, see F. R. Leavis and Michael Yudkin, *Two Cultures?: The Significance of C. P. Snow*, Richmond Lecture, 1962 (London: Chatto & Windus, 1962). The worldwide debate that resulted from this controversy is discussed in David Krause Cornelius and Edwin St. Bincent, *Cultures in Conflict: Perspectives on the Snow-Leavis Controversy* (Chicago: Scott Foresman, 1964).

[102] C.P. Snow, *The Two Cultures and the Scientific Revolution*, Rede Lecture, 1959 (Cambridge: University Press, 1962), 9-10.

[103] Also see Snow's explanation of the same in the 1963 lecture "The Two Cultures: A Second Look," available from C. P. Snow, *The Two Cultures and A Second Look: An Expanded Version of the Two Cultures and the Scientific Revolution* (Cambridge: The University Press, 1965).

[104] See discussion in Stefan Collini, introduction to C. P. Snow, *The Two Cultures* (London: Cambridge University Press, 1993).

[105] The original publication is available as C.P. Snow, *The Two Cultures and the Scientific Revolution*, The Rede Lecture, 1959 (New York: Cambridge University Press, 1959).

[106] Collini, xxii.

Jonas Salk, who was planning to launch a new research facility with the support of the March of Dimes foundation, decided to address the concern raised by Snow within this new institutional set up. Snow had already alluded to the fact that the solution to this divide of the two cultures lay in the rethinking of education and Salk hoped to achieve this through a new vision for a scientific facility which was worthy of entertaining the most illustrious members of the art world. Consequently, he approached Kahn with a desire to create an institutional campus where he could entertain Pablo Picasso and a new alliance was born centred around this concern that both came to identify with. As Salk later recalled, he had decided to make a statement for the need to resolve the divide between the two cultures "architecturally' and Kahn was his collaborator.[107] As the work on the new research facility progressed, the bond between the two collaborators became stronger and they came to respect each other for their commitment towards this central ideal. Indeed, it was Salk that introduced Kahn to the arguments of C.P. Snow, but Kahn found in these ideas a resonance of issues that he had already been alerted to through his previous associations and which he had himself pondered upon for some time. As a result, Kahn found himself thoroughly invested in the "two cultures" debate.

Snow's arguments for a divide between the humanities and the sciences were predicated on the general concern that had affected the thinking of many intellectuals at the time, that is, the impact of science and technology on the social structure.[108] Ever since the Industrial Revolution the impact of machines on human society had been contemplated by many intellectuals and the advent of the twentieth century saw a rise in this debate where the techno-centric future of mankind was equally lauded and despised by opposing factions. We have already witnessed some of the arguments regarding this dualist formulation in the discussion of Mumford's work on the history of technology in the late 1920s. Snow's argument for a Scientific Revolution, which had seemingly come about with the 1920's arrival of electronics and automation, was not much different than Mumford's own account of the Neotechnic phase.[109] Furthermore, Snow's reference to the literary intellectuals as "Natural Luddites," to which he devoted a full section of his

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[107] Salk, interview by David B. Brownlee and David G. De Long, May 24, 1990, quoted in Brownlee and De Long, *Louis I. Kahn*, 95.

[108] Snow himself refers to the works of Alfred North Whitehead and J. Bronowski in his lecture. See Snow, *The Two Cultures and the Scientific Revolution*. It is relevant to note that Whitehead's arguments also serve as the basis for the works of Lewis Mumford as well as Bruno Latour.

[109] Snow also recognised the Industrial Revolution as the first wave of this Scientific Revolution which is in accordance with Mumford's arguments for a Palaeotechnic phase. See Snow, *The Two Cultures and the Scientific Revolution*, 81.

Rede Lecture, highlighted his personal concerns for the technophobia of the so called humanities that Mumford had been addressing in his search for the problems posed by mechanization.[110] In this sense, then, the "two cultures" debate was for Kahn merely an extension of the "drama of the machines" that he had witnessed with the works of Mumford. By the 1950s Kahn had already come to acknowledge a need to resolve this divide within the architectural camps of the Rationalists and the Organicists, which he had recently been acknowledged as transcending by adopting a middle ground between the likes of Corbusier and Wright at the Richard's Medical towers. With the further influence of Salk, and consequently Snow, Kahn came to realise that this divide was not merely a problem of architectural styles but was founded on a deeper epistemological condition, born of the methodological difference of the sciences and the humanities. Therefore, with the Salk Institute we see, in Kahn, the birth of a desire to bridge the divide between the natural and social sciences (and, indeed, rethink human existence in the continuous unfolding of Life[111]) – a quest that would find its resolution years later in the works of Bruno Latour, coincidentally at the same site of the Salk Institute.[112]

The proximity to Snow's ideas that Kahn achieved through his association with Salk, and later through a direct meeting with Snow himself, had yet another impact that must be recalled here. In his Rede Lecture Snow had offered, as a solution to the problem of the two cultures, a rethinking of the education system that continued to produce "little elites." He had discussed the education system of various countries including the United States of America and Russia to highlight how different models perpetuated the training of these "little elites." However, Snow's argument did not stop at a reappraisal of the Western world and continued to consider the development of education models in the new developing countries of Asia. In a separate section that was entitled "Rich and Poor," Snow announced that any hope for bridging the gap between the two cultures was dependent on the development of education and industry, and thereby bringing

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[110] Defining this trend as developing out of the nineteenth century trend, Snow noted, "... some like Ruskin and William Morris and Thoreau and Emerson and Lawrence tried various kinds of fancies which were not in effect more than screams of horror." Snow, *The Two Cultures and the Scientific Revolution*, 25.

[111] It is worth noting that arguments of C.P. Snow, Jonas Salk, and Bruno Latour share amongst them a similar reference to the biological analogy of *plasma*. See Jonas Salk, *Man Unfolding*, World Perspectives (New York: Harper & Row, 1972), and Latour, *Reassembling the Social*.

[112] Latour's ground breaking work in the field of science studies developed out of his research at the Salk Institute in the 1970s and was published in *Laboratory Life*. In fact, the preface of this book is written by Jonas Salk where he recalls the "two cultures" debate as a relevant precursor to Latour's work. See Jonas Salk, preface *Laboratory Life: The Social Construction of Scientific Facts*, by Bruno Latour and Steve Woolgar (Beverly Hills: Sage Publications, 1979).

about a Scientific Revolution, in view of the "poor" countries. He further went on to discuss the possibilities of carrying out a Scientific Revolution in a country like India within a much shorter time span with requisite support of capital and expertise from the West and a development of an appropriate education program.[113] These ideas were a mere reiteration of institutional support that countries like America were already offering to the new developing nations, but recast in this jargon of helping "those less lucky" they found new resonance with Kahn. Kahn, who had a chance to share the dinner table with Snow after a RIBA (Royal Institute of British Architects) meeting in 1962, found in his impoverished upbringing and a penchant to serve the social community a similarity of his own life's quest and took to these ideas rather strongly.[114] Within a month of this dinner meeting with Snow, Kahn received a commission to work on a collaborative educational setup in Ahmedabad, India, and he subsequently arrived at the site of his encounter with brick at the IIM (Indian Institute of Management).

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[113] Snow, *The Two Cultures and the Scientific Revolution*, 41-48.

[114] Kahn had invited Snow to the dinner party. Brownlee and De Long, *Louis I. Kahn*, 95. Kahn had already met with his future collaborator on the IIM project, B.V. Doshi who had suggested his involvement in the development of the School of Architecture in Ahmedabad, and Kahn would likely have engaged Snow in discussing that venture.
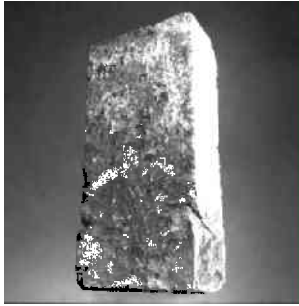
Much like our human protagonist *Kahn*, it is difficult to consider *Brick[1]* outside its conventional image as a cuboid building element which assumes its strength through dumb repetition. Of course *Brick* as a *substance* has considerably more to offer; however, in this case the established stereotype will be arguably harder to break. The use of the term stereotype is particularly relevant in alerting us to the extent of this prejudice, considering that the word shares a philological connection to stereotomy. The prejudiced understanding of brick may be traced back to Gottfried Semper's decision of relegating brickwork to this classification of *stereotomy*, instead of *tectonics*, in his 1859 *Prospectus on Style in the Technical and Tectonic Arts or Practical Aesthetics.[2]* At first, considering the etymological roots of Greek *stereós* for solid and *-tomía* for cutting as well as Greek *tekton* or Sanskrit *taksan* referring to the craft of carpentry, Semper's choice to classify brickwork as a function of the more massive and foundational crafts seems reasonable.[3] However, Semper's further decision to include these two categories of *tectonics* and *stereotomy* as the only discernable taxonomies of building craft (the other two categories of Ceramics and Metal Technology are more specific in their material affiliations) led to a dichotomous definition and brought them to stand in opposition to each other. Consequently it came to be recognised that, as Frampton notes, "Semper […] classif[ied] the building crafts into two fundamental

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[1] In this capitalised and italicised form the word *Brick* refers to the *substance*, and not the common noun which is used in its normal formulation of 'brick'.

[2] See Gottfried Semper, *The Four Elements of Architecture and Other Writings*, trans. Harry Francis Mallgrave and Wolfgang Herrmann, Res Monographs in Anthropology and Aesthetics (Cambridge UK: Cambridge University Press, 1989).

[3] For an etymological note on 'stereotomy' as well as its philological connection to 'stereotype' see Philological Society (Great Britain), *The Oxford English Dictionary: A New English Dictionary on Historical Principles, Founded Mainly on the Materials Collected by the Philological Society*, ed. James A. H. Murray, 13 vols., vol. 10 (Oxford: Clarendon Press, 1933), 925-26. For an etymological note on 'tectonics' developing from the Sanskrit *taksan* see Kenneth Frampton, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, ed. John Cava (Cambridge, Mass.: MIT Press, 1995), 3-4.

procedures: the *tectonics* of the frame, in which lightweight linear components are assembled so as to encompass a spatial matrix, and the *stereotomics* of the earthwork, wherein mass and volume are conjointly formed through the repetitious piling up of heavyweight elements."[4] Within such a dichotomous relationship between the crafts of *spatial assembly* and *repetitious piling*, brickwork loses its more sensual craft relationship (that was at least even suggested by the Semperian use of stereotomy as an art of developing sections of solids), and is in turn relegated to an act of monotonous recurrence without possibilities of change. Consequently we have reached a position where the image of *Brick* in general cultural understanding is synonymous with this mechanical repetition and the phrase 'just another *brick* in the wall' is employed to express the idea of a conformist and unchanging society. In an attempt to overcome this prejudiced approach we shall consider brick through a revised account of its cultural associations.

Formulating a cultural biography of brick within the scope of this thesis is considerably harder than that for Kahn, not least because the fascinating journey that brick traversed before its arrival at IIM (Indian Institute of Management) spans over 10,000 years of history.[5] From its humble beginnings in the riverside settlements of Central and South Asia to the various cycles of espousal in architectural collectives, where its status fluctuated from that of extreme power and favouritism to outright denial and marginalisation, the life story of brick has even more events to consider before a thoroughgoing and complex understanding of the *substance* can emerge. However, for the purpose of the condensed account offered here we may divide this huge time period into yet another set of four phases of development alluding to the major highs and lows of its passage. Clearly the narrative begins with the modest origins where *Brick* shared a phase of mutual growth with its human associates, before recounting the glorious days of sharing the house of "Gods and Kings," to an eventual conquering of the entire landscape of civilisation through its martial allegiance, and a final decline in the face of the pretentious desires of its human collaborators. Through this, often generalising account of the history of brick, we shall aim to gather a picture of the complexity of its becoming and its possible contributions to the event of 1964.

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[4] Frampton, *Studies in Tectonic Culture*, 5.

[5] Once again, the term "cultural biography" used here has been appropriated from Igor Kopytoff, "The Cultural Biography of Things: Commoditization as Process," in *The Social Life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (Cambridge UK: Cambridge University Press, 1986).

BRICK: A CULTURAL BIOGRAPHY OF THE MATERIAL *SUBSTANCE*

Just as Kahn was not born an architect, brick too found its beginnings in a considerably different form – as a roughly shaped block of clay dried under the afternoon sun of the vast Asian plains – well over ten thousand years ago. Once again the exact origin of brick is hard to determine and while the 1952 findings of Kathleen Kenyon propose a birthplace along the banks of the river Jordan near Jericho, recent archaeological digs at Mehrgarh in the Bolan Valley area of Balochistan suggest a South Asian origin rather than a Central Asian one.[6] Within the imprecise landscape of archaeological dating this event could have taken place anywhere from the eleventh to the eighth millennia BCE and the debate on exact origins will continue.[7] However, we can rightfully claim that while still in the "aceramic phase," brick had not only assumed a stable morphology but also the specific ratio of 1:2:4 that is commensurate with its present image, and can thus be identified as such.[8] The beginning years bore witness to a very special and deep bond that was developing between brick and its human counterparts and which was to continue for a period of over half a millennium. It is within the context of this relationship of mutual support and coexistence that we may proceed with the discussion of the first phase of brick's cultural becoming.

During the late Mesolithic and early Neolithic period, the development of both brick and the human civilisation was *ontically* tied to the fertile alluvium of the river plains that surrounded them. While the clay served as the very basis of brick's physical being, the humans too were deeply dependent on it for crop cultivation, and their newly acquired status as settlers rather than gatherers. This connection was further extended to a close corporeal relationship of mutual becoming where the bricks supported the human cause of settlement while the use of the human hand gave brick its unique

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[6] For a discussion of Kenyon's findings see Kathleen M. Kenyon, *Digging up Jericho* (London: E. Benn Ltd., 1957). For a note on bricks in the archaeological digs at Mehrgarh carried out until mid 1990s see Dilip K. Chakrabarti, *The Oxford Companion to Indian Archaeology: The Archaeological Foundations of Ancient India Stone Age to AD 13th Century* (New Delhi: Oxford University Press, 2006), 108. The legacy of Mehrgarh could arguably be traced all the way back to the 11th millennium BCE which it would share with Aq Kupruk, and being in the same interacting zone could be the site for the origin of brick before its migration into Central Asia. See Chakrabarti, *Oxford Companion to Indian Archaeology*, 114.

[7] As the conventions of archaeological dating do not always correspond to the dating conventions of the Common Era, the process of extracting this information from dense architectural literature proves all the more tedious.

[8] While the examples from Jericho belonging to the Neolithic Pre-pottery B period (7600-6600BCE) bear the approximate dimensions of 400x150x100mm, the examples from Mehrgarh belonging to Aceramic Phase IA of around the same time period measure 280x145x70mm and closely follow the 1:2:4 ratio.

character: distinctive in it's "bun-shape" with finger-mark patterns on top.[9] Brick was thus an inextricable part of not only a pragmatic but a ritualistic existence that it shared with humans, both in animated existence and eternal rest.[10] Within the architectural context, this relationship of mutual growth was furthered by the arrival of moulds which allowed brick to assume an ever more stable form and serve its architectural role better. The morphological identity it had already acquired through the connection with the human hand was merely translated into rectilinear forms and the finger indentations assumed the definition of a frog.[11] The other event that would eventually take brick to the very forefront of this continuously developing architectural collective, as *fired-brick*, was also quick to follow. However, this potential was denied for the longest term due to the incompetence of brick's human collaborators who were slow in offering their support.[12]

Brick's impatience to pass the flame-test must have been apparent to its human counterparts as early as the sixth millennia BCE when the development of pottery had led to the construction of small scale *clamp-kilns*.[13] Since the kilns were themselves constructed of (unfired) bricks, the firing process would have undoubtedly revealed the potential capabilities that brick could achieve as fired-brick. However, the contributions that brick could make to the architectural collective in this new hardy, waterproof and fireproof state was not realised fully until three more millennia had passed. By the third millennium BCE, and the advent of the Uruk period, brick had finally assumed its new avatar as *fired-brick* and thereby come to establish an irrefutable place within architectural collectives right across the Asian plains.[14] It must be noted that this establishment of prime status within the architectural collective was not gained through

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[9] Both, examples from Jericho as well as Mehrgarh, follow this pattern of bun-shape and finger-marks.

[10] Apart from the pragmatic use of house construction brick was also involved in ritual processes of burial. See remark on "pillow brick" in Chakrabarti, *Oxford Companion to Indian Archaeology*, 113. Also see S. R. Rao, *Lothal and the Indus Civilization* (New York: Asia Pub. House, 1973), 148.

[11] The ratio of 1:2:4 can be assumed as having been perfected with the 100x200x400mm dimension accorded to the examples from Bala Kot site in Khurkera alluvial plain (dated between 4200-3000 BCE). See Chakrabarti, *Oxford Companion to Indian Archaeology*, 121-123.

[12] For a better understanding of this process where human endeavour is symmetrically enabled by 'wooden moulds' and 'fire' in the subsequent development of brick, consider Bruno Latour's arguments on the process of *fabrication*. See Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, Mass.: Harvard University Press, 1999), 180-183.

[13] The period of 7th to 6th millennia BCE marks the beginning of the "ceramic phase" with the development of pottery in both Central and South Asia.

[14] On the gap of almost 4,000 years between the development of pottery and the engagement of fired-brick in architecture see note in James W. P. Campbell, *Brick: A World History* (London: Thames & Hudson, 2003), 30.

grandiose displays of formal compositions but through serving the humble purpose of drainage channels. While the subsequent developments in the Mesopotamian context of Ur would take brick to an unparalleled god-like status within the cultural collective (and this will be discussed as part of the next phase), it is these more modest developments within the Indian sub-continent, closer to the future site of IIM, that remain most relevant to the understanding of a relationship of mutual growth between brick and its human colleagues that would endure for several centuries to come.

The tradition of mutual growth, that brick had established over several millennia of its initial becoming, continued to be developed within the context of the Indus-Ghaggar-Hakra alluvium, where brick became synonymous with almost all architectural endeavours. This practice subsequently led to the development of one of the earliest and most thoroughly planned settlements under the Harappan civilisation (popularly known as the Indus Valley civilisation).[15] The architectural endeavours of the Harappan civilisation stood in contrast to developments elsewhere along the Asian plains, because its hierarchical structure did not impose a need for pretentious displays of power, and this allowed for a focus on reciprocal becoming.[16] In this secular environment the status of brick was maintained at its former level of parity and it continued to serve various different roles holding the development of the community as the primary objective. In Dholavira, Gujarat, what now constitutes the geo-political context of the IIM, this relationship of shared growth can be seen in the development of the extensive system of waterworks, a privilege it shares with the better known Mohen-jo-daro settlement.[17] In the construction of an intricate system of drainage and irrigation canals, humans and brick worked together to develop features that were not yet available to the

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[15] According to the "Mesopotamian Origin Theory" put forward by Mortimer Wheeler in 1947 it was originally believed that the Indus valley civilisation was a mere extension of the Mesopotamian orbit. However, in light of the more recent findings of Pre-Indus settlements in Kot-Diji and the Dholavira region of Gujarat it may be argued that the development of brick in this part of the world had little to no contact with Mesopotamia. See Dilip K. Chakrabarti, *The Archaeology of Ancient Indian Cities* (Delhi: Oxford University Press, 1995), 52. Also see Mortimer Wheeler, *Civilizations of the Indus Valley and Beyond*, Rev. & enl. ed., Library of the Early Civilizations (London: Thames and Hudson, 1966), and S. Settar and Ravi Korisettar, eds., *Indian Archaeology in Retrospect: Protohistory Archaeology of the Harappan Civilization*, 4 vols., vol. 2 (New Delhi: Manohar Publishers, 2002).

[16] For discussion of architectural explorations of the Harappan civilisation, see Ernest J. H. Mackay and Dorothy M. S. Mackay, *Early Indus Civilizations*, 2nd ed. (London: Luzac, 1948), and Jonathan Mark Kenoyer, *Ancient Cities of the Indus Valley Civilisation* (Karachi: Oxford University Press, 1998).

[17] Both settlements belong to the mature phase of Harappan Civilisation and are dated around 2500-2000 BCE. For development of waterworks using burnt-bricks see Michael Jansen, *Mohenjo-Daro: City of Wells and Drains* (Bergisch: Gladbach Frontinus-Gesellschaft V, 1993), and R.S. Bisht, "Urban Planning at Dholavira: A Harappan City," in *Ancient Cities, Sacred Skies: Cosmic Geometries and City Planning in Ancient India*, ed. J. M. Malville and L. M. Gujral (New Delhi: Aryan Books, 2000).
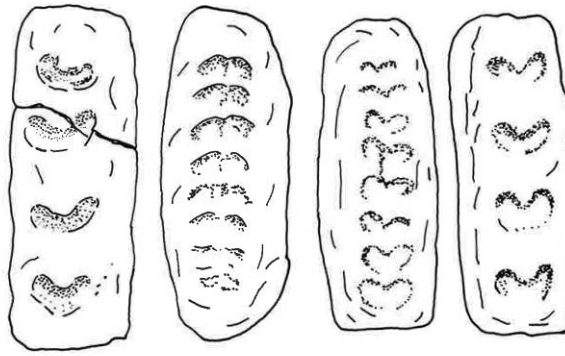
Fig. 6.1. The "bun-shape" brick with finger-mark patterns from Jericho.
(*Source:* Campbell, *Brick: A World History*, 26.)

Fig. 6.2. The Harappan Orbit
(*Source:* Deo Prakash, *Harappan Art*, 41.)

Fig. 6.3. Brickwork from Mohen-jo-daro excavation site.
(*Source: (L)* Deo Prakash, *Harappan Art*, 41; (R) Cichy, Architecture of the Ancient Civilisations, 155.)

Plate 6a. The Beginnings – (*A mutually respectful coexistence*)
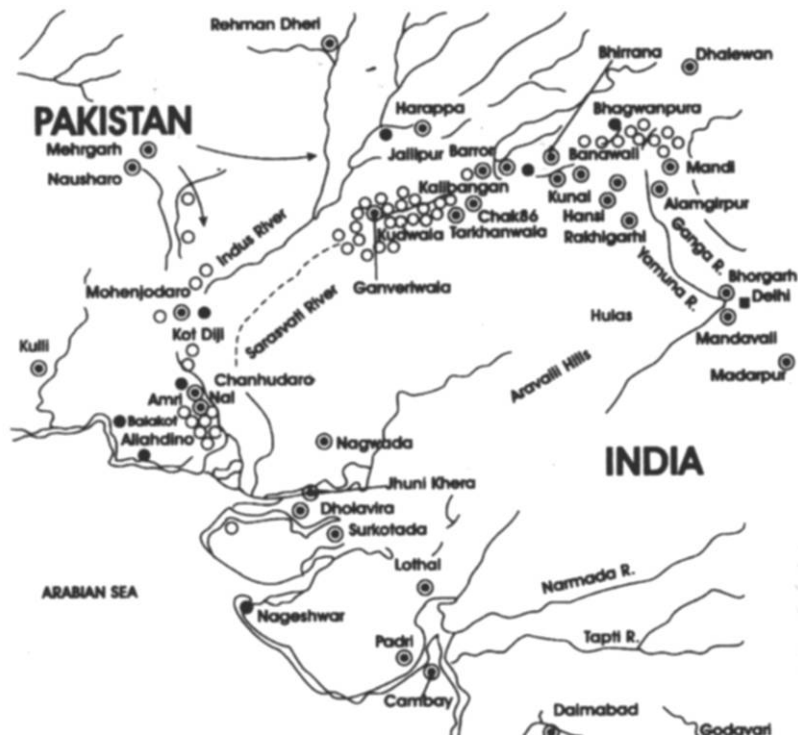
contemporary Egyptian and Mesopotamian settlements (and which are retrospectively remembered as being superior).[18] This relationship of mutual respect is particularly relevant to recall, considering that the rural Indian settlements maintained a very similar character as late as the twentieth century.[19] Thus, in spite of the limited information available on the Harappan settlements themselves, it is clear that this relationship of mutual respect that marked the extended first phase of brick's becoming provided a stable structure for the coexistence of humans and brick.

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While the collectives within the South Asian context of the Harappan civilisation continued with the secular atmosphere of mutual becoming, yet other cultural collectives across the globe were exploring newer ways of dealing with their surroundings. Within the context of the third millennium BCE, the most well known of these is undoubtedly the Egyptian civilisation. The monumental architecture of these settlements, which still grace the architectural landscape today, stand testimony to the complex nature of social hierarchy that was developing within these collectives. It must be noted, however, that these architectural marvels were not envisioned as splendours of human conquest over nature. Instead, as a society of *theocratic socialists*, the act of construction, like any other human activity, was bound in a complex logic of connectedness with existence, and brought the divergent concepts of symbolic and performative action under a single banner.[20] The hierarchical structure of society that stemmed from this allowed for a stratified architectural collective where brick could find itself commanding a position of unique power. Indeed the evidence found in Rekh-mi-Re's tomb from 1450 BCE suggests a considerable involvement of brick within this collective, and Egyptian society is still credited with some of the first experimentations with arch and vault construction, but the coveted spot was lost to the abundantly present

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[18] The construction of cylindrical wells and wedge shaped bricks was unknown in contemporary Egyptian and Mesopotamian settlements. See Chakrabarti, *Oxford Companion to Indian Archaeology*, 167.

[19] For arguments regarding the same see Dilip K. Chakrabarti, *Indus Civilization Sites in India: New Discoveries* (Mumbai: Marg Publications on behalf of the National Centre for the Performing Arts, 2004). This argument is particularly relevant to the development of the Gandhian idea of *village economy* and will be dealt later in the chapter.

[20] For arguments on ritualistic nature of construction practices in theocratic socialist civilisations see Spiro Kostof and Greg Castillo, *A History of Architecture: Settings and Rituals*, 2nd ed. (Oxford: Oxford University Press, 1995).

stone.[21] Brick, however, found greater appreciation within the Central Asian reaches of this theocratic socialist orbit, in the plains of Mesopotamia, where the lack of stone allowed it to assume the foremost position in the collective. It is within this context of the Mesopotamian civilisation that we can identify yet another phase in brick's becoming where it rose from the mundane status of serving the house of commoners to sharing the social space of power and luxury at, as one author puts it, "the houses of Gods and Kings."[22]

In the lofty *ziggurats* of the city of Ur, brick served to connect the entire gamut of reality - from the Gods in Heaven to the Earth below - into a single coherent picture of existence. Brick was so intricately enmeshed into the cultural context of Mesopotamia that not only did it exceed any utilitarian definition, which may be accorded to it retrospectively, by many times, but often served as the *gnosiological* centre of the entire practice of architecture. In the construction of these brick *ziggurats* the first brick laid in the foundation was recognized as the "brick god" and the coveted stock of honey, cream, oils and ambergris were offered in its honour.[23] This brick (*sig-nam-tar-ra*) was even higher in the social hierarchy than the King, who personally served the emergence of this brick "into the daylight."[24] This supreme status afforded to brick then continued to colour the entire structure of the cultural collective, where brick served as the very basis of social organisation. In the more abstract realm of language, this condition is evident in the fact that the Sumerian word for brick – *sig* – was also the name of the god of building as well as the signifier of a building or even a city.[25] At a more pragmatic level the physical dimensions of brick served as the basic unit for measurement and defined all matters concerning an architectural layout.[26] Even the human members of the collective came to be defined according to the service of labour that they offered to the brick god. Consequently the taxonomies of digger, mixer or porter of mud, kiln-

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[21] For an overview of brick in Egyptian architecture see A. J. Spencer, *Brick Architecture in Ancient Egypt* (Warminster: Aris and Phillips, 1979). Also see Campbell, *Brick: A World History*, 29.

[22] Campbell, *Brick: A World History*, 30.

[23] For a detailed account of the ritual practices surrounding brick in Mesopotamian society see D.O. Edzard, "Deep Rooted Skyscrapers and Bricks: Ancient Mesopotamian Architecture and Its Imagery," in *Figurative Language in the Ancient near East*, ed. M. Mindlin, Markham J. Geller, and John E. Wansbrough (London: Routledge, 1987).

[24] Edzard, "Deep Rooted Skyscrapers and Bricks," 20.

[25] Edzard argues that previous translations of the word *sig* as 'brickwork' "obscures or blurs the original meaning." See Edzard, "Deep Rooted Skyscrapers and Bricks," 18.

[26] See discussion in Campbell, *Brick: A World History*, 33.

man, glaze preparer, brick layer, all the way to the chief builder or architect were born. In turn, brick kept its end of the bargain by providing to its human subjects a resilient and waterproof solution that defended the *ziggurats* against the constantly flooding rivers, and held this complex picture of reality – the intermingling worlds of gods, humans and objects – together in harmony.

Over the subsequent centuries the influential status of brick continued to spread east until the previously divergent worlds of brick, in Central and South Asia, eventually came together with the Achaemenid annexation of North-Western India.[27] In the first half of the sixth century BCE the provincial capital of Babylon, associated with King Nebuchadnezzar II, served as the site of yet another addition to the developing persona of brick when it entered the realm of moulding and decoration. Over the years of perfecting the passage through the kiln-fire, brick had often been exposed to, sometimes in not so desirable ways, the melting of clay into a glass-like mass.[28] Within the Babylonian context this experience came to brick's advantage as this 'glaze' was exploited as an adornment and increased brick's appeal even more. Expanding further east, by the dawn of the fourth century BCE brick had entered the Fars plain of Iran in its new 'moulded' form. Here, during the period of Darius I of Susa, brick continued to collaborate on such exquisite pieces as the Frieze of Archers and the Frieze of Griffons.[29] This realm of brick continued to expand right across to the Indian subcontinent where the rising impact of religious practices had already begun to transform the architectural landscape of a previously secular settlement.[30] The development of the Brahmi script had allowed for the ritualistic practices of Vedic Brahmanism to have a greater impact, and this was further affected by the arrival of Buddhism and Jainism in the fifth century BCE.[31] Consequently the rise of new

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[27] See W. J. Vogelsang, *The Rise and Organisation of the Achaemenid Empire: The Eastern Iranian Evidence*, Studies in the History of the Ancient near East (New York: Brill, 1992).

[28] See discussion in Campbell, *Brick: A World History*.

[29] See Prudence Oliver Harper, Joan Aruz, and Francoise Tallon, eds., *The Royal City of Susa: Ancient near Eastern Treasures in the Louvre* (New York: Metropolitan Museum of Art, 1992).

[30] For an account of developments in ritualistic practices before Vedic-Brahmanism, which were to subsequently find their way into a revised definition of Hinduism, see John Marshall, ed., *Mohenjo-Daro and the Indus Civilization*, 3 vols. (London: Arthur Probsthain, 1931).

[31] Most publications dealing with Vedic practices on temple building are appropriated from later Vedic texts and therefore have a stronger focus on stone as the principal building material. However, for an account of ritualistic practices involving brick in temple construction see Stella Kramrisch and Raymond Burnier, *The Hindu Temple* (Delhi: Motilal Banarsidass, 1976), 101-107. Here the author describes how the brick, called *asadha* or "the invincible," was accorded the supreme status within the collective and
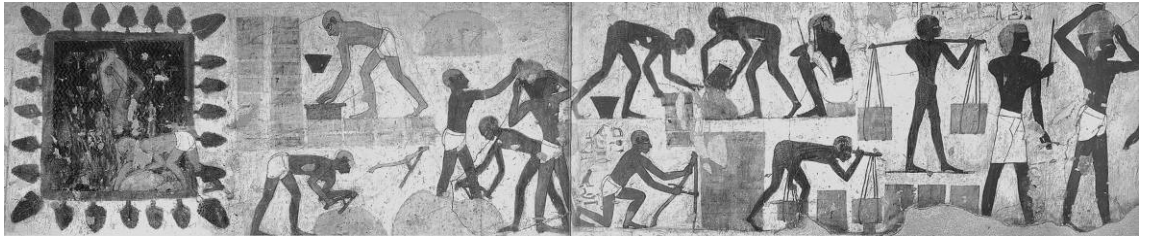
Fig. 6.4. Egyptian brickmaking, Wall Painting from the Tomb of Rekh-mi-Re.
(*Source:* Campbell, *Brick: A World History*, 28-29.)

Fig. 6.5. The Ziggurat at Al-Untesh-Napirisha.
(*Source:* Campbell, *Brick: A World History*, 32.)

Fig. 6.6. The Frieze of Archers from the Palace of Darius, now at Louvre, Paris .
(*Source: Photograph by author, 2008.*)

Plate 6b. The Glorious days of Ur – (*Sharing the House of Gods and Kings*)

architectural types like the *Stupa* allowed brick to enter the newly emerging religious collective in a region where its alliances had been mostly secular.[32] In short, the entire Asian belt from the Mediterranean in the west to inner reaches of China on the east was rightfully the dominion of brick.

This period of glorious ascent, where brick came to reign supreme over the cultural collectives across Asia, came to an eventual decline in the third century BCE with the invasion of the Greeks under Alexander. The Greek civilisation, now in the Hellenic period, had been besotted by the abundantly available stone and had little sympathy for the aspirations of brick.[33] Alexander's exploits in the Central Asian region, then, helped to further this realm of stone, and brick was eventually marginalised. After Alexander's invasion the cities of Mesopotamia fell into decline, and the potentiality of brick was lost in the landscape which was little more than mud and dirt for the invaders. Even within the Indian subcontinent, which did not entirely succumb to Alexander's advances, the eventual effect of this infiltration of stone became evident in the subsequent rise of stone sculptures in the Greco-Buddhist art in the Mauryan region of Gandhara.[34] Thus, with the swift blow of a martial assault the magnificent period of brick's becoming – commanding the very forefront of the architectural collective - came to an abrupt end. Ironically, it was the same tactic of martial allegiance that allowed brick to regain a stronghold over the architectural landscape of the European continent during the next phase of its becoming.

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Before we continue with the discussion of the next phase of brick's becoming it must be pointed out that often the abundance of historical information regarding a particular time period helps to further a partial and prejudiced understanding of the subject. We

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how the human sacrificial body was itself considered to be made of brick. (The term *asadha* has been wrongly quoted as Sumerian in Campbell, *Brick: A World History*, 33).

[32] *Stupas* were large earth mounds erected as markers of the bodily relics of Buddha which were subsequently developed into significant symbolic structures with the rise of Buddhism across the subcontinent and further east into China.

[33] There is an enormous corpus of literature available on building traditions in Ancient Greece but for instance see A. W. Lawrence and R. A. Tomlinson, *Greek Architecture*, 4th ed., Pelican History of Art. (Harmondsworth, UK: Penguin Books, 1983).

[34] For an introduction to the cultural exchanges between Ancient Greece and India see W. W. Tarn and Frank Lee Holt, *The Greeks in Bactria & India*, 3rd ed. (Chicago, IL: Ares Publishers, 1984). For Gandhara see Kurt A. Behrendt, *The Buddhist Architecture of Gandhara* (Leiden: Brill, 2004), as well as John Boardman, *The Diffusion of Classical Art in Antiquity*, A.W. Mellon Lectures in the Fine Arts (Princeton, N.J.: Princeton University Press, 1994).

have already witnessed this in the case of Kahn where numerous historical projects continue to provide the minutest details of Kahn's architectural endeavours and herald him as a genius architect, but the information on his earlier years of development are limited. Similarly when considering the *substance* of brick we may find that the comparatively abundant historical information available for the last two thousand years forces us to focus on this period of brick's development more strongly. As a result we are content with a synoptic overview of five millennia of development of, say, in the Neolithic phase, but a similar synopsis of architectural history over the more recent years seems reductive. Even though there is an immense amount of information available on the architectural projects of the last couple of millennia, and indeed many individual instances might be cited as an exception to the argument offered here, the third phase of *Brick's* development outlined here focuses on the specific status acquired through a martial allegiance right through the Roman, Christian and Islamic eras. In all these varied and immensely rich histories of architectural endeavours the place of brick in the collective was most specifically affected by the desire for rapid armed conquest, and it is within this context that brick was to assume its new rule across the entire landscape of civilization.

Following Alexander's exploits, yet another era of martial conquest was launched by the Romans who had already annexed most of the Italian peninsula by the second quarter of the third century BCE. During these early years the penchant for Greek and Etruscan precedents in architecture did little to further the cause of brick within the Roman lands. However, by the first century CE, when the Romans had expanded their territories from the Atlantic Ocean to the Red Sea, brick came to command a stronger status on European soil than ever before under a new kind of patronage – the army. Ever since its inception *Brick* had always needed a bevy of human labourers to support its architectural and social goals. Within the extremely regimented constitution of the Roman army this support structure took on a guise that would serve a rapid resurgence of brick in the European continent. The previously separate realm of the likes of diggers and kilns-men now formed part of the Roman martial units and by the end of the first century CE the Roman legions setup brickyards wherever they went.[35] Within Rome the hierarchical structure further spread to the development of *collegia* of freedmen that

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[35] For an introduction to Roman society see Henry C. Boren, *Roman Society: A Social, Economic, and Cultural History*, 2nd ed. (Lexington, Mass: D.C. Heath, 1992). For overview of social structure and brickwork see Campbell, *Brick: A World History*.

were completely dedicated to the service of brick. Consequently the rise of brick became synonymous with the rise of the Roman Empire, and historians today often recall the heyday of the "Roman brick" with much admiration; this is to the point that several developments of brick have been erroneously accorded to its Roman days and are only now being refuted. In spite of these historical *faux pas* it is undoubtedly so that it was the patronage of the Roman army that allowed brick to infiltrate the farthest reaches of the European continent. Therefore, at least within the context of a Western history of architecture (read Eurocentric), the Roman brick serves as an apparent beginning.

The status of brick within this new definition of the social collective was, however, particularly different from its Mesopotamian context. The growing complexity of the social assemblage, where newer agencies were constantly populating the social realm, meant that the direct connection between Gods and objects of the Mesopotamian era was lost, and a new type of socio-political structure was formed. Within this increasingly complex realm of Roman society the focus eventually shifted from the Gods and the unified picture of existence to the expanding role of humans as mediators of this reality. A further division of labour based on this understanding meant that the ontological connection of humans and their surroundings became the subject of contemplation for the specialised but also limited agencies of philosophers, while the pragmatic concerns of military conquest were relegated to the Senate. Since brick had only found its recognition retrospectively within the martial context of rapid expansion, it never became the subject of an ontological contemplation within its Roman context. It may also be argued that the Romans never really understood the *ontic* character of brick and continued to engage it as a substitute for their beloved stone.[36] This is particularly evident from a closer look at the construction practices where the brick, in its Roman context, bore no similarity to its previous physical form that had been the result of a close corporeal connection with humans and had also lost its role as the sole provider of structural integrity. Cast as large square slabs, it was cut diagonally into triangular pieces before being inserted into a largely concrete wall with the longer side facing

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[36] The idea that Roman brickwork was akin to stone construction has been mentioned by several authors. For instance see the massive monograph, Jean-Pierre Adam, *Roman Building: Materials and Techniques* (London: Routledge, 2003). Also see the dated but highly influential, Auguste Choisy, *Histoire De L'architecture*, 2 vols. (Geneve: Slatkine Reprints, 1983).

outward so as to suggest the rectangular integrity of brick on the facade.[37] Therefore, even though the martial allegiance allowed brick to establish itself in the European architectural collectives its role remained severely limited compared to the Mesopotamian days and it remained subordinate to the human desires for conquest.

The biggest contributions of brick, in this new role, came as a support for the two specific desires of its military patrons, namely the need for quickly constructing a resilient structure for support of the home army without contemplating the architectural context of the annexed lands, and that of a visual homogeneity which would serve as the banner of the warring state across these lands. These specific contributions allowed brick to find continuing patronage in the numerous military advances that marked the following era of Christian and Islamic conquests.

Within the Asian context the arrival of Islam in the seventh century allowed brick to re-establish itself along the entire breadth of the Asian plains through the martial predilections of the early Caliphs. Brick had already entered Asia after its Roman sojourn when the split of the Empire in the fourth century, and the establishment of the new capital of Byzantium in the city of Constantinople had allowed brick to attempt a confluence of its Mesopotamian and Roman experience. The Byzantine brick was thus formally similar to its square Roman antecedents but resorted to structural configurations that recalled the integrity of its previous years in Central Asia.[38] This re-entry was further supported by the neighbouring state of the Sassanids in Persia who collaborated with this new square-form brick to generate magnificent structures like the palace at Ctesphion, which is considered one of the wonders of the ancient world.[39] The rapid spread of Islam after the death of the prophet in 632CE allowed brick, very much still in its Byzantine and Sassanid guise, to spread across the entire expanse of the Asian

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[37] The Roman construction system known as the *Opus Testaceum* is largely a concrete structure with brick inserts. The changing focus from the brick to humans is also evident in the sizing of Roman bricks which were defined as *Pedalis*, *Sesquipedalis* and *Bipedalis* referring to the Roman feet measurement taking from the Greek practice of *Pentadoron* and *Tetradoron* referring to palm size measurements. See Gerald Brodribb, *Roman Brick and Tile* (Wolfeboro, N.H: A. Sutton 1989). For Roman practices of brickmaking see Alan McWirr, *Roman Brick and Tile*, BAR International Series Vol. 68 (1979).

[38] See Cyril Mango, *Byzantine Architecture*, History of World Architecture (London: Faber, 1986).

[39] For a discussion of early Pre-Islamic settlements in Central Asia and its effects on the extended orbit into the Indian subcontinent see the recent publication, Elizabeth Errington and Vesta S. Curtis, eds., *From Persepolis to the Punjab: Exploring Ancient Iran, Afghanistan and Pakistan* (London: British Museum Press,2007).

plains.[40] Once again, brick offered a quick and resilient solution for the Muslim invaders who had little time to contemplate the traditional architectural practices of the annexed lands. But more importantly, brick allowed them to leave an architectural marker of their religious beliefs in some of the earliest examples of "naked brick architecture" in the region.[41] The tenets of Islam that were opposed to figurative representation allowed the Muslim invaders to reject the sculptural practices of stone masons in the annexed lands and brick, with its geometric decorative patterns, came to be recognised as the preferred alternative.

The retrospective support of religious canons for an otherwise pragmatic set of desires can also be seen within the European context of the Christian crusades of the Middle Ages. Since the decline of the Roman Empire brick had lost its presence in the Northern reaches of Europe until the twelfth century. The incursions of the Teutonic Knights finally allowed brick to establish itself within the European context once again.[42] Here too the engagement of brick was primarily driven by its fireproof nature that allowed for resilient fortifications. However, the Cistercian recognition of its "humble" origins and "austere" aesthetics were touted as grounds for its appropriateness for the "piety of a religious order." A poignant example of this confluence of martial and religious rationale can be seen at the Cathedral of St. Cecile in Albi, where "a brutal 78 metre high fortress of a cathedral" was constructed in the wake of the Albignesian crusades to serve as a simultaneous reminder of both the humility of the religious order and the power of the Christian invaders.[43] Thus, before the advent of the next phase, brick continued to trace this path of an ambiguous identity, doomed to serve as a reluctant spokesperson for, on one hand, the omnipotent God of its monotheistic human patrons, and on the other, the might of the human patrons who took it upon themselves to mediate the supremacy of this God through martial conquest.

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[40] A general introduction is available from Richard Ettinghausen and Oleg Grabar, *Islamic Art and Architecture 650-1250* (New Haven: Yale University Press, 1987).

[41] Previously unexplored examples of these "naked brick" structures, which reached the Indian sub-continent through the Islamic invaders as early as the beginning of the eighth century CE, are included in Ahmad Nabi Khan, *Islamic Architecture in South Asia: Pakistan, India, Bangladesh* (Karachi: Oxford University Press, 2003).

[42] See discussion in Campbell, *Brick: A World History*, 104.

[43] It is worth noting that the Cathedral of St. Cecile in Albi, which Kahn visited in 1959, had a considerable impact on the development of British Church Architecture, and thereby served as a reference for the style recommended by the Cambridge Camden Society for architecture in India. The Indian context will be introduced later in the chapter, but for the influence on British architecture, see John Thomas, *Albi Cathedral and British Church Architecture* (London: The Ecclesiological Society, 2002).

Fig. 6.7. Roman Brickwork, showing diagonal cut pieces of slab in embedded in concrete.
(*Source: (L)* Acocella*, Architecture of Place,* 170*; (R) Photograph by author, 2008*.)
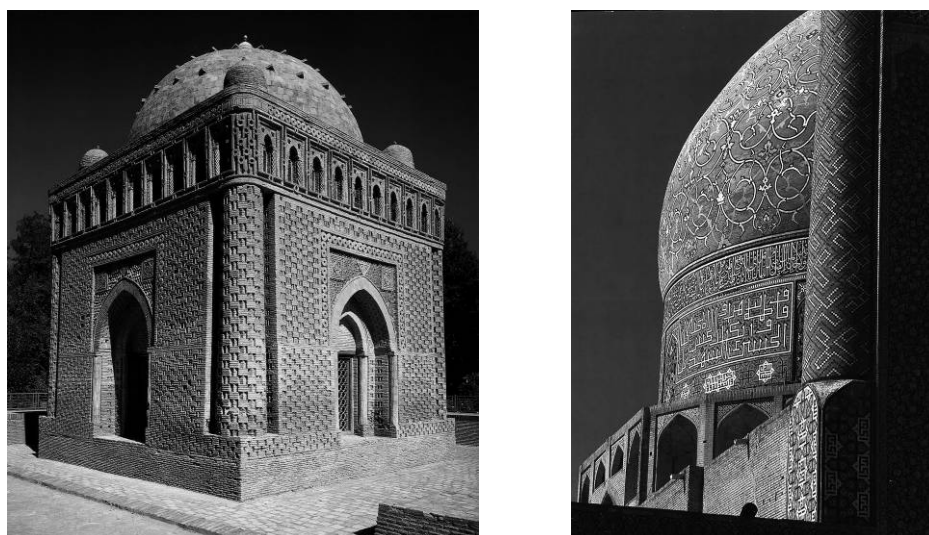
Fig. 6.8. Islamic Brickwork, early naked-brick example & subsequent ascent of tiling.
(*Source:* Campbell, *Brick: A World History*, 74, 153.)

Fig. 6.9. Cathedral of St. Cecile, Albi, France, 'humility' and 'power' of Christianity .
(*Source: Photograph by author, 2008*.)

Plate 6c. A Thousand Years of Martial Conquest – (*Practicality and symbolism*)

Within such a pseudo-religious military context it is not hard to discern that brick was merely engaged to serve the problems posed by the human desire for rapid armed conquest, reminiscent of the Roman days. Although this martial allegiance allowed for brick to spread right across Europe and Asia, it remained imposed on the local populace of the annexed lands and was never able to form a bond similar to its earlier experiences in either the Mesopotamian or Harappan contexts. The new human acquaintances reluctantly adopted brick to submit to the will of their conquerors and the superficial religious notions that they brought with them, while never truly embracing it as an integral part of the cultural collective. The superficiality of the spread and the lack of connection with members of the new collectives becomes obvious in the subsequent decline of brick in all these contexts. The failure of this arrangement was already evident with the Roman example where the retreat of the Roman troops also spelled the decline of brick in the Northern reaches of Europe.[44] Brick met with a similar fate in the lands annexed by the Muslim invaders. The desire for rapid conquest did not allow the invaders enough time to replace the long established traditions of stone in the farthest reaches of Asia. As a result, the newly introduced "naked brick architecture" succumbed to a subsequent resurgence of stone where, although not entirely obliterated, brick was concealed behind a stone veneer embellished with calligraphic inlay work. [45] Within the European context too brick was faced with a similar marginalization at the hands of stone with the advent of the next phase marked by the coming of the Renaissance.[46] Thus, throughout this phase of its becoming brick was reduced to playing the role of a reluctant spokesperson for the invading foreigners rendering any possibilities for recognition of its ontological parity by its new human associates impracticable.

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With the advent of the Renaissance, and the so called Modern world, the status of brick within the cultural collectives of Europe suffered yet another blow. This condition was

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[44] See argument in Campbell, *Brick: A World History*, 96.

[45] Within the Indian subcontinent this is most easily perceivable with the assimilation of local traditions that came about at the end of the great Timurid Empire, leading to the more famous architectural endeavours of the Moghul Empire. See discussion in Nabi Khan, *Islamic Architecture in South Asia*. Also see Bianca Maria Alfieri and F. Borromeo, *Islamic Architecture of the Indian Subcontinent* (London: Laurence King, 2000).

[46] For instance, see Richard Goldthwaite, *The Building of Renaissance Florence* (London: John Hopkins Univ. Press, 1980).

brought about not so much by the birth of modern science, which was still considered a part of philosophy, but the "purification" of the human realm that came with it.[47] Renaissance's call for the pursuit of knowledge for its own sake meant that the role of human agents as observers of phenomena became more valued than their role as mediators of a divine reality (such as had been accorded to them in the previous era); as such a collective of disengaged observers of natural phenomena, humans came to stand separated from the natural world. Within architecture we can witness the impact of this shift to the human observer as early as Brunelleschi's demonstration of the perspectival method in the early fifteenth century, where the development of ever more refined observational techniques implied the importance of the distanced human gaze upon material objects. Within such a paradigm, architecture, and consequently architectural material, got divorced from its human contemporaries to be recast as an *object* that needed to be observed and perceived rather than be engaged with intuitively. The change in focus was swift and by the beginning of the Galilean era human engagement with the world, under the aegis of natural science, was set onto a direction where the separation between the humans and non-humans – even the mind and the body – was considered complete.[48] This purification of the human realm led to a rising focus on the human agent and with the Enlightenment years humans came to stand at the centre of the cultural collectives in Europe. The Enlightenment itself spawned an era of the *genius* architect and brick, along with other architectural materials, became secondary to individual human will.[49]

Both the rapid change in the structure of the collective and the resultant marginalisation of brick came with the rise of yet another member of the cultural collective – the written word. Written word had started to assume strength over the previous era when medieval scribes devoted their abilities to the spread of religious texts. The effect of this rising

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[47] For the argument of "purification" of the human realm that came about with the birth of the Modern age, see Bruno Latour and Catherine Porter, *We Have Never Been Modern* (New York: Harvester Wheatsheaf, 1993), 50.

[48] The shift in thinking which came about with the Galilean era has been widely acknowledged. Of particular relevance are the arguments for the "anti-anthropomorphic" nature of natural science which have been explored by both Carlo Ginzburg and Bruno Latour. The period also marks the beginning of the Cartesian duality of mind and body which further served to deepen the separation of the two realms. The changes in architectural thinking brought about by these developments of the 16th and 17th century CE, which rejected all intelligence in nature, are discussed in Liane Lefaivre and Alexander Tzonis, "The Machine in Architectural Thinking," *Daidalos* 18 (December, 1985).

[49] The arguments for the cult of the *genius* architect which came about during the Enlightenment have been offered in many accounts of the history of Western architecture. For instance, see Barry Bergdoll, *European Architecture, 1750-1890* (New York: Oxford University Press, 2000).

status of the written word on the decline of brick was much more direct within the Islamic context of the Asian plains, where the need to display the words of the Koran gave rise to architectural calligraphy and the exquisite naked brick architecture was superseded by a different form of architectural ceramic – *Haft Rangi*.[50] Within the European context, the efforts of the scribes had allowed for the reappearance of classical ideas which had remained dormant for centuries hidden away in decaying old volumes. With the subsequent embrace of movable type printing in the mid fifteenth century the growing reproductions of these old texts, and their sponsorship by the new Renaissance ideals, allowed for a return to Classical traditions and its penchant for stone over brick.[51] Within the Neo-Classical context of the Renaissance and the ensuing cult of the *genius* architects of Enlightenment, then, brick remained secondary to the growing status of stone. Under the influence of both, the print media of encyclopaedias and manuals as well as individual architects like Christopher Wren and Thomas Jefferson, this revival of Stone-Classicism, then, further spread to the farthest reaches of civilization in England and America. Considering this combined onslaught of the printed word and individual *geniuses*, it is not surprising that certain authors recognise the sixteenth and seventeenth century rise in mannerist theatricality and decadent displays of the architect's panache as already signalling the end of the glorious era of brick in architecture.[52]

The allusion to the end of the era of brick does not in any way imply the disappearance of brick from the architectural collectives. In fact, after the Great Fire of London of 1666 brick became highly regarded for its fireproof capabilities and served to resolve the growing problem of housing the ever-expanding populace of an industrialised and colonised world. As the European colonizers established their unfaltering control over the various collectives across the globe they brought the memories of the tragedy with them. The several millennia of existence already ensured the ubiquitous presence of brick across these lands and it continued to be employed for its abilities to avert a reoccurrence of such a disaster. Even though this condition allowed for brick to be a

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[50] For the developments in *Haft-rangi* which came to overshadow the exquisite tradition of brick architecture within the Islamic world, see Venetia Porter, *Islamic Tiles* (London: The British Museum Press, 2001).

[51] For the effects that the development of printing had on the architectural tradition, see Mario Carpo, *Architecture in the Age of Printing: Orality, Writing, Typography, and Printed Images in the History of Architectural Theory* (Cambridge, Mass.: MIT Press, 2001).

[52] See remark in Campbell, *Brick: A World History*, 133.

continuing part of the architectural collectives, it was merely exploited for its inexpensive incidence, rather than regarded as a counterpart in the struggle for existence. What the end of an era implies, then, is that brick lost its glorious, or even respectable, status within the cultural collective and was reduced to the rank of a servant – subordinate to the will of the human master.

This condition became even more suffused with the Industrial Revolution where the processes of mechanisation removed any corporeal connection between the brick and its human counterparts. The humans in their subsequent role as engineers feigned greater power over the world of material objects and directed their workings from the confines of a drafting studio. The arrival of newer members into the architectural collective, such as cast iron and Portland cement, did not help the cause of brick either. Entering into a context of subordination to the human will these seemingly inert materials never had the opportunity to engage in an ontological reappraisal and took on the role of servants ever more eagerly.[53] With the growing number of members in the collective, each succumbing to the supremacy of the human master, any possibility of regaining its former glory seemed doubtful for brick. Consequently, the fourth phase of the development of the *substance* of brick saw it reduced to the lowest level of the cultural collective being bound into a life of voiceless servitude, a far cry from the glorious days of Ur.

<p style="text-align:center">*.~.*.~.*</p>

This unenviable plight of brick continued for the most part through the years of the nineteenth and twentieth centuries before its arrival at IIM. The cultural context of the newly industrialized world fuelled by the mechanistic ideals of the modern age created a scenario where the cultural becoming of the *substance* of brick had hit a downward spiral, seemingly never to emerge on top again. We have already discussed how the well-intended attempts of nineteenth century theorists like Semper were misappropriated in such a context to further alienate brick from its human counterparts. This condition was only worsened with the rise of socialist tendencies in the late nineteenth century that employed a jargon of "underlying rational structures" to reduce the world to serving a single purpose of human well being. This shift from the

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[53] The ontological reappraisal prompted by the 'drama of the machines' did not occur till the beginning of the twentieth century when philosophical and architectural thought struggled to come to terms with the conditions of *mechanisation*.

heterogeneous conception of the *cultural* to the increasingly confined definition of the human-centric *social* bolstered the existing human tendencies for a utilitarian engagement with the world. Consequently, the twentieth century rise of the Modernist movement in architecture, which epitomized this socialist agenda and regarded architectural materials for little more than structural economy, allowed for the spread of these functionalist notions outside of its European confines and into the rest of the world. Needless to say, then, brick like other architectural materials was exploited for its physical properties but never given a chance to become a sentient member of the now exclusively human social realm. Still, there was a glimmer of hope that arose out of the late nineteenth century trends in Gothic Revival and the rise of the Arts and Crafts which saw a renewed interest in establishing a sensual connection with the material world. Certain cultural networks that grew out of these traditions worked to relieve brick from the drudgery of this servitude and these need to be discussed in a little more detail.

TRACING ASSOCIATIONS

Once again, the foregoing attempt at recounting a cultural biography of brick generates the illusion of a linear process, in this case a regressive one, where the status of brick in the cultural collective has continuously shifted from a state of individuation towards an impending commoditization of the modern era.[54] We have already discussed the limitations of such a historical overview in unpacking all the networks and associations that constitute the process of becoming. Therefore, while this highly abbreviated account of the life story of *Brick* alerts us to certain major facets of its complex becoming, it does not reveal the nuances of other cultural associations that worked as an exception to this generally regressive course. Closer to the time of its arrival at IIM, brick was once again supported by certain such networks, which worked against the general trend to help it regain a standing of high regard within the cultural collective. In order to appreciate the *substance* of brick in all its complexity during the events of 1964 we must once again resort to the strategy of tracing these associations and laying bare the social assemblages that could have allowed *Brick* to counter its grim fate. In tracing these networks the following account engages the individual figures of Joseph Anatole de Baudot, Arthur Shoosmith and Laurie Baker, who as architects allowed for brick to

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[54] For a better understanding of this use of the terms *individuation* and *commoditization* see discussion in Kopytoff, "The Cultural Biography of Things."

become a part of these networks. It is through these specific associations, which developed in the early years of the twentieth century, that brick was already on its way to re-establishing itself within the cultural context of an independent India before its subsequent arrival at IIM.

Brick-Baudot

Beginning at the turn of the century, the first association that can be traced here with regards to brick's changing role in the modern world concerns an individual who is not usually regarded as one of its obvious proponents. Joseph Eugène Anatole de Baudot, a nineteenth century French architect and the successor of Viollet-le-Duc, is much better known as a polemicist and a progenitor of brick's obvious twentieth century rival – concrete. Baudot's contribution to the built environment was limited to a precious few projects, and he went on to devote the last two decades of his life extolling the virtues of reinforced concrete as a material.[55] However, it is neither Baudot's writings in general nor his fascination with reinforced concrete which is pertinent here. In tracing the impact that this association had on the *substance* of brick within the context of the twentieth century rise of Modernism in architecture, we need only to focus on the most important work of Baudot's career – The Church of St. Jean de Montmartre in Paris. The church at Montmartre, completed in 1904, is heralded as one of the most "original" and "significant" constructions of the period, and one which was to mark the onset of twentieth century modernism in architecture.[56] Although the project's claim to fame lies in its use of reinforced concrete, the contribution made by brick was equally significant, and this allowed for brick to establish itself in newer ways within the changing collective.

Anatole de Baudot, who had trained under Henri Labrouste and later became a student of the highly influential Viollet-le-Duc, was a strong proponent of the French architectural tradition of Structural Rationalism.[57] Baudot's introduction to architecture came with Labrouste, who "strove for a consistent tectonic expression, one in which the

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[55] For an introduction to Baudot see Marie-Jeanne Dumont, ed., "Anatole De Baudot, 1834-1915." Special issue, *Rassegna* 68 (1996).

[56] Baudot's impact on twentieth century architecture was first recognised by Peter Collins. See Peter Collins, *Concrete: The Vision of a New Architecture* (London: Faber, 1959), 113.

[57] Anatole de Baudot's transition from Labrouste to Viollet-le-Duc is seamless considering it was on Labrouste's recommendation that he went on to study with the "master of structural rationalism" in 1856. See Frampton, *Studies in Tectonic Culture*, 54.

Fig. 6.10. Detail drawing of the Cottancin system of *ciment armé*.
(*Source:* Dumont, "The Fortune of a Pioneer.")

Fig. 6.11. The Church of St. Jean de Montmartre, Paris. Front view and detail of structure.
(*Source: Photographs by author, 2008.*)

Plate 6d. Brick-Baudot

ornamentation would be derived directly from the process of construction."[58] Although stylistically Labrouste could be identified as a part of the Greco-Gothic school just like Viollet-le-Duc can be associated with Gothic Revivalism, it was these structural rationalist notions that bridged the thirteen year gap between them. Labrouste's work, according to Frampton, "amounted to a rationalized and articulated neoclassical architecture that was to serve as a link between the intercolumniated space theorized by the Greco-Gothic intellectuals and the structurally rationalist, Gothic-inspired architecture to be elaborated later by Viollet-le-Duc."[59] Having spent his formative years under the guidance of both these figures, Baudot came to champion the ideas of Structural Rationalism which he then continued to relieve from the burden of a necessary Gothic Revival such as had plagued his second teacher Viollet-le-Duc. Towards the later part of his life Baudot was to claim that Viollet-le-Duc had made "too many compromises with historical styles" to allow a truly contemporary solution to emerge.[60] In order to avoid such a "sin of historicism," Baudot recalled his earlier training with Henri Labrouste and sought to go beyond a mere revivalist attempt, to actually embrace the calling of Structural Rationalism and develop an architectural solution for the modern world. He continued to carry on the unfinished work of his teachers by collaborating with and promoting various new materials, while continuously making his efforts answerable to the Structural Rationalist ideal.[61] Finally, as Marie-Jeanne Dumont claims, "with the church of Saint Jean, Montmartre, Anatole de Baudot had opened a new path to structural rationalism, and had succeeded where his teacher had failed."[62]

By 1894, when the design of the church at Montmartre was started, Baudot had already formed an alliance with engineer Paul Cottancin to engage the Cottancin system of *ciment armé* in his pursuit of a contemporary architectural solution for the modern world. *Ciment armé* was a newly developed method of reinforced concrete construction

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[58] Frampton, *Studies in Tectonic Culture*, 48.

[59] Frampton, *Studies in Tectonic Culture*, 41.

[60] Owing to his growing admiration for the possibilities afforded by the new material *ciment armé*, the start of the 20th century saw Baudot become highly critical of what he considered Viollet-le-Duc's inability to extricate himself from a stylistic revival of Gothic architecture. See Marie-Jeanne Dumont, "The Fortune of a Pioneer," in "Anatole De Baudot, 1834-1915," ed. Marie-Jeanne Dumont, special issue, *Rassegna* 68 (1996): 10.

[61] To counter "public apathy" and "conservatism" which he believed prevented appropriate forms to develop, Baudot launched 'programless competitions' and encouraged experimentation with new materials in his teachings.

[62] Dumont, "The Fortune of a Pioneer," 10.

that allowed two materials – cement and iron – to come together in a coalition and offer new possibilities in tackling problems of tensile stress in architectural forms. This method, which can be better described as reinforced cement construction, involved the use of a thin slab of high cement content where an encased "mesh of small-diameter round rods (on average 4mm), woven like cloth, acted as an homogenous and continuous reinforcement."[63] Although like other contemporary attempts this method of reinforced construction was also reliant on a composite of different materials, its uniqueness lay in the fact that it nevertheless allowed the constituent materials to pursue their individual rational goals in the process of construction. Frampton notes that, "the wire reinforcement and cement infill were considered as acting independently," and this is what allowed the Cottancin system to "avoid the fundamental weakness of all other contemporary reinforced concrete patents."[64] Indeed, it was such sensitivity to the rationalist ideal that would eventually allow *ciment armé* to be heralded as the "philosopher's stone" of Structural Rationalism, which Baudot's teacher Viollet-le-Duc had searched for in vain.

Considering his quest for a contemporary architectural solution based on the Structural Rationalist principles, Baudot's collaboration with *ciment armé* is not surprising. Yet the way he engaged *ciment armé* at the church in Montmartre needs to be considered here against the alternative of *béton armé*. The Hennebique system of *béton armé*, which employed a gravel base to encase a variety of metal reinforcements, was born of an attempt to homogenize the complete fabric of the building by using concrete across all architectural elements. An architectural solution that developed out of this "one stone" analogy would then burden the coalition with the entire gamut of stresses in order to reduce the responsibility of calculation on the human collaborators. Baudot recognized this desire to make concrete subservient to human convenience as a reflection of the growing utilitarian perspective of the modern era, and continued to work with *ciment armé* in order to uphold the ideals of Structural Rationalism.[65] The continued insistence on a Structural Rationalist solution meant that in the construction

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[63] Dumont, "The Fortune of a Pioneer," 8.

[64] Frampton, *Studies in Tectonic Culture*, 55.

[65] Baudot remarked on the difference between *ciment armé* and *béton armé* in his lectures (posthumously published as *L'architecture et le ciment armé*), where he argued that the use of aggregate in *béton armé,* which rendered it impossible to standardise, was intended at relieving the architect of the burden of understanding structural principles. He further stated that the popularity of *béton armé* was solely dependent on the fact that *ciment armé*'s "frail dimensions upset [these architect's] habits of composition." See Collins, *Concrete*, 116.

of the Montmartre church *ciment armé* would not serve any other role than that of handling tensile stress, which was best suited to this alliance of cement and iron. This allowed for a more complex architectural formulation to emerge through a rational inclusion of other materials into the collective.

It is at this juncture that we witness the contributions of brick to this project which has been heralded as a true exemplar of the ideals of Structural Rationalism. In his quest for a new architectural order commensurate with the times, Baudot sought to address the problem of compressive forces left unresolved by *ciment armé* by engaging an old collaborator in this decades long search – brick. Therefore, in the construction of the church at Montmartre, while the thin, light cement shells operated to resolve the tensile forces in the slabs and ribs, the compressive stresses of the walls were left to brick, allowing it to serve its own rational goal. The role played by brick was so crucial that Collins goes so far as to claim that the construction could "more properly be described as reinforced brickwork than reinforced concrete, but which used reinforced cement for vaulting."[66] Indeed, the use of brick made the process extremely labour intensive and this would eventually make it lose out to the more economical Hennebique system (which was to become the hallmark of the Modernist movement in Europe). However, Baudot was adamant about the rational integrity of the architectural solution at Montmartre, and refused to build walls with concrete.[67] He argued that from a Structural Rationalist perspective it would be inauthentic and incorrect to enforce upon *ciment armé* the task of carrying compressive forces of the wall merely to aid human convenience, and that this role was best suited to brick.[68] By allowing each material to achieve its rational potential, the building was a perfect application of Structural Rationalist ideals and showed the way forward for the followers of this "material-oriented" thinking, who in turn saw the new idiom for the modern world as being composed of "reinforced concrete and interlocking brick."[69]

The inclusion of brick, in this significant architectural endeavour from the turn of the century, is of utmost importance to the future status of brick within the newly

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[66] Collins, *Concrete*, 83.

[67] Baudot recommended the Cottancin system as it followed the Rationalist ideal of "unity of structure," and refused to build walls in concrete and infill. See Dumont, "The Fortune of a Pioneer," 10.

[68] Like his teacher Viollet-le-Duc, Baudot "steadfastly refused to reject traditional materials completely," and sought rational means to include the new with the existing. See, Collins, *Concrete*, 114.

[69] This was in spite of other parallel trends in architecture, exploring yet other representations of the modern world. See discussion in Dumont, "The Fortune of a Pioneer," 11.

developing Modernist collective. This is not merely because of the project's association with the influential figure of Anatole de Baudot, but also because of the new direction that it offered to the tradition of Gothic Revival. Throughout the nineteenth century the growing trend for Gothic Revival had already set the stage for the resurgence of brick to the forefront of the architectural collective. The architecture of the Middle Ages was commended for its ability to throw "lofty vaults from slender pillars across a vast intermediate space" and that too with "stones scarcely larger than ordinary bricks."[70] This admiration for mediaeval masonry coupled with the "protofunctionalist principles" of the Gothic Revival had led to the reappearance of exposed brick in the works of important figures like Pugin and Schinkel as early as the second quarter of the century. Building in exposed brick was not only a visible expression of the tectonics of masonry but also provided for an ornamentation which was an "enrichment of the essential construction."[71] However, by the last decade of the century, the rise of several new stylistic trends supported by technological advancements was already spelling the end of this undulating desire for Gothic forms. A continuing association of brick with Gothic Revivalist architecture would have meant that it too would suffer the rejection accorded to Gothic forms. At such a juncture it was necessary for the survival of *Brick* to prove its allegiance to overlapping trends such as Structural Rationalism, which transcended Gothic formulation and continued to survive through other upcoming stylistic trends. The church at Montmartre served as just such a stage for brick to demonstrate its rightful place alongside concrete in the architectural idiom for a new and 'modern' age.[72]

This potential to adapt to the requirements of a modern world, while still respecting the rationalist ideals of Gothic Revivalism, made it easier for brick to enter the modern idiom in places which had already adopted this revivalist trend. Gothic Revivalism, in parallel to an attempt at retracing disciplinary ancestry through the emerging field of archaeology, had also gained popularity through nationalistic and religious associations,

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[70] Augustus W. N. Pugin, *The True Principles of Pointed or Christian Architecture* (London: Academy Editions, 1973), 3.

[71] The role appropriated by brick follows perfectly from the precepts of the movement as laid out by Pugin: "First, that there should be no features about a building which are not necessary for convenience, construction or propriety; second, that all ornament should consist of the enrichment of the essential construction of the building." See, Pugin, *True Principles of Pointed or Christian Architecture*, 1.

[72] Baudot's appropriation of brick was bound to the understanding of modernism by denying "whimsicality of form to encroach on the authority of reason." See Jean-Michel Leniaud, "The Diocesan Architect," in "Anatole De Baudot, 1834-1915," ed. Marie-Jeanne Dumont, special issue, *Rassegna* 68 (1996): 26.

and this had aided its spread to the farthest reaches of the colonised world.[73] Closer to the future home of the IIM, Gothic Revivalism had established itself in India as early as 1847 with the Afghan Memorial Church in Bombay.[74] Over the second half of the century the style gained favour as the preferred style of colonial architecture, and several public buildings were executed in the Gothic mode. Consequently, Volwahsen notes, "it was Bombay and not London that developed in the second half of the 19th century into the centre of the Victorian Gothic Revival style."[75] It was only a matter of time before the trends of Gothic Revivalism back home in Europe led to examples on the subcontinent that aided the resurgence of brick to the forefront of the collective. As Modernism took hold with the advent of the twentieth century, the experiences of Gothic Revivalism subsequently gave way to Rationalist arguments, and an Indian Modernism emerged from the shadows of this brick-oriented Gothic past. Having already established its place alongside concrete in the modern collective through its association with Baudot, brick was now ready to fulfil its new role in a new world.

Brick-Shoosmith

The next association traced here recalls a collaboration with architect Arthur Shoosmith which marked the arrival of Modernism in India; it is indeed a function of this alliance that brick was to reserve an undeniable place in the future of Modernism on the subcontinent. Arthur Gordon Shoosmith had arrived in India in 1920 as a representative of Sir Edwin Lutyens for the Capital project at New Delhi.[76] Of the work he did at the Viceroy House over the next decade, Henry Medd commended "his meticulous insistence on the highest standards of workmanship in his interpretation of the drawings

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[73] While Gothic revival was often supported by a theory of Rationalism, this was not the only reason for its popularity. Several exponents of Gothic Revival such as Pugin urged its adoption on grounds of Catholicism and yet others offered a Nationalistic rationale. Collins enumerates 5 principal ideas that supported the Gothic Revival: romanticism, nationalism, rationalism, ecclesiology and social reform. For a detailed explanation of these varied and conflicting ideas that allowed for a Gothic Revival right across the colonised world, see Collins discussion on "Gothic Nationalism," in Collins, *Concrete*, 100.

[74] The Afghan Memorial Church designed by Henry Conybeare was the first church in India based on the guidelines of the Cambridge Camden Society. See Andreas Volwahsen, *Splendours of Imperial India: British Architecture in the 18th and 19th Centuries* (New Delhi: Timeless Books, 2004), 166.

[75] Volwahsen, *Splendours of Imperial India*, 129.

[76] Arthur Shoosmith's appointment to India came as a result of a recommendation from the Royal Institute of British Architects after winning the prestigious Soane Medallion in 1919. For a brief biographical sketch see, Gavin Stamp, "Shoosmith, Arthur Gordon (1888–1974)," in *Oxford Dictionary of National Biography: From the Earliest Times to the Year 2000*, ed. H. C. G. Matthew and B. H. Harrison (Oxford: Oxford University Press, 2004).

sent from London."[77] Shoosmith continued with this interpretational task for a better part of the 1920s until his first design project came by in 1928, when he was recommended by Lutyens to design the military church in the new cantonment west of New Delhi.[78] At the resultant Garrison Church of St. Martin, built between 1928 and 1930, Shoosmith collaborated with brick to create what has been recognized as one of the most remarkable churches of the twentieth century and which Irving heralds as a "timeless monument of brick."[79] The project was of utmost significance to the changing architectural collective on the subcontinent and, even though this "monolith of 3½ million bricks looming straight out of the arid Indian plains"[80] is one of only two projects ever designed and executed by Shoosmith[81], it served as a "cenotaph" that signalled the arrival of Modernism in India. Shoosmith's first, yet most significant, encounter with brick was by no means a radical coincidence and can be seen as following from a series of conditions that had been developing within the architectural collectives of the subcontinent over the past several decades.

With the advent of the twentieth century the architectural collectives in the subcontinent were divided over the future of architecture in India. Philip Davies identifies the two opposing schools as "the aesthetic imperialists and the native revivalist."[82] The "aesthetic imperialists," inspired by the works of the Anglo-French Augustus W.N. Pugin, sought for a nationalist architectural expression of the British Empire based on the Gothic Revivalist trend back in Europe. In opposition to such an unabashed import of ideas the "native revivalist" sought to revive elements from the architectural heritage of the subcontinent to generate a more responsive solution and developed the Indo-Saracenic school.[83] By the beginning of the second decade of the twentieth century the

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[77] Henry Medd, quoted in Robert Grant Irving, *Indian Summer: Lutyens, Baker, and Imperial Delhi* (New Haven: Yale University Press, 1981), 334

[78] Arthur Shoosmith had come second in the competitions held in 1927 for both the Anglican and the Roman Catholic churches to be constructed in Delhi, losing out to Henry Medd. Therefore, Lutyens offered him a chance by recommending him for the design of the new garrison. Lutyens contributions to this significant project, as we will see later, did not end there. See Stamp, "Shoosmith, Arthur Gordon."

[79] Irving, *Indian Summer*, 334.

[80] Philip Davies, *Splendours of the Raj: British Architecture in India, 1660 to 1947* (London: Murray, 1985), 241.

[81] The only other project designed and executed by Shoosmith, The Lady Hardinge Serai built in 1930-31, is also situated in India.

[82] Davies, *Splendours of the Raj*, 192-93.

[83] The term Indo-Saracenic refers to the Mughal models of Islamic architecture in India, which are Persian in lineage rather than Arabic. See discussion in G. H. R. Tillotson, *The Tradition of Indian*
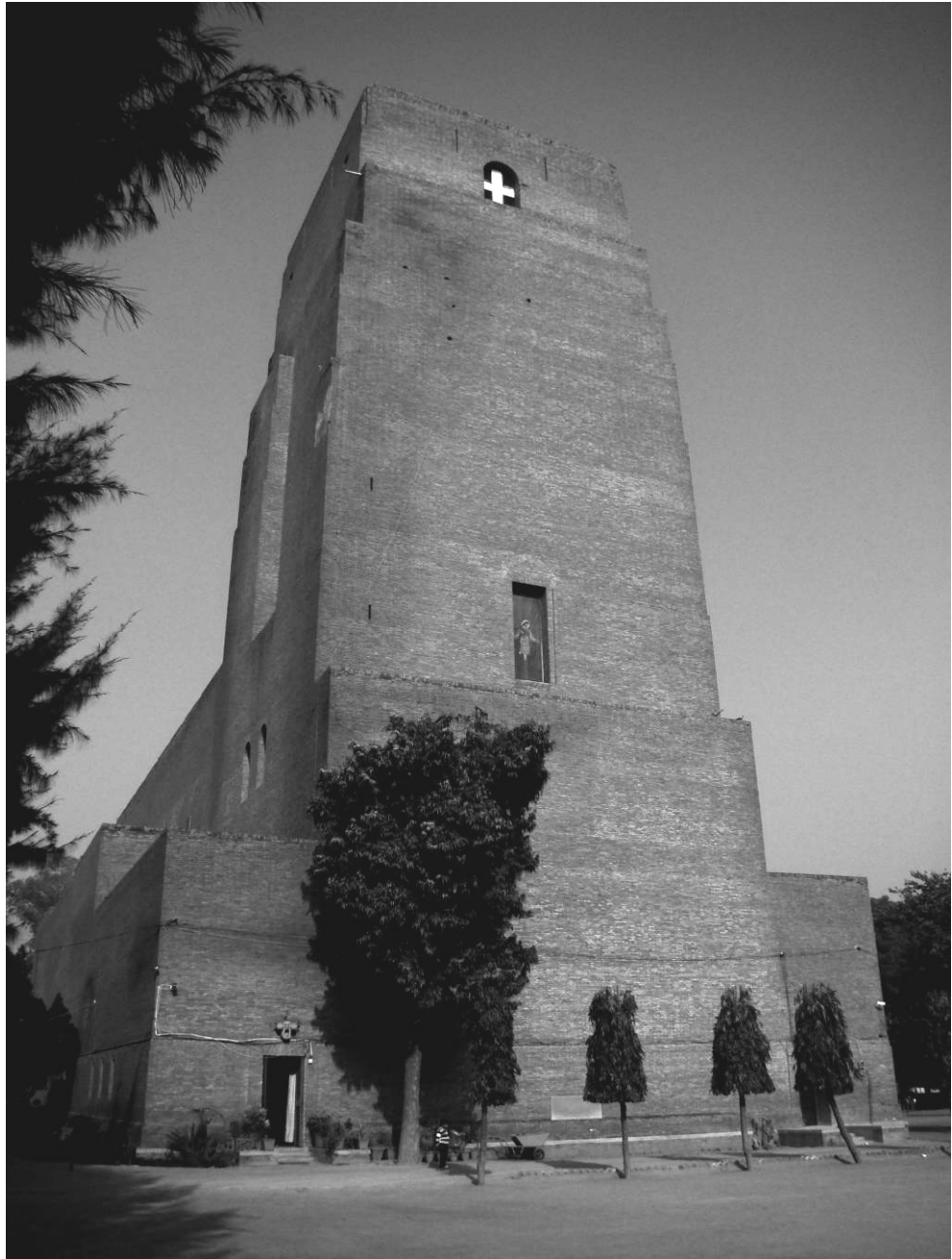
Fig. 6.12. The Garrison Church of St. Martin, Delhi.
(*Source: Photograph by author, 2009.*)
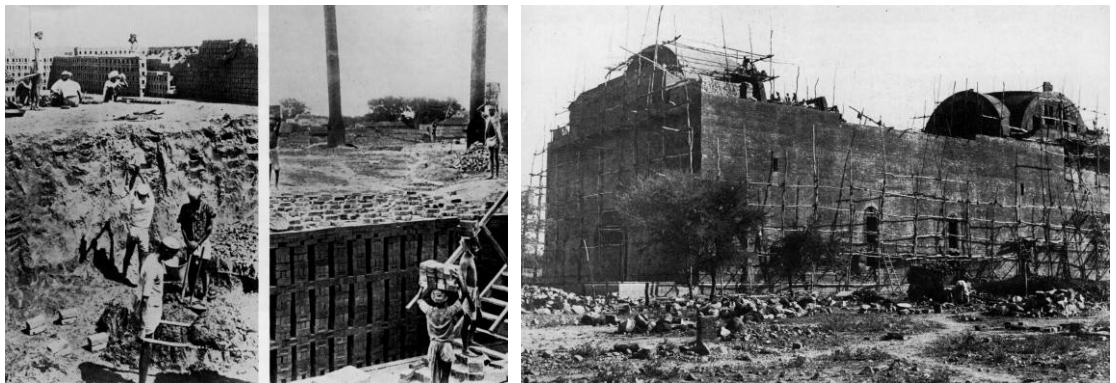
Fig. 6.13. Construction images, The Garrison Church of St. Martin, Delhi.
(*Source:* Irving*, Indian Summer*, 335-36.)

Plate 6e. Brick-Shoosmith

two schools of thought had strong followings and had reached an impasse in succeeding each other as the preferred solution for the future of architecture in the subcontinent. It is at this juncture that the plans for a new capital at Delhi were announced at the Durbar of 1911.[84] With such a defining and prestigious project at hand, the two schools continued to debate about the appropriate expression for this new seat of the British government. The incommensurable arguments of either side reached an end with the arrival of Sir Edwin Lutyens on the scene. Sir Edwin Landseer Lutyens, a self taught architect and a keen exponent of the English vernacular, had been given the chance to script the most fabulous project in the recent history of the Empire. Although in his own solution for the capital at New Delhi Lutyens chose to resort to a "Palladian Classicism," it was his interest in the Arts and Crafts school that helped debunk the claims of the two revivalist factions and set the stage for Modernism in India. [85]

Sir Edwin Lutyens had completed his early training under Phillip Webb, who worked in partnership with William Morris and was a great exponent of the Arts and Crafts School. As a result, when Lutyens was faced with the task of rethinking an architectural solution for India it was the ideals of this movement, with its focus on context and traditional materials, that formed the basis of his vision. The ideals of Arts and Crafts were not new to the subcontinent and figures like John Lockwood Kipling had spent a better part of the last three decades of the nineteenth century promoting it through the Bombay School of Art.[86] However, these arguments for an architectural solution, which concerned itself with the existing context and materiality more than the symbolism of historical forms, was lost in the revivalist atmosphere of the late nineteenth century. Lutyens's rejection of both the prevalent revivalist trends as possible solutions for the momentous project at New Delhi opened a window for the recognition of some of these arguments.

Architecture: Continuity, Controversy, and Change since 1850 (New Haven: Yale University Press, 1989), 46.

[84] In his speech at the Durbar of 1911 the King announced, "We have decided upon the transfer of the seat of the Government of India from Calcutta to the ancient Capital of Delhi…" In the same breath he also defined the plans for a new Presidency of Bengal. The announcement of the new capital foreshadowed the reasons for this shift out of Calcutta, but the conditions in Bengal were to significantly affect the future of architecture in the subcontinent, as we will discuss further in the context of the *swadeshi* movement. For an excerpt of the speech see Irving, *Indian*, 11.

[85] Lutyens's shift from a picturesque aesthetic of the English vernacular to a Classical vocabulary in his projects for New Delhi has been the topic of much discussion. For instance see, Christopher Hussey, *The Life of Sir Edwin Lutyens* (Woodbridge: Antique Collectors' Club, 1984).

[86] Kipling taught at the Bombay School of Art from 1865 to 1893 and was an avid promoter of William Morris's Arts and Crafts tradition.

In his search for an appropriate architectural expression for the subcontinent Lutyens continued to argue the importance of materiality. In fact, in a letter addressed to Arthur Shoosmith in 1927, Lutyens wrote,

> *"A building of one material, is for some strange reason much more noble than one of many. It may be the accent it gives of sincerity, the persistence of texture and definite unity."*[87]

However, rooting the new architecture in a concern for materiality was not enough. This new architectural expression, which was to serve as a model for the future of architecture on the subcontinent, also needed to transcend the impasse created by the alternating use of Western and Eastern antecedents. To transcend the existing revivalist framework of the two schools, Lutyens suggested not only a synthesis of East and West but also the past and the present. Lutyens argued that any reference to the East or West needed to be "discreetly subsumed within the controlling geometric system" and that this could only be achieved by dropping all sophistication of iconography and striving for the "essentials."[88]   For the assimilation of "stylistic quotations from historical sources," he recommended that "they have to be so well digested that there is nothing but essence left."[89] As a result, he suggested an *austere* and *abstract* formal expression based on "simple geometrical shapes" that would espouse the "monumental quality found in primitive simplicity." [90] Even though Lutyens's designs at New Delhi might not serve as obvious markers of these ideals of materiality and abstraction, it was precisely these ideas that shaped the Garrison Church of St. Martin, which Davies recognises as "the ultimate expression of that form of 20th century Anglo-Indian architecture promulgated by Lutyens and developed by his disciples."[91]

For the Garrison Church of St. Martin, Shoosmith found in brick a perfect accomplice for realising the ideals set out by his mentor. Having already established itself at both the revivalist camps, brick served as a neutral representative which could allow for both the opposing schools to find a common ground in the new aesthetic. In addition to this, the hard edged geometry and the 'elemental' form of brick offered the perfect

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[87] Letter, Edwin Lutyens to Arthur Shoosmith, February 13, 1927, quoted in, Irving, *Indian Summer*, 334.

[88] Irving, *Indian Summer*, 170.

[89] Irving, *Indian Summer*, 170.

[90] Robert Grant Irving, *Indian Summer: Lutyens, Baker, and Imperial Delhi.* (New Haven: Yale University Press, 1981), 170.

[91] Davies, *Splendours of the Raj*, 241.

embodiment of the austerity and abstraction that Lutyens had recommended. That the ideals which Lutyens had laid out could only be achieved through collaboration with brick was acknowledged by Lutyens himself when in a letter to Shoosmith he exclaimed "My dear Shoo, Bricks!"[92] Heeding his mentor's recommendation to take inspiration from the "Roman wall,"[93] Shoosmith helped script an "immutable and forbidding"[94] essay which would firmly establish brick as the champion of this new architectural idiom. Indeed, the simple geometric forms of the St. Martin's church stood in contrast to the highly ornamented character imposed by the stone detailing of the Indo-Saracenic and the Neo-Gothic examples, and further allowed brick architecture to shine through as an embodiment of "the monumental quality found in primitive simplicity" that Lutyens held as the core of Modernism. Therefore, it was with this momentous collaboration of Shoosmith and brick that the era of revivalist trends, which Rationalists such as Fergusson and Kipling had been fighting against for over half a century, finally came to an end and Modernism grabbed a foothold in India.[95]

The Garrison Church of St. Martin, "majestic in its bold modelling, directness, simplicity, and severity,"[96] had indeed set the course for the future of architecture on the Indian subcontinent. However, the success of this project as the harbinger of a new architectural idiom must not be accorded merely to the ideological parameters put forward by Lutyens. Its growing appeal within the architectural collectives of the subcontinent as a possible model for the future also resulted from its ability to simultaneously incorporate several conflicting ideas that had kept them divided until this point. By incorporating aspects of the Arts and Crafts movements and developing a focus on materiality and context, the project had already claimed its allegiance to the Rationalist arguments of Fergusson and Kipling. However this accord did not come at the cost of the Neo-Gothic ideals of 'massiveness' and 'monumentality' which had been set out as early as 1846 in the *Ecclesiologist*.[97] In fact, by adopting a "bare-brick"

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[92] Letter, Edwin Lutyens to Arthur Shoosmith, February 28, 1928, quoted in, Hussey, *Life of Sir Edwin Lutyens*, 493.

[93] Letter, Lutyens to Arthur Shoosmith, February 13, 1927, quoted in, Irving, *Indian Summer*, 334.

[94] Davies, *Splendours of the Raj*, 241.

[95] For a short overview of these trends that led to the end of the Classical tradition in India, see Gavin Stamp, "India: End of the Classical Tradition – Role of the Anglo-Indian School in the Construction of Delhi," *Lotus International* 34 (1982).

[96] Irving, *Indian* Summer, 334.

[97] The *Ecclesiologist* in 1846 outlined the Camden Society's recommendations for the Speluncar style for British architecture in India, alluding to these ideas of 'massiveness' and 'monumentality'. See, Davies,

facade the project had also managed to achieve a "brutal" quality in its expression which was a true reflection of the visions of the Cambridge Camden Society.[98] Indeed, it was the very engagement of brick that further allowed the project to gain the support of the Indo-Saracenic collective by acknowledging their Persian antecedents.[99] And lastly, in spite of these tenuous links to the various revivalist schools, the Garrison Church was without doubt 'modern' in its abstract and primitive forms. Here Shoosmith, as Gavin Stamp notes, "succeeded not only in reconciling East and West, but giving it architectural qualities which blurred the distinction between past and present."[100] Therefore, by incorporating the ideals of the various opposing factions in an "edifice which defied labels of modern and traditional, Eastern or Western"[101] the project had offered a model that would ensure a change in the architecture of Colonial India, and the 3½ million bricks that constituted its timeless form served as an embodiment of this lesson.

By collaborating with Shoosmith on this decisive project, *Brick* had ensured a place of high regard within the changing architectural collective which would allow it to persist through till the post-colonial era. Even though Shoosmith left India shortly after the Garrison church was constructed (in 1931) other members of the Rationalist network continued to engage with brick in order to promote this new architectural idiom. Of these, the most influential were the figures of Walter Sykes George and Claude Batley, who collaborated with brick on several examples over the coming decades to reinforce its changing status. But more significantly it was the contributions of both these figures towards the newly developing field of architectural education that would ensure the continuing presence of this idiom even in post colonial times. While Walter George helped set up and taught at the Delhi School of Planning and Architecture, Claude Batley spent the majority of his days teaching at the J.J. School of Art in Bombay.[102]

Splendours of the Raj, 153. As mentioned before the Cathedral of St. Cecile in Albi, which Kahn visited in 1958 and has been argued as affecting his designs for the IIM, was also the reference for these stylistic trends in British Church Architecture. See Thomas, *Albi Cathedral and British Church Architecture* (London: The Ecclesiological Society, 2002).

[98] The Camden Society as Collins notes "preferred a certain brutal ugliness to the more traditional notions of beauty." See Peter Collins, *Changing Ideals in Modern Architecture, 1750-1950* (Montreal: McGill-Queen's University Press, 1998), 109.

[99] Irving, *Indian Summer*, 337.

[100] Stamp, "Shoosmith, Arthur Gordon."

[101] Irving, *Indian Summer*, 334.

[102] The impact of Walter George and Claude Batley on the architectural education in India has been acknowledged by most sources cited before. However, for a more focused argument of the contributions

They often acknowledged the high regard in which they held the lineage of Shoosmith and Lutyens, but in their teachings they offered this new architectural idiom as a convergence of seemingly disparate ideas which had seen many different allegiances before being crystallised in the works of Lutyens and Shoosmith. In their respective arguments of a "forward looking" architecture and a "Renaissance of Indian Architecture" both George and Batley offered this 'modern' brick architecture as a distillation of the rationalism of the Neo-Gothic, the materiality of the Arts and Crafts and the contextual monumentality of the Indo-Saracenic.[103] Catering to a nation in the process of birth, these ideas were crucial in shaping the architectural collective that would soon take over the reigns from the colonial past. Therefore, with the arrival of the crucial decade of the 1940s, when India gained its independence from colonial rule, spreading through this architectural education system that was still in its nascent stages, brick had ensured its place within the architectural collectives of the new nation.

Brick-Baker

The final network of associations traced here can be best invoked through the relationship that brick has come to share with architect Laurie Baker within the context of the post-colonial architecture of India. Laurie Baker, though yet another architect of British descent, had an entirely different encounter with India. He had spent most of his early career tending to war victims in China and Burma, and it was eight years after he had completed his architectural training that he began exercising his skills as an architect, that too for constructing medical centres in remote areas.[104] It took another eighteen years before he actually committed himself to developing an architectural practice, which by now was deeply indebted to the Indian context and was far removed from his training in Birmingham. At first glance Laurie Baker's brick architecture, which often limits itself to rural settings, can be easily dismissed as a pragmatic solution born of mere economic concerns. Yet, the fact that this association developed out of deeper cultural processes becomes palpable when it is posited as an ideological

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made by these figures, see Rahul J. Mehrotra, "Responses to a Tradition: A Study of Architectural Attitudes During the British Intervention in India (1857-1947)," (UG diss.: Centre for Environmental Planning and Technology, 1985).

[103] See Claude Batley, *The Design Development of Indian Architecture* (London: J. Tiranti & Co., 1934). Also see Claude Batley, *Architecture*, Oxford Pamphlets on Indian Affairs 35 (London: Oxford University Press, 1946).

[104] For an introduction to Laurie Baker's life and architectural projects see Gautam Bhatia, *Laurie Baker: Life, Works & Writings* (New Delhi: Penguin Books, 1994).

Fig. 6.14. Architecture of Laurie Baker; (L) Loyola Hostel, (C) Baker at work, (R) Namboodiri House.
(*Source:* www.lauriebaker.net*, Photographs by Seema K.K.*)

Fig. 6.15. The Hamlet. Baker at home with brick.
(*Source:* www.lauriebaker.net*, Photographs by Seema K.K.*)

Fig. 6.16. Gandhi Samarak Sanghralaya, Ahmedabad, India, architect Charles Correa.
(*Source: Photograph by author, Ahmedabad, 2007.*)

Plate 6f. Brick-Baker

relationship of "appropriate technology."[105] As Bhatia notes, Baker's brick architecture is representative of a kind of simplicity that lies at the cross roads of "technology, tradition and lifestyle."[106] It is such a culturally rooted basis of this relationship that has eventually allowed it to be regarded as a hallmark of an ideological stance on economic and social growth – quintessential to the developing world. However, to understand the general status of brick within the post-independence context of India, that this relationship has come to represent, we need to probe deeper into its origins. Baker himself accords the beginnings of this ideological relationship to a chance encounter with Mahatma Gandhi in Bombay that came before his foray into architectural practice.[107] Considering this event, the alliance of Baker and brick can be at least understood as an outcome of the ideological threads of Gandhian economics. Therefore, it is in a discussion of Gandhian philosophy, and its precursor in the *Swadeshi* movement, that we can find the roots of the renewed status that brick was to command in the Indian socio-political context by the 1960s.

Gandhian economics, which is most easily understood today as a model of rural self-help, has a longer history to acknowledge in the arguments of *Swadeshi* that formed an integral part of the Indian nationalist movement. *Swadeshi*, as simply put by Sarkar, was a sentiment "that indigenous goods should be preferred by consumers even if they were more expensive than and inferior in quality to their imported substitutes, and that it was the patriotic duty of men with capital to pioneer such industries even though profits initially might be minimal or nonexistent."[108] This ideology, which took on a strong nation wide appeal after the 1905 partition of Bengal, had been developing through the events of the fourth quarter of the nineteenth century. During this period, on one hand, the revivalist desire to return to the Hindu caste traditions had prompted a sporadic resurgence of home (literally *swadeshi*) crafts. While on the other, since Bholanath Chandra's 1873 appeal against the anti-India tariff policy (which privileged Manchester goods), the decline of traditional handicrafts was increasingly being recognized in

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[105] The idea of "appropriate technology" is often used to classify Laurie Baker's architectural endeavours and is also used by Campbell to reflect the general attitude towards this trend of engaging brick. See Campbell, *Brick: A World History*, 296. In Campbell's account, as in most other such appropriations, the ethical arguments for such an engagement with materials are recognised, but the deeper ideological issues are left out.

[106] Gautam Bhatia is Laurie Baker's biographer. See Bhatia, *Laurie Baker*.

[107] Bhatia, *Laurie Baker*, 15.

[108] Sumit Sarkar, *The Swadeshi Movement in Bengal, 1903-1908* (New Delhi: People's Pub. House, 1973), 92.

economic circles as a result of deliberate British policy.[109] With the decision on the division of the presidency of Bengal, which came about on 16 October 1905, the discontent with the imperialist policies of 'divide and rule' brought these two ideas together and launched the revival of *swadeshi* crafts into a full fledged nationalist movement. The nationalist upsurge brought about by the partition spawned the birth of many different ideological groups from the "moderates," who supported British presence, to the "extremists," who argued for the overthrow of the British Empire.[110] However, it was the "Tagore group," which differentiated itself from the others by arguing for "self-help and autonomous development" in spite of the British presence, that had the strongest impact on the nationalist aspiration.[111] This political stance for a resistance to the imperialist agenda through an economic emancipation used the previous discontent with British economic policies to argue the ills of industrialized goods and the West in general, and offered Swadeshi as a "panacea for all the ills of India."[112] Therefore, by the time of Gandhi's arrival in India, in the middle of the second decade, the *Swadeshi* ideology had already become synonymous with a nationalist desire that would only resolve itself in India's independence.

It must be clarified here that, although seemingly vested in economic concerns, the *Swadeshi* ideology was by no means limited in scope to the economic or even the political arena. We are already aware that the "Tagore group" had a substantial role to play in allowing this idea to become the entire basis of the nationalist struggle. This extreme politicisation of a common disapproval of imperialist economic policies was only possible due to the past efforts of the Tagore family in spreading these notions through a revolution in art and literature. The Hindu Mela of 1867, which allowed the revivalist trends of the *swadeshi* crafts to gain currency within the art circles, was made possible by the efforts of Dwijendranath and Gajnendranath Tagore. This Hindu revivalist trend was itself a result of the archaeological finds that had begun to acknowledge India as the very "cradle of civilisation."[113] As these archaeological

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[109] See discussion in Sarkar, *The Swadeshi Movement in Bengal*, 95-96.

[110] Prithvischandra Ray defined these ideological groups as early as 1907. See Prithvischandra Ray, "The 'Moderates' and the 'Extremists'," *Indian World* (Mar-Apr, 1907)

[111] For a discussion of how the Tagore group was placed within the existing ideological spectrum of the Moderates and the Extremists, see Sarkar, *Swadeshi Movement in Bengal*, 33.

[112] Sarkar, *Swadeshi Movement in Bengal*, 98.

[113] See argument in Tapati Guha-Thakurta, *Monuments, Objects, Histories: Institutions of Art in Colonial and Postcolonial India* (Ranikhet, India: Permanent Black, 2007).

theories got intermixed with racial concerns India's Aryan past seemingly offered Europe "its own distant lineage and prehistory."[114] Consequently the Hindu traditions were posited as a function of the supremacy of the Aryans, and Indians sought an inversion of the colonizer's claim of superiority in art and architecture.[115] We can witness the effects of this reversal in the literary works of Rabindranath Tagore where he came to challenge the European art traditions as early as 1880s in his call for *Atmasakti*. Over the next decade and a half, until the 1905 partition, Rabindranath's poetic expression and his growing influence on education had made the idea of the superiority of the Orient over European civilisation commonplace.[116] The belief in the authority of the Indian past and the repudiation of the Western model that this art tradition brought with it, was further advanced through the works of Abanindranath Tagore and Ananda Coomaraswamy and this allowed the *Swadeshi* movement to spread through the very fibre of the Indian nationalist desire.[117] Therefore, as Coomaraswamy later noted, *Swadeshi* should also be recognised as "a religious and artistic ideal" aimed at a "regeneration of India through art and not by economics and politics alone."[118]

Within such an environment where the notion of *Swadeshi* had spread throughout the economic and political as well as an artistic core, many indigenously produced goods were gaining preference. With the advent of the First World War and a corresponding decline in British imports, locally produced objects could finally claim to have established a firm presence within the Indian context. However, this resurgence of the home-industry was still infused with the local populace's desire for a refinement of the produced goods, and the Western model of mechanisation had not been entirely obliterated.[119] At such a juncture Gandhi's return to India, when he established his seat

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[114] Guha-Thakurta, *Monuments, Objects, Histories*, 144.

[115] See arguments on publication of *Aryajatir Shilpachaturi* by Shyamacharan Sriman in 1874 and its impact in arguing for the Aryan supremacy of Indian art forms over the European model, in Guha-Thakurta, *Monuments, Objects, Histories*, 140-171.

[116] For an introduction to the writings of Rabindranath Tagore and its impact on the social climate, see Tapati Dasgupta, *Social Thought of Rabindranath Tagore: A Historical Analysis* (New Delhi: Abhinav Publications, 1993).

[117] See Partha Mitter, *Art and Nationalism in Colonial India, 1850-1922: Occidental Orientations* (Cambridge [England] ; New York, NY, USA: Cambridge University Press, 1994). Also see Partha Mitter, "Reflections on Modern Art and National Identity in Colonial India: An Interview," in *Cosmopolitan Modernisms*, ed. Kobena Mercer and Institute of International Visual Arts. (Cambridge, MA: Institute of International Visual Arts MIT Press, 2005).

[118] Ananda Kentish Coomaraswamy, *Art and Swadeshi* (Madras: Ganesh Press, 1911).

[119] See Tagore's comments on the idea of mechanisation as "the Nation of the West driving its tentacles of machinery deep down into the soil," in Rabindranath Tagore, *Nationalism* (London: Macmillan, 1917). He further notes, "This political civilisation is scientific, not human."

at Ahmedabad in 1915, gave a strategic boost to the *Swadeshi* impulse. In trying to fight the caste prejudice Gandhi helped to reverse certain stereotypes when he launched his crusade of the *charkha* (spinning wheel).[120] Gandhi's espousal of the *charkha* did much to revive the anthropometric ties between humans and objects that the Modern Western impulse of commoditisation had come to destroy in recent years. Consequently, we can witness a complete reversal in the desire of the Indian populace, which shifted from the smoothness of silk to the coarseness of *khadi,* imbuing the notion of a "lack of sophistication" with an almost spiritual quality.[121] Within such a context of a spiritual connection with human patrons several hand made goods, which had been previously spurned for their crudeness, regained a place of virtue within the cultural context. It would not, then, be entirely incorrect to borrow C.A Bayly's observations regarding *khadi* and claim that the Indian hand-made brick too "seemed to be able to capture and retain the spirit of the land itself" and thereby came to rise to a coveted spot within the Indian cultural collective.[122]

In addition to the valued status that a spiritual interpretation of the *Swadeshi* ideology brought to the brick, other aspects of Gandhian economics that were subsequently developed also worked towards reinforcing this privileged position. It is generally acknowledged that Gandhi never had a formal economic strategy and enlisted existing beliefs and symbols towards the central issue of fighting the "curse" of mechanised industrialisation based on the Western model. This resistance to mechanisation was not a novel concern, and Gandhi's arguments for the "evil" nature of modern civilisation divulge a Ruskinian fear of the machine.[123] The *Swadeshi* ideology employed by Gandhi towards this end already contained within it the elements of a belief in the superiority of ancient Indian civilization over the Western model. The discovery of the gems of Harappan civilisation in 1921 further endorsed this notion and the subsequent turn in Gandhian economics towards a decentralised village economy conjured a utopia for independent India not very different from the heydays of Harappa and Mohen-jo-

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[120] See argument in C.A. Bayly, "The Origins of Swadeshi (Home Industry): Cloth and Indian Society, 1700-1930," in *The Social Life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (Cambridge UK: Cambridge University Press, 1986).

[121] Bayly, "The Origins of Swadeshi."

[122] Bayly, "The Origins of Swadeshi," 289.

[123] Gandhi had translated John Ruskin's tract on political economy, *Unto This Last*, in 1908 as *Sarvodaya* (the welfare of all). The term later came to serve as the ideal of his own political philosophy. See Joan Valerie Bondurant, *Conquest of Violence: The Gandhian Philosophy of Conflict* (Princeton, NJ: Princeton University Press, 1958), 156.

Daro.[124] The economic model based on village industry called for self-sustenance of a relatively smaller number of humans who would be involved in a process of mutual growth invested in their "immediate surroundings to the exclusion of the more remote."[125] Closer to the topic of architecture, this translated into a need of only engaging materials present within a five kilometre radius and which were to be employed without the use of heavy machinery to process them. Within such a format for development, although Gandhi never claimed it out-right, brick would come to serve as the obvious proponent of an architecture of Gandhian India, integrating itself into a process of mutual growth much like its Harappan days.

Gandhi's death soon after independence, in 1948, meant that Gandhian economics would not serve as the standard model for an independent India. India's first Prime Minister Jawaharlal Nehru firmly believed in a course of centralised and industrialised development for the new nation and there is no doubt that free India was Nehru's playground. In spite of this, staunch followers of Gandhian economics like J.C. Kumarappa continued to spread the ideas throughout the decade of the 1950s and within certain sections of Indian society the reverence for Gandhi and his teachings were unfaltering.[126] That these limited efforts had any considerable impact on the spread of a Gandhian model on architecture is doubtful. Still, nearer to Gandhi's seat in Ahmedabad, these ideas on architecture were teased with, at least symbolically, in the 1958 commission of the Gandhi Samarak Sangrahalaya that was designed by Charles Correa.[127] It was almost a decade and a half after Gandhi's death, and a sustained resistance to Nehru's model of industrialization, that these ideas would experience a partial return with the decline of the Nehruvian era. It was in such a scenario that an alliance was forged between brick and Laurie Baker in 1963, months before Nehru's death, to allow for a revival of the Gandhian ideas. Baker's practice, which was established in Kerala, was placed at the geographical extreme from Nehru's seat in Delhi and accordingly stood in diametric opposition to the Nehruvian model of

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[124] For an introduction to Gandhian economics see Shriman Narayan, *Relevance of Gandhian Economics* (Ahmedabad: Navajivan Publishing House, 1970). The continuing relevance of the Harappan traditions in twentieth century context of India and the basis of the arguments for a village economy are stated in Chakrabarti, *Indus Civilization Sites in India*.

[125] Mohandas K. Gandhi, *The Selected Works of Mahatma Gandhi*, 5 vols., vol. 5 (Ahmedabad: Navajivan Publishing House, 1968), 288.

[126] The second half of the 1950s saw a revival in publications regarding Gandhian economics which came out of the Navajivan Publishing House in Ahmedabad.

[127] For a description of the project and arguments regarding its basis in Gandhian ideas, see Sherban Cantacuzino, *Charles Correa*, Architects of the Third World (Singapore: Concept Media, 1984), 11,16.

mechanisation by promoting hand-made brick. Therefore, this practice which became the centre for brick's resurgence in the architectural discourse of India by informing the developments in 'appropriate' and 'responsive' architecture, more specifically stands as an example of the alternate place that *Brick* was carving out for itself in the socio-political context of the 1960s, moments before its arrival at IIM.
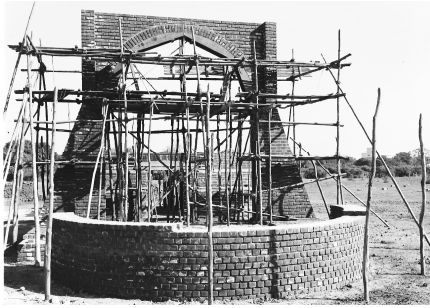
Returning to the site of the encounter in Ahmedabad, India, it is worth noting that when the IIM project was initiated in the early 1960s neither Kahn nor brick were likely to play a considerable role in its production. The coming together of both protagonists, and indeed the very inception of the IIM project, was the result of a series of events that were prompted by the post-war collaborations between the new post-colonial nation of India and the United States of America. On one hand, the rapid retreat of the colonial powers in the wake of the world war had led to the generation of new post-colonial nations. While, on the other hand, the growth of America as a new world superpower meant that it had considerable interest in the development of these new nations as socio-political entities.[1] India, as one of the largest of these new world political players and a potential representative of the "free world," attracted much support from America in the crucial years of early development, and this was to inextricably tie the academic institutions of the two countries together in a complex web of international collaborations. As a result of these world events, and an increasingly complex socio-political scenario developing in the city of Ahmedabad itself, the architectural project for a small management school on the west banks of the Sabarmati River became the centre of an international architectural alliance. Consequently, Kahn and then brick found themselves included into this network of connections, coming together in a manner that was destined to change the place of both in world architecture forever.

The Birth of the Architectural Project

In the decade following the enactment of the constitution (on the 26th of January 1950) the Central Government of India was working intensely towards building an infrastructure for the emerging economy. With its espousal of democratic ideals the new

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[1] This relationship is equally evident in terms of architecture, where the leaders of the Modern movement found in the newly instated post-colonial nations the perfect playground for their globalising dreams and in their new base of America the immense political credibility to achieve this.

nation had already managed to attract tremendous support from the United States, and American academic institutions were extremely active in facilitating this endeavour for infrastructure development.[2] One such institution that helped foster these ties between the two countries was the Ford Foundation. Accordingly the Ford Foundation set up its first international field office at New Delhi in 1952, soon after the constitution came into effect.[3] In the years that followed several research studies were conducted under the sponsorship of the foundation to assess the status of industry and education in the new nation.[4] As a part of this initiative, in 1959 the Ford Foundation commissioned a study report on the state of managerial competence in India to be conducted by George Robbins of the University of California (UCLA). George W. Robbins, the then Associate Dean of the School of Business Administration at UCLA, prepared a report which outlined the existing conditions and put forward a proposal for the establishment of two new schools of management. This proposal was further endorsed by the recommendation for setting up of "formal management education institutions" put forward by a team of professionals headed by Minoo Rustomji over the next year, and the idea of the Indian Institute of Management was born.[5]

In accordance with the recommendations laid out in Robbin's Ford Foundation Report the first campus for the Indian Institute of Management was allocated for Calcutta, to be eventually set up in November 1961. The development of this campus followed the pattern of continuing academic collaborations between the two countries and grew out

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[2] The proposition that the academic support received from America was indeed vested in political interests is available from various sources. However, in the particular case of IIM this is directly evident from the statement of the Faculty Committee of Harvard University which was responsible for setting up the IIM Ahmedabad. Making a comparison between India as the world's largest democracy and China as the world's largest communist country the Faculty Committee claimed that "If we accept the proposition that the Free World cannot afford to have India fail under a democratic system [...] it is important that the institutions of the Free World [...] examine carefully their opportunities to help Indian economic growth. [...] for we and the Indians are in effect today each other's keeper." See "A Base in Cambridge – An Institute in India," *Harvard Today* (Spring 1963): 30.

[3] For a general introduction to Ford foundation's work in India see Eugene S. Staples, *Forty Years: A Learning Curve: The Ford Foundation Programs in India 1952-1992* (New Delhi: The Ford Foundation, 1992).

[4] The impact of the Ford Foundation on the development of educational institutions in India during the early years of independence is a research topic that requires much attention. Yet, for an introduction, see Jayanth K. Krishnan, "Professor Kingsfield Goes to Delhi: American Academics, the Ford Foundation and the Development of Legal Education in India," *American Journal of Legal History* 46 (2004).

[5] In the year between Robbin's recommendation and the setting up of the institution a team of professionals under the guidance of Minoo Rustomji, who was the finance director at TELCO, had continued to research the management practices of Europe, U.K. and U.S.A. For further details regarding the decision process that led to the birth of the management schools in India, see S.K. Bhattacharyya, "The Early Years of Institutional Development," in *Institution Building: The IIMA Experience*, ed. Ravi Matthai Centre for Educational Innovation (Ahmedabad: Indian Institute of Management, 1993).

of a partnership with the Alfred P. Sloan School of Management at the Massachusetts Institute of Technology (MIT). The plans for the recommended second campus were also under way and this alliance with MIT raised the interests of its competing institution at the Harvard University. Consequently, a meeting was arranged between Professor Harry L. Hansen of the Harvard Business School and the Secretary of the Department of Company Affairs, Ministry of Finance, Mr. D.L. Mazumdar. In this fateful meeting Harry Hansen put forward the offer to provide academic support for the curriculum and faculty development at the second campus as long as there was a government and industry initiative to set up the institution. The Central Government's interest in the project was already apparent and Mazumdar agreed to furnish the "annual revenue expenditure" for the new campus. [6] This process was significantly aided by the further offer of Douglas Ensminger, the Director of the Ford Foundation in India, who agreed to underwrite the foreign exchange required for campus construction, library and faculty development. In spite of such outstanding support from the Central Government and the American collaborators the establishment of the second campus was being delayed as the state government authorities showed a lack of enthusiasm in providing the remaining resources like land for campus construction.

When the second campus had been proposed as a part of Robbin's Ford Foundation Report in 1959 it was obviously conceived as being located in the other most important centre of commerce of the British era besides Calcutta - Bombay. However, the socio-political situation of the Bombay state had changed since then. On 1st of May 1960 the British grand presidency of Bombay, which had now expanded at the time of Independence to include neighbouring princely states under the new Bombay state, was finally split into two separated states of Maharashtra and Gujarat.[7] The split came as a result of the agitation of the Marathi nationalists who demanded their own state on the basis of the cultural and more specifically lingual differences of the Marathi-speaking south from the Gujarati-speaking north. Since the division was based on the desire for a separate regional definition, establishing a discernable identity also became important for the newly formed state of Gujarat. Maharashtra stood to inherit Bombay as its capital which already had an established and rich identity due to its British past. Ahmedabad as the new capital of Gujarat, on the other hand, had yet to be recognized as

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[6] For a more detailed account of the context and outcome of this fateful meeting see Bhattacharyya, "The Early Years of Institutional Development," 7.

[7] For an introduction to the political conditions that led to this split, see Jayant Lele, *Elite Pluralism and Class Rule: Political Development in Maharashtra, India* (Toronto: Univ. of Toronto Press, 1982).

an important metropolitan centre of the new nation. Therefore, by 1961 Ahmedabad was in fierce competition with Bombay to establish itself as the socio-cultural hub in the region.

The region of Ahmedabad had always been associated with trade and commerce and was best known for its flourishing textile industry. Historically this had its origins as early as the Harappan civilization when the region served as a major centre of production and commerce with trade connections all over the globe. With the arrival of the British East India Company, which set up its first factory in the city of Surat in Gujarat, the local textile commerce had suffered a temporary set back. However, after the revolt of 1857, which led to the end of Company rule, the businessmen of the Ahmedabad region took to competing with the British, and the modern textile industry of Ahmedabad was founded in 1861.[8] In the ensuing hundred years the entrepreneurs of these textile mills continued to accumulate much wealth as Ahmedabad came to be recognised as the "Manchester of the East." With the advent of the *Swadeshi* movement and the coinciding lack of British imports during the First World War tremendous profits were made in the wake of misguided patriotism.[9] The further proximity to the seat of Mahatma Gandhi and the corresponding nationalist movements allowed these millowners to finally become some of the richest and most influential families in free India. In almost all aspects of the intellectual and cultural climate of Ahmedabad, then, these millowner families were shaping the future of Ahmedabad.[10] So when the time came to promote Ahmedabad as an important metropolitan centre in the region it was these millowners that took it upon themselves to put Ahmedabad on the map.

With the lack of initiative from the corresponding state government in acquiring the second campus of the Indian Institute of Management for Bombay, the elite business

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[8] During the period of mercantile annexations by the East India Company the British industrialised processes had destroyed the local textile commerce. However, after the 1857 revolt the Indian entrepreneurs took to make a place for themselves in this industrialised world of textiles. Sjt. Ranchhodlal Chhotalal made the path breaking start by setting up the first spinning mill called Ahmedabad Spinning and Weaving Company Limited in Shahpur in 1861.

[9] For an account of the several interpretations and misinterpretations of the *Swadeshi* impetus that led to the economic betterment of the mill owners of Ahmedabad as a by product of the nationalist attitudes of their fellow countrymen, see Sumit Sarkar, *The Swadeshi Movement in Bengal, 1903-1908* (New Delhi: People's Pub. House, 1973), 119.

[10] For an overview of the impact that the millowner community had on the cultural climate of Ahmedabad see Yatin Pandya and Trupti Rawal, eds., *The Ahmedabad Chronicles: Imprints of a Millennium* (Ahmedabad: Vastu-Shilpa Foundation for Studies and Research in Environmental Design, 2002). Also see Kenneth K. Gillion, *Ahmedabad: A Study in Indian Urban History* (Berkeley: University of California Press, 1968).

families in Ahmedabad found an opportunity to grab this important institution for their city. The foremost problem that had been preventing the establishment of the second campus in Bombay was the state government's failure to provide land resources and this was resolved through a generous grant of 65 acres of land by the Ahmedabad Education Society. The piece of land situated in the newly developing institutional sector on the west bank of the Sabarmati River constituted a part of the 400 acre Gujarat University complex that the Ahmedabad Education Society had developed under the aegis of an influential millowner Sheth Kasturbhai Lalbhai. (Fig. 7.1) Once the problem of land resources had been resolved the other conditions were easily fulfilled as industry support was garnered under the leadership of Dr. Vikram Sarabhai, a member of yet another prominent millowner family. With influential figures like Kasturbhai Lalbhai and Vikram Sarabhai behind the cause, political pressure was applied to finally achieve the shift of the second campus for the Indian Institute of Management to Ahmedabad. The impact that these two figures had on the development of the second campus project, however, cannot just be explained as a function of their socio-economic status and needs to be put into the context of their continuing investment in the establishment of educational and research institutions.

Kasturbhai Lalbhai was not a highly educated individual as he had been compelled to drop out of university to take over the family business following the death of his father, when he was only seventeen years of age.[11] The Lalbhais as a family of millowners were also not the most prominent of the business families in Ahmedabad at this time. However, under Kasturbhai's tenure the business grew steadily and the Lalbhai group of industries soon became highly profitable. When the First World War broke out Kasturbhai Lalbhai was one of the few entrepreneurs that consolidated the Ahmedabad textile industry to reap the benefits of the market conditions and make unprecedented profits. In spite of the lack of a university education, or maybe indeed because of it, Kasturbhai directed much of his profits towards funding the development of new educational institutions. As a result, when the Ahmedabad Education Society was

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[11] Kasturbhai Lalbhai was an immensely influential figure in the development of Ahmedabad. Unfortunately, however, his contributions to the socio-cultural environment have not been the subject of a comprehensive biographical study and this dearth of literature is highly lamentable. The account included here is developed from several disparate sources that mention Lalbhai, as well as personal accounts of individuals in Ahmedabad interviewed by the author. For an account that focuses mostly on the economic history of the Lalbhai group of industries yet offers a useful insight into Kasturbhai's involvement in various development activities see Dwijendra Tripathi, *The Dynamics of a Tradition: Kasturbhai Lalbhai and His Entrepreneurship* (New Delhi: Manohar Pub., 1981). Also see Gita Piramal, *Business Legends* (Columbia MO: South Asia Books, 1998).

Gujarat
University
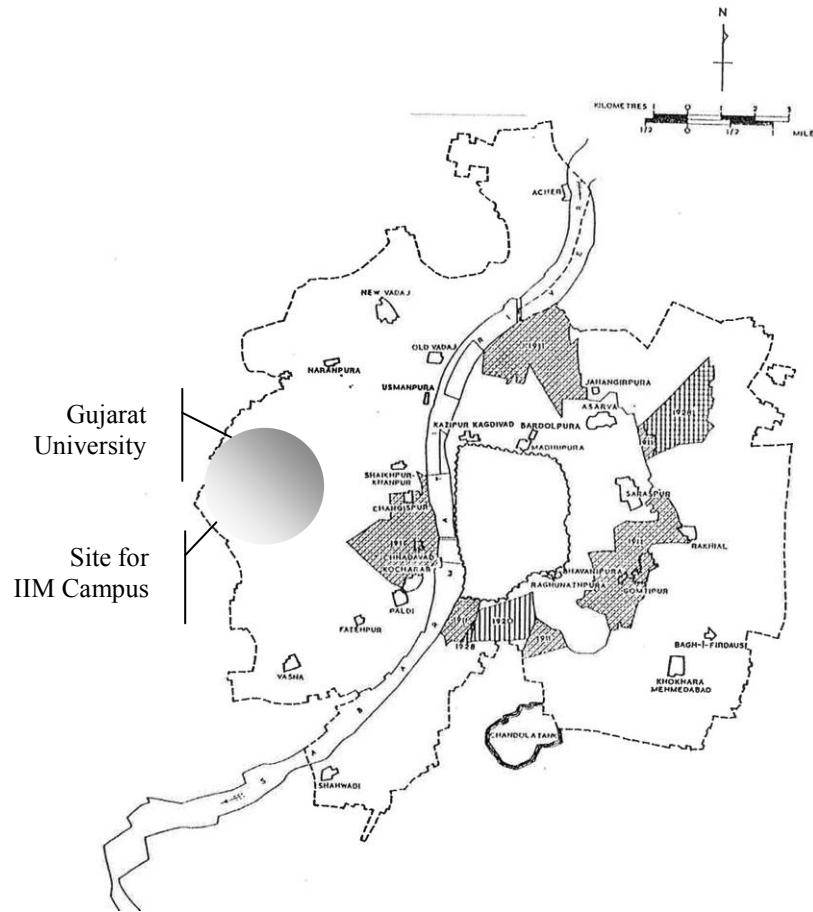
Site for
IIM Campus

Fig. 7.1. Building Site for IIM project in context of Ahmedabad city limits, 1961
(*Source: Census of India, 1961, Vol-V Gujarat Part X-A*)

Fig. 7.2. Individuals involved in the birth of the IIM project
Dr. Vikram Sarabhai; Sheth Kasturbhai Lalbhai; Prof. Harry L. Hansen
(*Source:* Pandya and Rawal, *The Ahmedabad Chronicles*)

founded in 1936 Kasturbhai Lalbhai was elected the Chairman of its Governing Body. Soon afterwards, at the behest of his cousin Chinubhai, Kasturbhai entered into starch production, and Anil Starch Production Limited being the sole provider of starch to a growing textile industry became one of the most profitable businesses under the Lalbhai banner.[12] Following this immense success in the business arena Kasturbhai donated ever larger sums of money and land towards the development of educational facilities to the extent that almost half of the Ahmedabad Education Society's funds were constituted of his contributions.[13] It would not be entirely incorrect to state then, that under the title of the Ahmedabad Education Society it was Kasturbhai Lalbhai who scripted the birth of numerous educational and research facilities in Ahmedabad, including (but not limited to) L.D. College of Arts (1937), M.G. Science Institute (1946), L.D. Engineering College (1948), Physical Research Laboratories (PRL) and the Ahmedabad Textile Industry's Research Association (ATIRA). Accordingly, when the need for land and revenue support for the acquisition of the Indian Institute of Management campus for Ahmedabad arose, Kasturbhai as the chairman of the Ahmedabad Education Society offered his assistance yet again. The Ahmedabad Education Society had recently dedicated 400 acres of land in the newly developing institutional district for the development of the Gujarat University and 65 acres of this was promptly allocated for the development of the new management school campus.[14]

Unlike Kasturbhai Lalbhai, Dr Vikram Sarabhai's father Sheth Ambalal commanded one of the most prominent textile businesses under the label of Calico Mills, and their family had been a strong influence on the socio-cultural climate of Ahmedabad since the late nineteenth century.[15] Under the sponsorship of this huge family fortune Vikram Sarabhai, like some of his other eight siblings, was able to pursue his higher education overseas, and upon the completion of his doctoral studies in Physics at Cambridge in 1947 returned to find an independent India. With a foreign education, and the family

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[12] An anecdote involving Kasturbhai's relationship with his cousin Chinubhai over the development of Anil Starch Production Ltd. in 1938, where Kasturbhai sent Chinubhai to Bombay to develop a considered proposal based on research, shows his continuing faith in a correspondence between research education and business in spite of his personal circumstances.

[13] For exact details of monetary accounts see Tripathi, *The Dynamics of a Tradition*, 193-196.

[14] Tripathi, *The Dynamics of a Tradition*, 195. It is also worth noting here that the Lalbhai group registered its highest profits in the year 1961 which would have prompted the 400 acre donation towards the Gujarat University campus.

[15] Vikram Sarabhai's contributions to the development of research and educational institutions in post-independence India have been more steadily documented throughout the years, and a consolidated account of his life is now available. See Amrita Shah, *Vikram Sarabhai: A Life* (New Delhi: Penguin Viking Press, 2007). Also

wealth and connections to back his endeavours, a young and enthusiastic Vikram was immensely fascinated with the possibilities of developing new educational and research institutions within the emerging nation and directed his efforts to this end. Consequently, within the first year of his return to India Vikram Sarabhai garnered support from charitable trusts controlled by his family and friends to establish the Physical Research Laboratories (PRL) and further went on to collaborate with other leading figures like Kasturbhai Lalbhai and S.S. Bhatnagar to set up the Ahmedabad Textile Industry's Research Association (ATIRA). These efforts launched Vikram Sarabhai into a lifetime of institutional development. Therefore, when the possibility of acquiring the Indian Institute of Management campus for Ahmedabad arose, Vikram Sarabhai was one of its biggest advocates and used his family's political connections to make this happen. He had already collaborated with Kasturbhai Lalbhai on similar projects in the past and once again worked with him to bring this new and important institution to Ahmedabad. Once the problem of land and industry support was alleviated by the contributions of Kasturbhai Lalbhai and the Ahmedabad Education Society, Sarabhai, as a confidante of the Indian Prime Minister Jawaharlal Nehru, embarked on rallying political support for this cause. With subsequent efforts by him and the then Chief Minister of Gujarat, Jivraj Mehta, the second campus for the Indian Institute of Management was finally announced for the city of Ahmedabad.

With the official decision of the shift to Ahmedabad the work for setting up the institutional facilities for the new campus finally began. The original initiative of the Harvard Business School, the Ford Foundation and the Central Government was now equally matched by the efforts of the State Government and the eminent members of the business community. With the continuing development of the institutional campus the figures of Vikram Sarabhai and Kasturbhai Lalbhai assumed newer roles and led the local community in this collaborative effort. Sarabhai helped with the curriculum and faculty development, which had already been taking place under the care of Harry Hansen and the Harvard Business School, by offering strategic administrative guidance as the Honorary Director during the first three years of the institution's becoming. Meanwhile, Lalbhai assumed a more unlikely but extremely significant role in terms of the new institute's architectural production as the Chairman of the Building Committee.[16] It is within this atmosphere of international collaborations, while still

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[16] In their previous engagements with the development of PRL and ATIRA, Kasturbhai Lalbhai and Vikram Sarabhai had developed a mutually respectful working relationship where both individuals

deeply rooted into the socio-economic nexus of Ahmedabad, that the architectural project for Indian Institute of Management (the IIM project) was finally born.

The Project Team at NIID

When the IIM project was launched in 1962 yet another institution which had recently developed out of a similar collaboration between the Indian Government, the Ford Foundation and the entrepreneurs of Ahmedabad was to play a significant role in its architectural production. As a part of the research studies conducted in the 1950s under the sponsorship of the Ford Foundation, the Government of India had also launched a project to evaluate the state of design as a discipline in the country. Accordingly the famous American designers Charles and Ray Eames had been invited to India in 1958 in order to explore the existing conditions and offer their recommendations for a training programme in this newly evolving field. Upon their arrival in India the couple had continued to tour the entire nation for a period of three months before drafting their recommendations in a document entitled the "India Report." The report called for an institute of design to be established under the Ministry of Commerce and Industry and in view of that the National Institute for Industrial Design (hereafter NIID) was set up in 1961 to serve the design concerns of an emerging nation.[17] As with the Indian Institute of Management, an Ahmedabad campus had not initially been considered. The Eames's original proposal was for NIID to be established in the historic city of Fatehpur Sikri, near Agra. But with the efforts of the Sarabhai family it was eventually shifted to Ahmedabad. This time it was the determination of Vikram Sarabhai's elder brother Gautam Sarabhai and their youngest sister Gira Sarabhai, who were members of the NIID governing body, which allowed for the fateful shift to Ahmedabad.[18]

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respected and supported each other through their vision and individual areas of expertise. Therefore with the IIM project the two individuals divided the administrative responsibilities accordingly and continued to support each other.

[17] The name of the National Institute of Industrial Design (NIID) evolved over the life of the IIM project, from NIID to National Design Institute (NDI), and ultimately to National Institute of Design (NID), as it is known today. Although this change of title is reflected in the numerous correspondences related to the IIM project, for the ease of comprehension we shall continue here with a single acronym of NIID for all stages of the project.

[18] The institute's governing body first shifted from Fatehpur Sikri to Bangalore, whereupon Gautam and Gira Sarabhai gathered political support from Pupul Jayakar and Jivraj Mehta to arrange for a subsequent shift to Ahmedabad. For details of Gautam and Gira Sarabhai's involvement see Sameeha Sharad Sheth, "The Making of Two Institutes: National Institute of Design & B.M. Institute of Mental Health, Ahmedabad by Gautam and Gira Sarabhai," (UG diss.: Centre for Environmental Planning and Technology, 2007), 49.

Although the NIID was developed to serve the different aspects of Industrial Design as a profession, certain criteria listed in the India Report towards its constitution and functioning resulted in its inadvertent engagement with several architectural projects. The first peculiarity came in the recommendation for the constitution of a core group of individuals who would be trained at the institute to work at its service branch. Even though this group would eventually be involved with a variety of subjects under the design discipline, the India Report specifically laid out the clause that it should be primarily composed of "graduate architects."[19] The institute continued to work with this group of graduate architects for the first decade of its existence and many of them went on to constitute its future faculty. In addition to this peculiar recommendation the India Report also outlined the requirement for what was termed later as the "service-cum-training" program. Here the report offered the proposal for a training program based on participation in not only research but also "service" projects.[20] This proposition allowed the members of this new institution to become a part of actual projects and learn by associating with eminent practitioners in the field. As noted in a domestic publication on *Internal Organisation, Structure and Culture,*

> *The uniqueness of the programme [...] lies in the fact that it utilizes the practice situation as an education tool. It seeks and accepts professional assignments from clients as a means of giving practical experience to students by associating them with mature designers in the solution of real problems. But while in each such assignment, professional service is rendered to a particular client, the primary task is education and the primary beneficiaries, the students.[21]*

The fact that this practice based training was aimed at a core group of graduate architects, who were involved in collaborative design projects, led to the condition of the institute actually taking up several architectural commissions during its first decade.[22] These architectural commissions were handled by a team of young graduates

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[19] Charles Eames and Ray Eames, "The India Report (April 1958)," (Ahmedabad: National Institute of Design, 2004), 7.

[20] Eames and Eames, "The India Report," 11.

[21] National Institute of Design, *National Institute of Design: Internal Organisation, Structure & Culture* (Ahmedabad: National Institute of Design, 1972), 13.

[22] For a brief period during the first decade the institute intended to develop a program in "Industrialized Architecture" to be started in 1971. However, this idea was dropped after 1969 when the institute retracted from its engagement in various architectural projects including the IIM project. See National Institute of Design, *NID Report 1963-69* (Ahmedabad: National Institute of Design, 1969), and National Institute of Design, *Annual Report 1970-71*(Ahmedabad: National Institute of Design, 1971.

at the institute under the guidance of a professional consultant who would act as a project head as well as a mentor for the trainees.[23]

Since the members of the Sarabhai family were personally involved in the development of both the NIID and the IIM, when the architectural project for the IIM was announced it was suggested that the newly instated NIID be engaged as the architect for the project. Accordingly, NIID was appointed as the official project architect for the IIM project with the graduate architects at the institute responsible for the design execution.[24] The conditions of the service-cum-training program, however, further required this team of graduate architects to be led by an established practitioner, who would, apart from serving as their mentor for training purposes, assume the role of the consulting architect for the project. In accordance with the educational focus of the initiative this consultant architect would be required to both lead the design development for the project and guide the graduate architects in developing their skills. While the search for this consultant architect was once again dependent on the Sarabhais, who were actively involved with the governing committee at NIID, it was Kasturbhai Lalbhai as the Chairman of the IIM's Building Committee who led the decision making process in this instance.

The members of the Lalbhai family were keen patrons of architecture and it was the result of their continuing support that the new district of Ahmedabad, west of the Sabarmati River, had become an important playground for modern architecture in post-colonial India. Even before independence, Kasturbhai Lalbhai had commissioned Claude Batley, a great proponent of the Anglo-Indian rationalist tradition, to design projects in both Bombay and Ahmedabad.[25] With the onset of the independence years

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[23] It is worth noting that this arrangement has some similarities to the Beaux-Arts training method, which would explain Louis Kahn's eventual desire to take up a teaching role at the institute.

[24] The NIID was recognised as the project architect for the IIM project well into the later 1960s according to one of the earliest articles on the IIM project to appear in the professional architectural press. See "Indian Institute of Management, Ahmedabad," *Marg* 20 (June 1967): 32. Officially this association came to an end in June 1969. See Letter, Gautam Sarabhai to Kahn, May 29, 1969, "IIM Correspondence 1/1/66 to 3/12/74," Box LIK 113, Kahn Collection.

[25] The allusion to Claude Batley as a proponent of the ideas of Rationalism or Modernism stems from the arguments offered in the previous chapter, which builds upon the proposition of historian Gavin Stamp that the Rationalist ideas of James Fergusson served as the basis for the developments of the Anglo-Indian school, whereby a legacy of Modernism was specifically developed for India. This use of Rationalism needs to be understood separately from the idea of Rationalist architecture accorded to the Modern Movement of continental Europe typified in the later rise of the International Style. For a brief introduction to some aspects of this argument see Gavin Stamp, "India: End of the Classical Tradition – Role of the Anglo-Indian School in the Construction of Delhi," *Lotus International* 34 (1982). For further notes on Claude Batley's connection to this Anglo-Indian Rationalist tradition, see Rahul J. Mehrotra,

this trend was altered by the arrival of Le Corbusier who was in India to design the new capital of Punjab at Chandigarh, and thereby provide the nation with a fresh architectural identity. Keeping abreast with the changing trend, Kasturbhai's nephew Chinubhai Chimanbhai, the then mayor of Ahmedabad, invited Le Corbusier on his maiden visit to the sub-continent to design a museum for the city and granted the commission for the Sanskar Kendra.[26] Le Corbusier's arrival to the city led to the grant of further commissions such as the famous Mill Owner's Association Building which was made possible through the efforts of yet another member of the Lalbhai family, Kasturbhai's other cousin Surottam Hutheesing. In his influential position as the president of the Mill Owners Association Hutheesing further helped to alter the general interest of the millowner's community towards the new architectural idiom when he invited Le Corbusier to design a private residence for himself. This residence, which was later executed for his friend Shyamubhai Shodhan and became known as the Shodhan House, was one of the two residential projects executed by Le Corbusier in Ahmedabad.

In the wake of Le Corbusier's architectural expositions the aesthetics of the European modern movement were rapidly gaining favour with the influential millowner families of Ahmedabad. As a result of this shift in attitude several Indian architects who had finished their architectural education abroad and were part of this architectural tradition were becoming clear favourites for new architectural projects in Ahmedabad.[27] Of these the best regarded was Achyut Kanvinde who had previously trained under Claude Batley and after studying under Walter Gropius at Harvard had returned to India in 1947 to take over the reigns as the new propagator of the modern idiom. His designs for the ATIRA and PRL projects situated in the institutional district of Ahmedabad have since been recognized as some of the earliest and most important modernist examples in

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"Responses to a Tradition: A Study of Architectural Attitudes during the British Intervention in India (1857-1947)," (UG diss.: Centre for Environmental Planning and Technology, 1985).

[26] Although there are several publications discussing Le Corbusier's works in India, most of them are elusive regarding the exact sequence in which the projects in Ahmedabad were granted. The clearest account of this sequence is available from, Peter Serenyi, "Timeless but of Its Time: Le Corbusier's Architecture in India," *Perspecta* 20 (1983).

[27] The three architects discussed here, namely Achyut Kanvinde, Charles Correa and Balkrishna Doshi, have been introduced in various publications on post independence architecture in India. For an introduction see Kazi Khaleed Ashraf and James Belluardo, eds., *An Architecture of Independence: The Making of Modern South Asia: Charles Correa, Balkrishna Doshi, Muzharul Islam, Achyut Kanvinde* (New York: Architectural League of New York, 1998).

independent India executed by an Indian architect.[28] However, a more recent arrival and one directly connected to the growing Corbusian legacy was architect Balkrishna Vidyadhar Doshi.[29] B.V. Doshi had worked as an apprentice at Le Corbusier's office in Paris for four years before accompanying him to India in 1955 to supervise the works at Chandigarh and Ahmedabad. Doshi's direct involvement with the foreign master made him an integral part of the network of influential millowners like the Sarabhais and Lalbhais who were closely involved with Le Corbusier's work in Ahmedabad, and therefore when he decided to stay back to start his own practice (Vastu-Shilpa Architects) in Ahmedabad he became the new favourite for these patrons of modern architecture. Kasturbhai Lalbhai had recently worked with Doshi on the housing projects for the ATIRA and PRL complexes, so when the time came to suggest a consultant for the NIID team that would lead the IIM project Kasturbhai was keen for Doshi to get involved.

Following Kasturbhai Lalbhai's recommendation the project team for the IIM project was finalized with NIID as the official project architect and B.V. Doshi serving as the consulting architect.[30] Considering the setup of the NIID, this heterogeneous composition of graduate architects from NIID working under the supervision of B.V. Doshi implied that the interaction between the team members would be subject to a pattern inconsistent with a regular architectural practice. On one hand, Doshi could not directly engage the processes he had developed with his established practice at Vastu-Shilpa Architects as he had to solely rely on this team of graduate architects to continue with design development and documentation, and this required a rethinking of established patterns. On the other hand, since the graduate architects at NIID were expected to be involved with more than one project at a time and would be working with different practitioners, Doshi's interactions with the continuously changing team would remain restricted. This peculiar arrangement, which was developed with the idea of diversity in educational experience, was destined to inevitably also lend a fresh

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[28] Jon T. Lang, *A Concise History of Modern Architecture in India* (New Delhi: Permanent Black: Distributed by Orient Longman Ltd., 2002), 53.

[29] For an introduction to B.V. Doshi see William J. R. Curtis, *Balkrishna Doshi: An Architecture for India* (New York: Rizzoli, 1988). Also see the more recent James Steele, *The Complete Architecture of Balkrishna Doshi: Rethinking Modernism for the Developing World* (London: Thames and Hudson, 1998).

[30] See Doshi's account in Balkrishna Doshi, *Architectural Legacies of Ahmedabad: Canvas of Modern Masters* (Ahmedabad: Vastu-Shilpa Foundation for Studies and Research in Environmental Design, 2000), 16-17.

perspective to the architectural design process.[31] However, it must be remembered that the NIID had just been instated and had not really recruited its entire set of core members so as to allow the IIM project to move forward. Therefore, over the subsequent years there were many changes in the constitution of this design team which distorted the input of the various agencies from its initial conceptualization and altered the way the project progressed.

Inclusion of Kahn

While B.V. Doshi was already in receipt of several architectural commissions through his involvement with the network of the influential millowners in Ahmedabad, he was also hoping to make a larger contribution to the architecture of the new nation through other means. This had more recently shaped into a desire to exploit his international connections to start a new school of architecture in India. Doshi was well aware of the status that his association with Le Corbusier had afforded him within the social circles of Ahmedabad and intended to foster new collaborative ties with other influential figures to benefit his plans for the new school. One such opportunity arose when the establishment of the new state of Gujarat in 1960 sparked the plans for a new capital project – Gandhinagar.[32] This initiative for a new capital was very similar to the situation in Chandigarh which had previously allowed for Le Corbusier to come to India and Doshi was quick to recognize its potential for acquiring new international talent. Accordingly Doshi put forward his suggestion that Louis Kahn, who he had recently been acquainted with and who he believed could greatly benefit his plans to start a new architecture school, should be invited to serve on the capital project.[33]

Doshi had the chance to meet Kahn for the very first time when he visited the United States on a Graham Foundation grant in 1958.[34] On this occasion he was introduced to Kahn's work by a friend in New York, who then escorted him to Philadelphia to visit

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[31] The peculiarity of this arrangement is generally evident from the guidelines set out in the India Report, but were further brought out by Anant D. Raje, interview by author, Ahmedabad, India, December 3, 2007.

[32] For a detailed account on the development of the Gandhinagar Capital Project see Ravi Kalia, *Gandhinagar: Building National Identity in Postcolonial India* (Columbia SC: University of South Carolina Press, 2004).

[33] See Letter, Doshi (Vastu-Shilpa Architects) to Kahn, April 14, 1961, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Louis I. Kahn Collection, University of Pennsylvania and Pennsylvania Historical and Museum Commission (hereafter cited as Kahn Collection).

[34] For details of Doshi's introduction to Kahn see his own account in Balkrishna Doshi, Muktirajsinhji Chauhan, and Yatin Pandya, *Le Corbusier and Louis I Kahn: The Acrobat and the Yogi of Architecture* (Ahmedabad: Vastu-Shilpa Foundation for Studies and Research in Environmental Design, 2007).

some of the buildings and attempt an audience with Kahn himself. Even with this first brief encounter at Kahn's office Doshi was particularly impressed by Kahn's ability to express the smallest of ideas with the aura of a teacher. The second meeting came in 1960 when Doshi was invited by Dean Holmes Perkins to lecture at the University of Pennsylvania on his experiences with Le Corbusier's work in India. Since Kahn was teaching at the university at the time Doshi got to witness Kahn within the academic context and engaged with him and his colleagues in a discussion on architectural history. During the course of the discussion Doshi was exposed to their ideas on Indian architecture which he later recalled as "an eye opener since [he] had never thought that way."[35] By the end of this trip Doshi came to recognize Kahn as an ideal resource to further his own academic ambitions of starting a new school of architecture in India. Therefore, later that year, when the capital project of Gandhinagar was being considered, Doshi recommended that Kahn be engaged as the "Chief Planner and Architect" for the project on the lines of Le Corbusier's commission for Chandigarh.[36]

After some early discussions in 1961 the work on the Gandhinagar project moved very slowly as the decision making process for a planner/architect proved more tedious than Doshi had envisaged. Contrary to Doshi's understanding the Gujarat Government had decided to consider this appointment through a limited competition and to keep with Doshi's recommendations Kahn was merely sent an invitation to participate in the same.[37] But while Doshi was facing difficulties with inviting Kahn to Ahmedabad through the Gandhinagar project the award of the IIM project afforded him another way to achieve the same. The NIID was in receipt of a US$ 200,000 Ford Foundation grant for the appointment of foreign consultants and Doshi decided to exploit this provision to aid the acquisition of Kahn.[38] Keeping in view the possibility of a significant international affiliation and the advancement of his architectural school project, Doshi decided to relinquish his own position as the consulting architect for the IIM project in order to involve Kahn. Accordingly he approached Kasturbhai Lalbhai and the

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[35] Doshi, Chauhan, and Pandya, *Le Corbusier and Louis I Kahn*, 24.

[36] Letter, Doshi (Vastu-Shilpa Architects) to Kahn, April 14, 1961, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

[37] Letter, Kahn to Doshi, May 26, 1961, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection. Kahn mentions that he "distrusts" competitions and will not be inclined to participate.

[38] For details of monetary accounts see National Institute of Design, *Annual Report 1968-69* (Ahmedabad: National Institute of Design, 1969.

Sarabhai's with the proposal that Louis Kahn be engaged as the consulting architect for the IIM project.[39]

Kasturbhai Lalbhai had always been a patron and showed keen interest in the development of such architectural ties with foreign practitioners, but he had little to offer in terms of who to engage. Therefore, on this occasion it was Vikram Sarabhai's brother Gautam Sarabhai, as the Chairman of the NIID governing council, who had to take Doshi's proposal into consideration and make a decision. Gautam Sarabhai, who had also finished his higher education from Cambridge University, was formally trained in mathematics, but his interest in design as a discipline had subsequently found him persuading the governing body of the NIID to shift to Ahmedabad. Apart from some early childhood experiences with the profession he had also spent some time at the Taliesin with his sister Gira Sarabhai, who now served alongside him on the NIID governing body.[40] Given the siblings' direct connection with Frank Lloyd Wright it is obvious that any consideration of involving a foreign architect would have been directed by Gautam towards an invitation to the great master. Indeed he had previously invited Wright to design the headquarters for the Sarabhai's flagship company of Calico Mills in Ahmedabad, which had not advanced past the sketch design stages, but with Frank Lloyd Wright's death in 1959 Gautam had been left without a considerable alternative. A passionate recommendation by Doshi at this juncture meant that Kahn became a viable option to lead the IIM project and train the new graduate architects at NIID through his international vision. Consequently Gautam Sarabhai drafted a formal proposal addressed to Kahn on the 5th of April 1962.[41]

The letter of appointment did not reach Kahn for another two months as Vikram Sarabhai held on to the communication while he travelled to America to discuss the design requirements with Harvard University.[42] It was not until the 1st of June 1962 that

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[39] Doshi, *Architectural Legacies of Ahmedabad*, 17.

[40] Jon Lang mentions Gautam's presence at Taliesin but there is little direct evidence of any formal training in architecture. See Lang, *A Concise History of Modern Architecture in India*, 44.

[41] Letter, Gautam Sarabhai to Kahn, April 5, 1962, "IIM – Sarabhais Correspondence (Vikram-Gautam)," Box LIK 113, Kahn Collection.

[42] It is noteworthy that although Kahn has often been credited with the design layout of the seminar rooms at the IIM the detailed recommendations laid out by Harry Hansen of the Harvard Business School are more than sufficient in explaining the formal layout finally adopted. See, Harry L. Hansen, "Notes in Connection with Classroom Design," August 7, 1962, "IIM First Programs," Box LIK 113, Kahn Collection. The relationship between IIM and Harvard pertaining to design of teaching facilities has also been discussed in Kathleen James, "Louis Kahn's Indian Institute of Management's Courtyard: Form Versus Function," *Journal of Architectural Education* 49, no. 1 (1995).

Vikram Sarabhai, while still in Geneva on his way back, drafted a cover to this letter of appointment and sent it across to Kahn.[43] Gautam's letter explained Kahn's role in the context of the setup of NIID's "service-cum-training" program and drew upon the ideas formulated in Eames's *India Report* extensively to explain this peculiar arrangement. According to Gautam's letter, then, Kahn was primarily invited to be "a consultant teacher to the architectural team on the staff of the Institute." The IIM project was only mentioned as an entailment of this teaching role where the project would "provide a useful learning opportunity not only in theory but in practice for the Institute's staff and apprentices."[44] The letter also outlined the terms of engagement which would only require Kahn to be present in Ahmedabad for 3 or 4 periods of 4 weeks at an interval of 4 to 8 months, while all the work will be "done in Ahmedabad by the staff and apprentices of the Institute." The focus on the role of Kahn as a teacher was clear in Gautam's letter and was further supplemented by Vikram's cover which reinstated the importance of the India Report and indicated that a copy was being forwarded from India separately.

In addition to the receipt of this offer letter on the 6th of June 1962, Kahn was further coaxed to take up the assignment by B.V. Doshi who was present in Philadelphia at the time.[45] Doshi had been invited by Dean Perkins to teach at the University of Pennsylvania over the fall semester of 1961 which, on account of previous engagements in Ahmedabad, he had postponed until the fall semester of 1962.[46] So when the invitation to work on the IIM project reached Kahn, Doshi was around to facilitate a quick decision. Taking into account the possibility of a subsequent engagement in the Gandhinagar Capital Project as well as a chance to be involved in the development of an

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[43] Letter, Vikram Sarabhai to Kahn, June 1, 1962, "IIM – Sarabhais Correspondence (Vikram-Gautam)," Box LIK 113, Kahn Collection. Vikram Sarabhai apologises for the delay and explains that the discussion has taken "a great deal of time."

[44] The formulation of Gautam's letter which includes an extensive introduction to the development and siting of the NIID, with only a nominal mention of the IIM project in the last paragraph, could very well be seen as a confusing communication where Kahn might have believed that his design consultancy was directly serving the NIID itself. Hence the anecdotal reference in certain interviews conducted by the author where members of the first meeting recall that Kahn actually offered his initial design ideas for a school of design and not management.

[45] An undated memo signed by Gira Sarabhai outlines the need for Doshi, who was to visit America shortly, to discuss the details of the IIM project with Kahn and inform NIID by telegram of the terms of engagement. The note also puts forward a proposal for Doshi's visit to Harvard Business School to meet Harry Hansen. See, Memorandum by Gira Sarabhai, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

[46] Letter, Doshi to Holmes Perkins (Dean, University of Pennsylvania), February 25, 1961, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

educational program in the third world, such as he had discussed not so long ago with C.P. Snow, Kahn accepted the proposal. Accordingly Doshi sent a telegram across to Gautam Sarabhai on the 27th of June 1962 confirming the same and stating that Kahn could only visit India in the month of November after four months.[47] Over subsequent discussions regarding the nature of involvement of both Kahn and Doshi, which followed Doshi's return from America, it was finalised that Kahn would serve as the consulting architect for the IIM project while Doshi would act as his local collaborator. Doshi forwarded the details of this arrangement to Kahn in an extensive telegraphic message on the 9th of August 1962, where he noted that, since the graduate architects at NIID would be involved in the production of design documentation under his supervision, there would be "no architectural work required by [Kahn's] staff [in] Philadelphia."[48] The details of Kahn's involvement (which was limited to a mere three visits at this time) would eventually change in the future but his involvement with the IIM project was finally established.

Kahn's Goal

Even as Louis Kahn was appointed as the consulting architect for the IIM project it did not imply an eventual inclusion of brick. In fact the initial design conception for the IIM project took place within the context of Kahn's Philadelphia practice, even before his first trip to India in November, and this clearly reflected the vocabulary that the office had been working with in early 1962. When the IIM project was offered to Kahn his office had just finished working on the design for the Salk Institute of Biological Studies and many features of the design language adopted for this project found their way into the new projects being handled by the office. This pattern was particularly evident in the design for the National Assembly Building in Dhaka – a project which came soon after the IIM project and developed alongside it within the context of the Philadelphia practice. It was exactly two months after his acceptance for the IIM project was wired to Gautam Sarabhai when a telegram from Pakistan had reached Kahn's office on 27 August 1962 inquiring about his interest in the Assembly building for East

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[47] Telegram, Gautam Sarabhai to Doshi (care of Louis Kahn), July 2, 1962, "IIM Cablegrams to/from Doshi," ," Box LIK 113, Kahn Collection. Although Kahn never mentioned this to anyone involved with him at a professional level owing to the secrecy that surrounded his personal life, the unwillingness to travel to India before November may well have been due to the pregnancy of Harriet Pattison who gave birth to their son Nathaniel in November 1962.

[48] Telegram, Doshi to Kahn, August 9, 1962, "IIM Cablegrams to/from Doshi," Box LIK 113, Kahn Collection. The telegram also outlines the terms of US$ 2000 monthly and the three first-class return airfares.

Pakistan.[49] Since Kahn already agreed to an extended engagement in the subcontinent through the IIM project he was quick in accepting this proposal and accordingly forwarded a reply in the first week of September.[50] The Dhaka project was essentially different in nature from the IIM commission since in this case the design was to be executed by Kahn's office as opposed to the collaborative process that had been established with the NIID. However, since the NIID team had not yet been fully formed at the time of Kahn's November 1962 visit the IIM project was forced to continue alongside the Dhaka project during the early stages of design development and the effect of the Philadelphia practice was evident.

One of the distinctive features of the Salk Institute project that was repeated in both the projects at Ahmedabad and Dhaka was a tripartite approach to planning. Kahn had always regarded the client's brief as being little more than a vague guideline, and with the Salk Institute project this belief had become firmly established within the office. As a result he had continued to redefine the requirements for the institute to include, in addition to the "living" areas for staff housing and the working areas for the "laboratory", a third section which came to be known as the "meeting house." (Fig. 7.3) This process of dividing the brief into three distinct functional parts subsequently found its way to the Dhaka project where the initial scheme was split up into the National Assembly Building, the Supreme Court complex and the "hostels" for the various members of the assembly. (Fig. 7.4) Accordingly, even the IIM project, which was developed during the same period, witnessed a similar three part division of the building program. Here the proposal was divided into the "main school building", the "housing" for the staff and the student "dormitories." (Fig. 7.5) This pattern of working with three separate divisions of the building program was not merely a system to aid task delegation but arose from a particular belief that had recently subsumed Kahn's design philosophy. In fact, starting with the Salk Institute, Kahn had assumed a stance to develop an architectural solution for the "two cultures" debate and the tripartite approach to planning was a manifestation of the same.

In the late 1950s Kahn was already going through a significant change in his personal becoming which had made him extremely philosophical towards his approach to life

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[49] Telegram, CapDap to Kahn, received August 27, 1962, "Second Capital – Pakistan Cablegrams to/from Kafiluddin Ahmad August 27, 1962 through Nov. 26, 1963," Box LIK 117, Kahn Collection.

[50] Telegram, Kahn to William Hall (Minister Councillor Pakistan), September 6, 1962, "Second Capital – Pakistan Cablegrams to/from Kafiluddin Ahmad August 27, 1962 through Nov. 26, 1963," Box LIK 117, Kahn Collection.
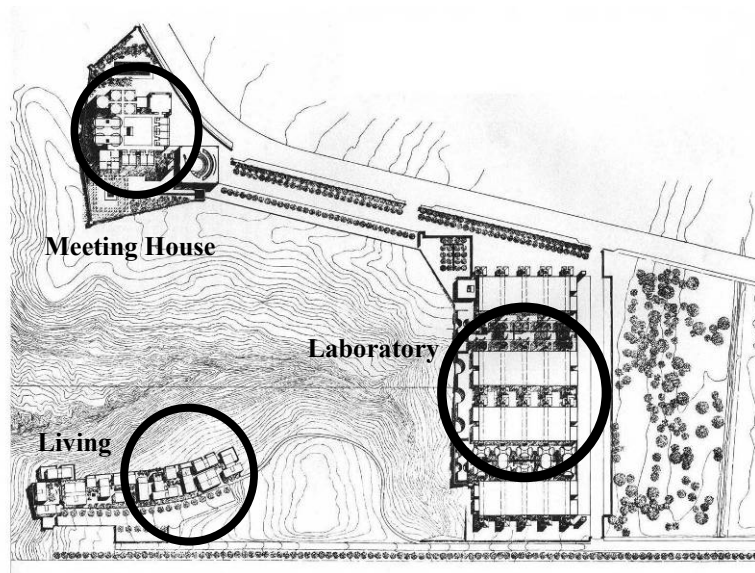
Fig. 7.3. Elements of Tripartite Planning at Salk Institute of Biological Studies (original layout)
(*Source:* Komendant, *18 Years with Architect Louis I. Kahn*, 46.)
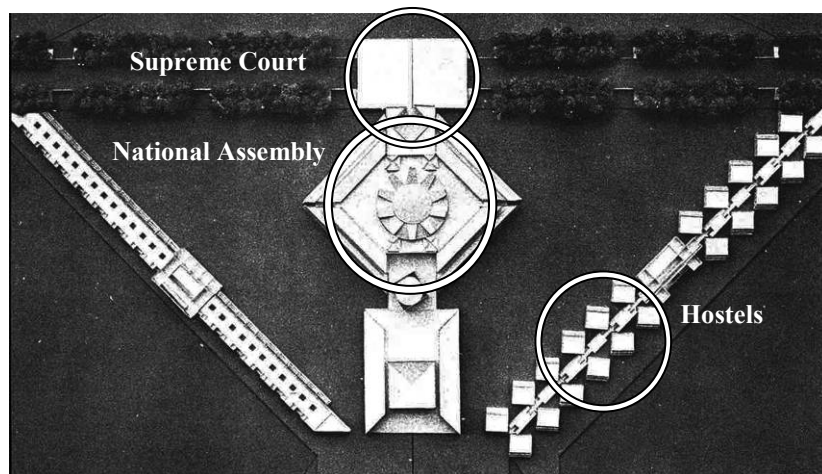
Fig. 7.4. Elements of Tripartite Planning at the Dhaka Project
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn*, 235.)
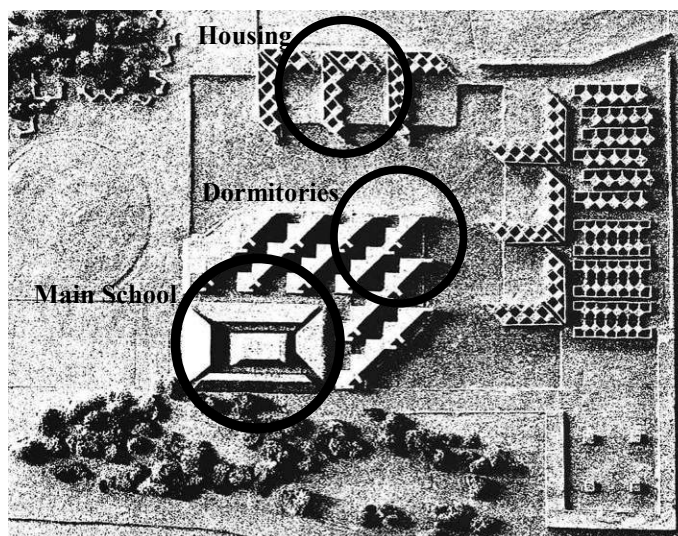
Fig. 7.5. Elements of Tripartite Planning at the IIM Project
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn*)

and architecture's place in it. At such a juncture an introduction to Jonas Salk and the "two cultures" debate compelled him to direct his energies towards addressing this cultural divide "architecturally." Salk had recruited Kahn to design an institutional complex where the members of the seemingly disparate realms of humanities and sciences could come together in an atmosphere of human bonding. As Kahn developed this idea into a design solution he generated a new pattern for the design of institutional projects; where a third spatial program would be created that would be ambiguous in its functional definition and thereby offer an arena for social exchange between the other two distinct categories. For the Salk Institute this resulted in the introduction of the Meeting House which was conceived as a special undefined space that was supposed to have the quality of both informal and formal gatherings in order to act as a place for casual encounter between the users of the complex. [51] This method of employing one functional category to bridge the disparities of the remaining two subsequently became ensconced into the processes of the Philadelphia practice and was repeated at both the Dhaka and the Ahmedabad projects. At Dhaka Kahn noted that the Supreme Court stood as the common ground between the "acts of legislation" constructed at the National Assembly Building and the "philosophic view of the nature of man" that emanated from the "hostels" which he had "transformed from the connotations of a hostel to that of studies in a garden on a lake."[52] Similarly the "dormitories" at the IIM served a greater function than housing the students and the extensive focus on the "club rooms" and "lounges" at the cost of actual living quarters was intended to provide a "space of invitation" which would add to the "inter-hospitality of spirit embodied in the seminar idea of exchange among students and teachers."[53] Since this new approach to institutional design was centred on the concern of creating a middle-ground which serves as an arena of human contact, the office had devoted a lot of effort in the development of an appropriate architectural vocabulary for the Meeting House and this was becoming a trademark of the Philadelphia practice.[54] Therefore, several other

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[51] The argument that the requirements for the Meeting House were developed out of a desire to address the "two cultures" debate is available from David B. Brownlee, "The Houses of the Inspirations," in *Louis I. Kahn: In the Realm of Architecture*, ed. David B. Brownlee and David G. De Long (New York: Rizzoli International Pub., 1991), 97.

[52] Kahn quoted in Heinz Ronner, Sharad Jhaveri, and Alessandro Vasella, *Louis I. Kahn: Complete Works, 1935-74* (Boulder, CO: Westview Press, 1977), 235.

[53] Indian Institute of Management, "IIMA: The First Decade, 1962-72," (Ahmedabad: Indian Institute of Management, 1973), 39.

[54] During his first presentation on the November 1962 visit Kahn argued for the development of such an atmosphere of casual exchange between peers as the very basis of an educational facility design. H. Kumar Vyas, interview by author, Ahmedabad, India, December 11, 2007.

design features developed for the Meeting House also found their way into the proposal for the Dhaka and Ahmedabad projects initiated later that year.

Over the later half of 1961 and early 1962 the designs for the Meeting House at the Salk Institute had undergone some significant changes. A young architect at the office resolved the problem of planning an irregular site by tracing a part of Hadrian's villa that Kahn had always admired. Even though the architect, Thomas Vreeland, meant this grafting of the Roman villa as a joke, the exercise stuck a deep chord with Kahn.[55] Kahn already had immense respect for the Roman architectural tradition and Hadrian's villa had stood for him as a "place of the unmeasureable." As a result, the subsequent development of the design for the Meeting House came alive with references to Roman antecedents. Over the following months these references were transformed into a new pattern where the elevation was composed of large openings inspired by Roman ruins.[56] (Fig. 7.6) Considering the glare encountered from the sun on the seaside site in La Jolla this pattern was incorporated as "glare walls" surrounding the building core and a new design vocabulary of "wrapping ruins around buildings" emerged. (Fig. 7.7) When the office received the projects for Dhaka and Ahmedabad later that year this newly developed idiom of "glare walls" found itself in resonance with the harsh environment of South Asia and served as the basis of the initial schemes.

As the design vocabulary of the Meeting House was carried forward to the projects in the Indian subcontinent it also brought with it other considerations related to the employment of materials. Even though the pattern of "wrapping ruins around buildings" had been developed from Roman antecedents it did not replicate the brick rendering of the original forms. In fact, for Kahn the ruins stood as "a symbol of the enduring values ... cleansed of the narrow and specific meanings brought to it by prior occupation."[57] Since the Roman references were to be cleansed of their specificity and regarded as abstract symbols of the beginning of human culture, the process of appropriation remained limited to formal considerations and bore no relation to the material history. As a result the Meeting House was rendered in what was the dominant material in the

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[55] For a discussion of this appropriation of Hadrian Villa by Thomas Vreeland and its effect on the design of the Meeting House see, Daniel S. Friedman, "Salk Institute for Biological Studies," in *Louis I. Kahn: In the Realm of Architecture*, ed. David B. Brownlee and David G. De Long (New York: Rizzoli International Pub., 1991), 335.

[56] The developments of the 'keyhole' window can be traced at this stage as changing from its rectilinear form to the arched form as well as assuming a larger size, better suited to an exposed brick vocabulary.

[57] David B. Brownlee, "The Houses of the Inspirations," 97.
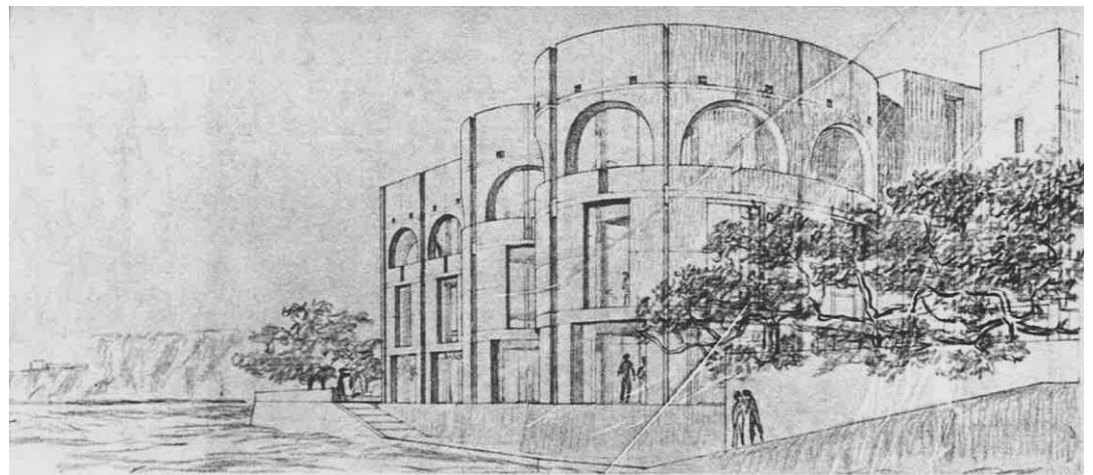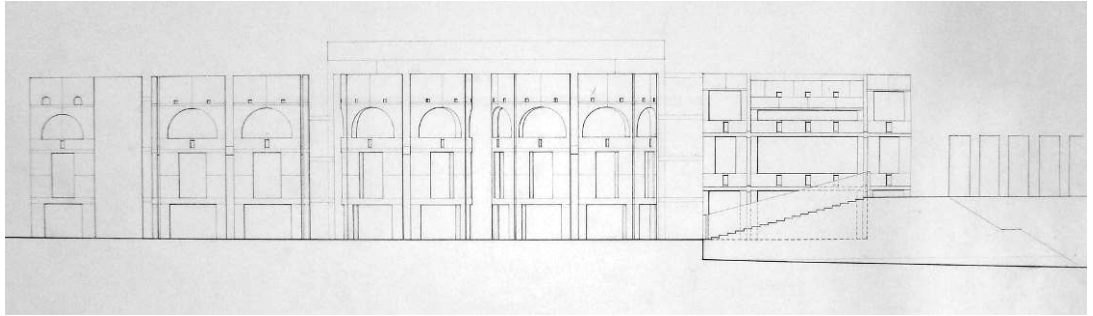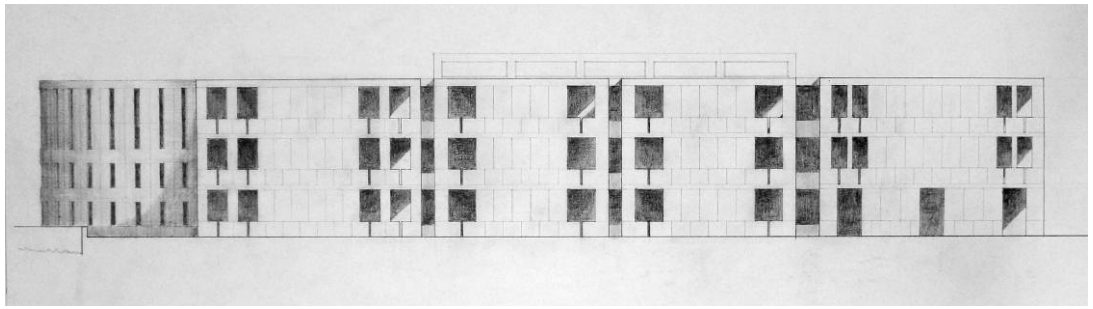
Fig. 7.6. Change in the design of openings for the Meeting House over 1962
(*Source:* "Office Drawings 10/8/1960 – 11/1/1962," Box LIK 540, Kahn Collection.)
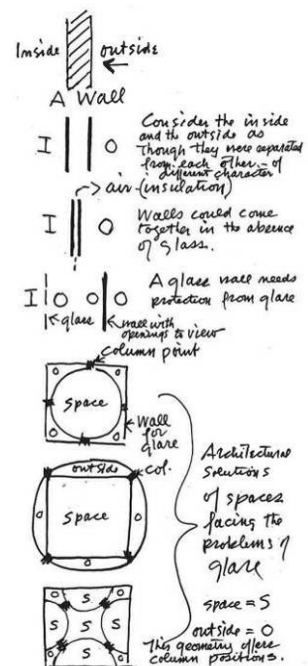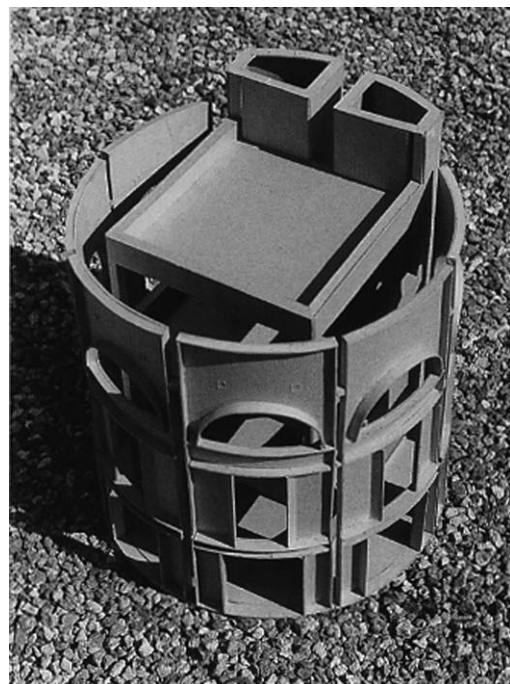
Fig. 7.7. "Wrapping ruins around buildings" – Development of the Glare Wall
(*Source:* Friedman, "Salk Institute for Biological Studies," 335.)

Philadelphia collective – concrete. Accordingly the initial schemes for both the Dhaka and Ahmedabad projects also showed a clear dominance of concrete.

Concrete had established a strong presence in the Philadelphia collective since the arrival of August Komendant in 1956. Komendant, who was a fellow Estonian émigré, had worked extensively with concrete before he assumed the role of Kahn's structural engineer, and needless to say his inclusion increased Kahn's confidence in the material.[58] In fact Kahn did not intuitively understand concrete and was completely reliant on Komendant for all matters related to this member of the collective.[59] Komendant's presence, thus, helped transform the standing of concrete within the collective and the final years of the 1950s saw the material assume force in the architectural endeavours of the office, first with Richards Medical Towers and then more strongly with the Salk Institute project. By the 1962-63 period the status of concrete was so firmly established that designs for any new projects handled by the office were invariably conceived in the material. The sway that the combined presence of Komendant and concrete held over the decisions made at the Philadelphia practice during these years was evident from the proceedings of the first presentation for the Dhaka Assembly in March 1963, for which Kahn was accompanied by Komendant and Carlos Vallhonrat. During this trip, even though it became clear that there was very little cement available in East Pakistan and that too, imported from China, was of very low quality, Kahn maintained the initial design decision to construct in concrete. Komendant's presence strengthened Kahn's convictions of engaging concrete and as a result they offered to set up a whole industry for the production and treatment of concrete, which was missing in East Pakistan, as a supplementary act to the design project for the Assembly Building.[60] Considering the growing status of concrete it is not surprising that the initial proposals for the IIM project which were developed soon afterwards within the context of the Philadelphia practice were also conceived in concrete.

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[58] August Komendant was a pioneer in the method of *pretensioning* and his 1952 publication entitled *Prestressed Concrete Structures* had established him as an expert in the field. For a brief bio of Komendant and his effect on Kahn's practice, see Thomas Leslie, *Louis I. Kahn: Building Art, Building Science* (New York: George Braziller, Inc., 2005), 96.

[59] For Komendant's recollections on Kahn's interaction with concrete as a material, see August E. Komendant, *18 Years with Architect Louis I. Kahn* (Englewood, N.J: Aloray, 1975).

[60] For details of this meeting, see Komendant, *18 Years with Architect Louis I. Kahn*, 78-81.

The initial sketches for the IIM project developed during Kahn's November 1962 visit were not explicit in the specification of the material for construction. In fact during these early stages the design concern was limited to problems of site planning and the design of the individual buildings did not receive much attention. However, the intention to engage concrete towards the design vocabulary could be argued even at this stage considering the repetition of certain design elements recently developed for the Meeting House at the Salk Institute as well as the architectural context posed by Ahmedabad. (Fig. 7.8) Kahn had already been introduced to the architectural context of Ahmedabad through his meetings with Doshi, who had recently worked with Le Corbusier to bring a new architectural idiom to Ahmedabad. Kahn was a great admirer of Le Corbusier's work and on his trip to India had a chance to visit not only his buildings in Ahmedabad but also the recently constructed Capitol Complex in Chandigarh.[61] Le Corbusier had done much to disseminate the ideal of concrete as the material of choice within the modern collectives in Europe to their counterparts in new post-colonial nations like India and the material had come to be recognized as being synonymous with the progressive stance of modernism itself. Within such a scenario it would have been not only acceptable but quite rightly expected by the clients in Ahmedabad that the newly commissioned foreign architect, Kahn, would bring the wisdom of the world and provide the city with the cutting edge architectural solution personified in concrete. Indeed then, considering the existing context of construction and his own previous experiences, Kahn would have been inclined to engage concrete in his design proposal.

In any case the November 1962 meeting of the Building Committee in Ahmedabad established a greater involvement of the Philadelphia office in the development of the IIM project. In the absence of a fully formed project team at NIID Kahn proposed that one architect from his office should be assigned as a "direct assistant" for the IIM project.[62] This proposal was readily accepted by the Building Committee and a further suggestion for deputing an Indian architect at the Philadelphia office was put forward.[63] As a result the design developments that took place subsequent to Kahn's return from

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[61] Receipt, Hotel Oberoi Mount View, Chandigarh, November 10, 1962, "National Design Institute: Incidentals (tickets, etc.)," Box LIK 113, Kahn Collection.

[62] Note by Louis Kahn, November 10, 1962, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

[63] Letter, Doshi to Kahn (Ahmedabad), November 16, 1962, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.
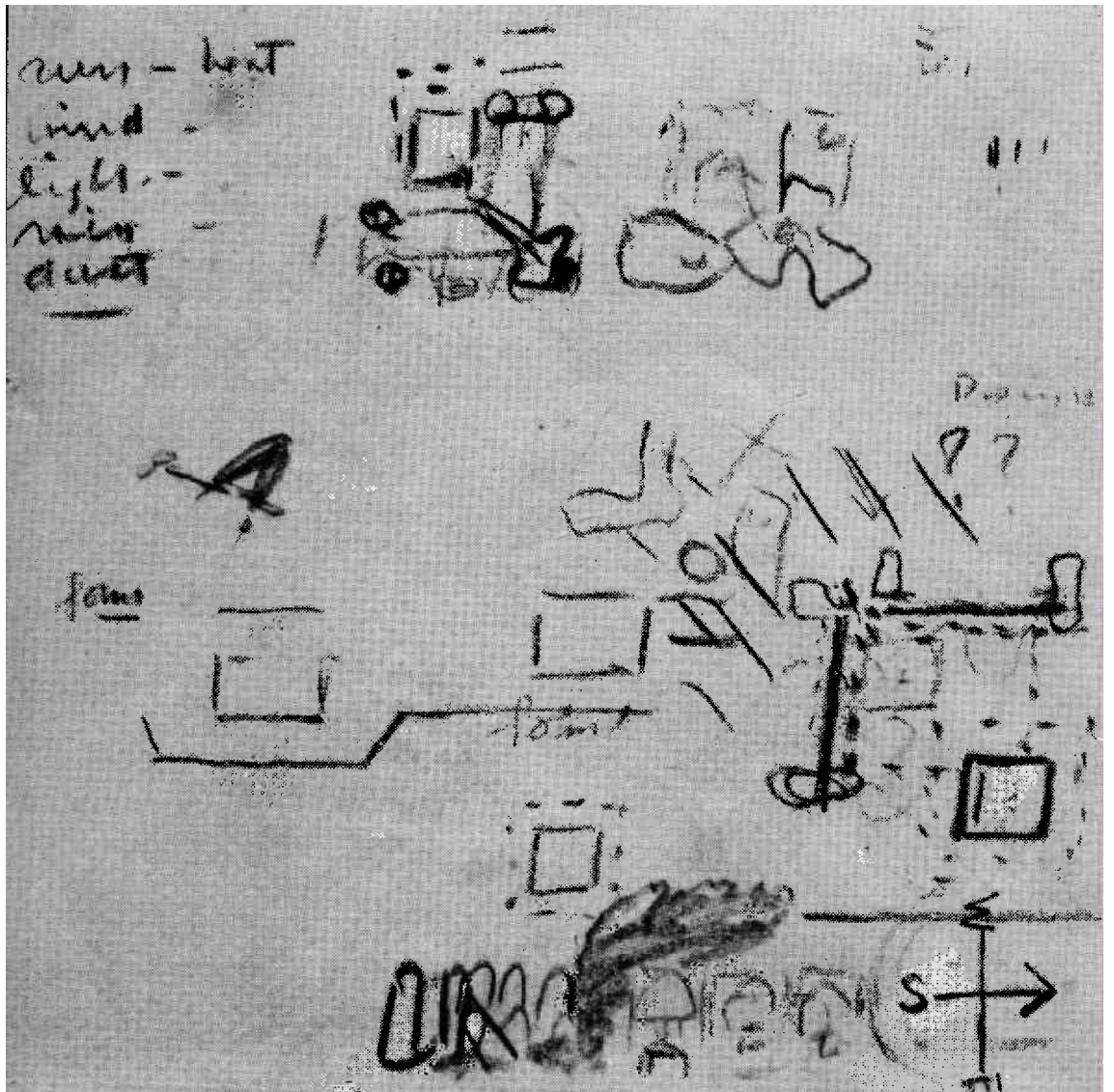
Fig. 7.8. Louis Kahn's sketches for IIM, November 14, 1962.
(Bottom right hand corner shows elevation pattern
similar to the Meeting House at Salk Institute)
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn*)

India were considerably affected by the circumstances of the Philadelphia practice. At first the IIM project received little to no attention as the office was preoccupied with the Salk Institute project which was to start construction in the last week of January 1963.[64] Even after this the demands placed by the Dhaka project restricted the amount of time that could be devoted to the Ahmedabad project as Kahn was supposed to return to Pakistan with his initial design proposal in March.[65] Following the March meeting, where Kahn and Komendant had offered to develop an entire setup for concrete construction in East Pakistan, the convictions to engage concrete was at its strongest within the office and it was in this atmosphere that the design development of the IIM project began.

The drawings and models developed for the IIM project during the early part of 1963 are also not definite on the material specifications, but the use of massive tapered shell structures clearly imply a design vocabulary involving concrete. Even though three separate design schemes were developed during these few months the changes were focused on issues of site planning and orientation to wind patterns, and the design of individual buildings retained their formal vocabulary.[66] The first scheme had started to develop alongside the Dhaka project by late March and was mostly based on the proposal outlined soon after the November 1962 visit. (Fig. 7.9) Even though Doshi's recommendations allowed for a reorientation of the entire site plan over the subsequent months, the basic design of the individual buildings followed the initial intent. (Fig. 7.10) Accordingly, the site model generated by NIID in May 1963 clearly incorporated the tapered form intended for the Main School Building.[67] (Fig. 7.11) Furthermore, considering the fact that the grandiose expression of the structure for the Main School Building had come to reflect the patterns being developed for the Dhaka Assembly building at the time, it is evident that concrete ruled the imagination of the Philadelphia collective during this phase and brick was not a consideration. (Fig. 7.12 and 7.13)

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[64] Letter, Kahn to Doshi, January 24, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection. Kahn mentions that he has spent all his time until now in San Diego for the Salk Institute project and further suggests that the new project in Pakistan may give him an opportunity to visit India more often than planned.

[65] Kahn travelled to Dhaka via Karachi at the end of January 1963 for his first meeting and was required to return with a scheme for the entire "new sub-capital" by the middle of March 1963.

[66] After discussions with Doshi regarding existing wind patterns in Ahmedabad the orientation of the site plan was changed. This is also available as an annotation on the revised site plan in "Early Design Drawings – 9/11/1962 – 12/1963," Box LIK 113, Kahn Collection.

[67] Letter, Doshi to Kahn, May 22, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 645, Kahn Collection.
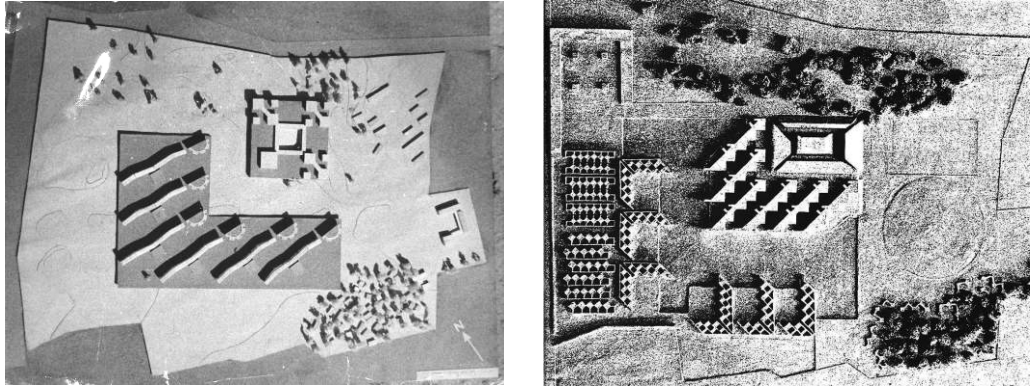
Fig. 7.9. (L) Preliminary model for first scheme, January 1963; (R) Developed scheme
(*Source: (L)* Box LIK 645, Kahn Collection; *(R)* Ronner, Jhaveri, and Vasella, *Louis I. Kahn*)
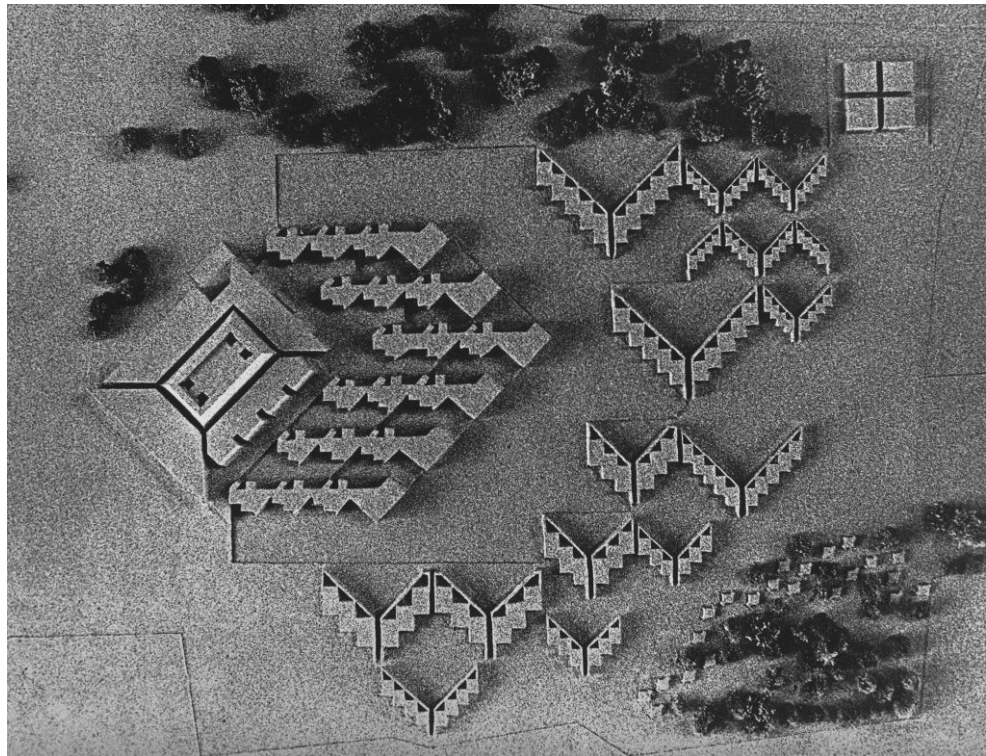
Fig. 7.10. Second scheme (notice reorientation of site plan)
(*Source:* Publications Department, Indian Institute of Management.)

Fig. 7.11. Model for Second scheme, May 1963 (Notice tapered form for School building)
(*Source:* NID Archives, National Institute of Design, Ahmedabad, India)
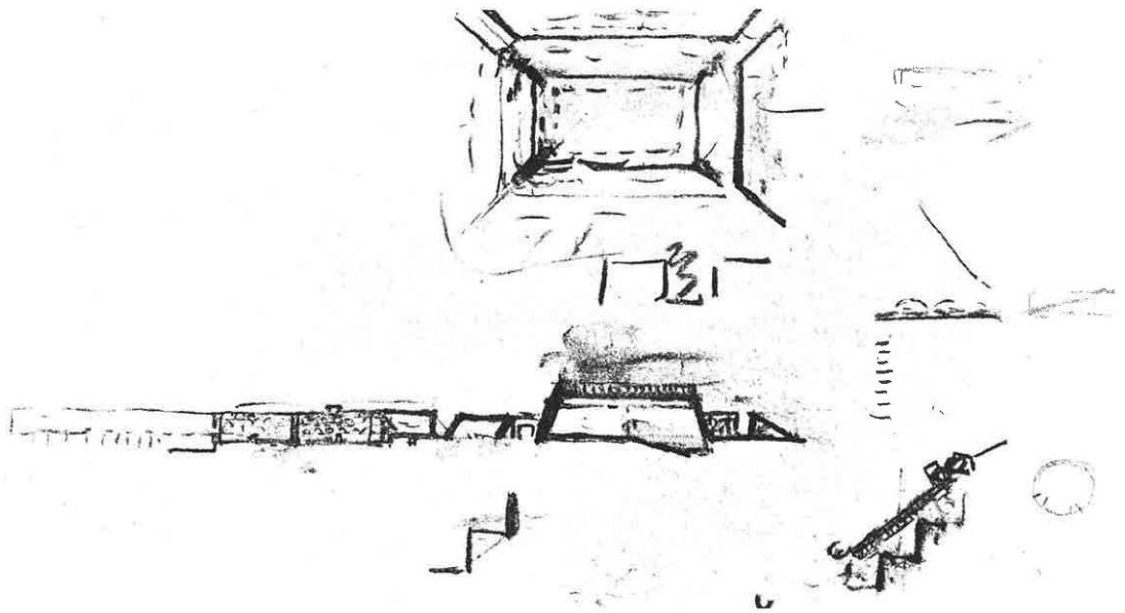
Fig. 7.12. Louis Kahn's sketches for School Building at IIM, 1963
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn.*)
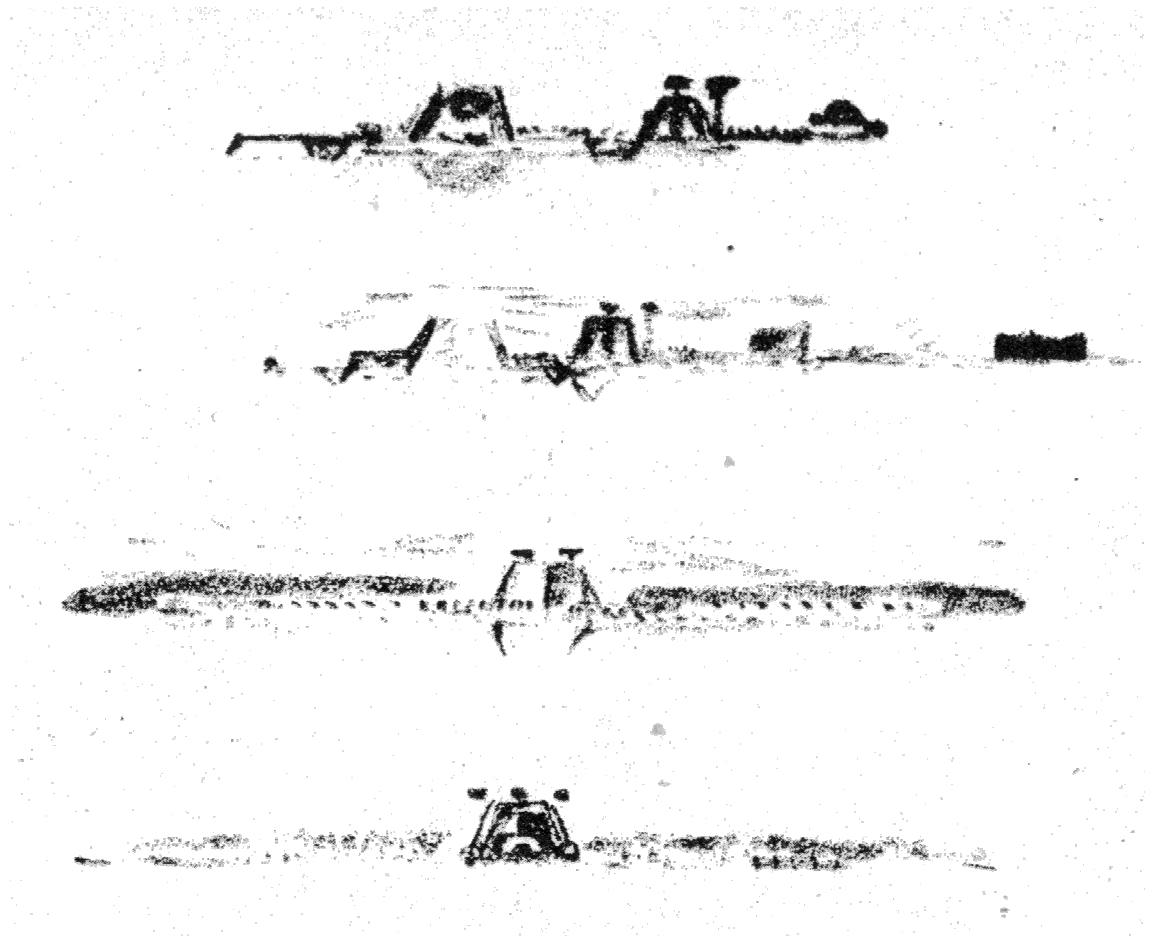
Fig. 7.13. Louis Kahn's sketches for Dhaka project, 1963
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn.*)

Therefore, it can be safely argued, as Ronner, Jhaveri and Vasella have also noted, that "buildings were designed to be executed in concrete at this stage."[68] However, this condition was to change with a subsequent restructuring of the Philadelphia collective, allowing for the inclusion of brick.

Inclusion of Brick

During the second half of 1963, the Philadelphia collective went through some significant changes and this was to alter the course of the IIM project. The first change came soon after Kahn's return from his next visit to Dhaka in July 1963 when there was a falling out with Komendant. As Komendant recalls, the relationship between the two had come under some stress since the March visit when Komendant had been invited by the Pakistani Finance Minister for a private meeting and Kahn was displeased with being sidestepped.[69] When Kahn decided not to submit Komendant's report to the Pakistani Finance Minister upon his next visit, and further offered the excuse that Komendant had not finished the report on time, Komendant felt greatly offended.[70] As a result of these events Komendant decided to withdraw his involvement from the Dhaka project and limited his interactions with Kahn to the Salk Institute project, which was already under construction.[71] Komendant's withdrawal was a crucial change for the Philadelphia collective and especially the status of concrete within it. Kahn had never completely understood the material and with the lack of Komendant's support his trust in engaging concrete for the projects in the Indian subcontinent was greatly affected. He had already made a commitment to the Pakistan government regarding the setup of an industry for the production and treatment of concrete in East Pakistan and the intent to employ concrete for this project was well established. Still, the latter half of 1963 brought about a serious rethinking of concrete and its place within the architectural projects being undertaken by this newly reorganized Philadelphia collective. Komendant's departure from the collective thus not only affected the development of

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[68] Ronner, Jhaveri, and Vasella, *Louis I. Kahn*, 288.

[69] Komendant, *18 Years with Architect Louis I. Kahn*, 59-60.

[70] Komendant, *18 Years with Architect Louis I. Kahn*, 83. In relation to his reaction regarding Kahn's conduct Komendant recalls: "As far as I was concerned, our close association was finished."

[71] The relations between Komendant and Kahn remained poor until 1967 when a collaboration on the Olivetti Project brought them together. See Komendant, *18 Years with Architect Louis I. Kahn*, 89-92. The projects handled by Kahn's office over the period of these 4 years show an obvious shift in the attitude towards materials which needs to take this change in office structure into account.

the Dhaka project but also the IIM project that was in the nascent stages of its design development.

The changing constitution of the architectural collective involved with the IIM project was not only the result of Komendant's absence but also the inclusion of other members from India. Since the November 1962 visit the requirement for an exchange of staff members between Philadelphia and Ahmedabad had been on the charts. On one hand, Kahn had intended to send one of his junior staff members, namely Duncan Buell, William Kleinsasser or Carlos Enrique Vallhonrat, across to Ahmedabad to oversee the process of design development.[72] While on the other hand, both Kasturbhai and Doshi had requested that a member from the NIID team be established in Philadelphia to work on the IIM project.[73] The placement of this NIID member at Philadelphia was intended to facilitate the production of drawings with direct inputs from Kahn without engaging the established practice set up. After the third Building Committee Meeting of 2nd August 1963, where the need to have a minimum set of buildings ready for occupation by 1st July 1964 was put forward by Vikram Sarabhai, this appointment was expedited to allow for the deputation to begin in September.[74] Subsequently, this long overdue deputation to Kahn's office was awarded to M.Y Thackeray, a senior architect working in Doshi's office, who would spend a period of six months at Kahn's office to facilitate the development of construction drawings.[75] Thackeray was supposed to arrive in Philadelphia alongwith Doshi during the month of September, but this program was postponed due to Doshi's prior commitments. As a consequence, both Thackeray and Doshi reached Philadelphia on November 13, 1963 and the Philadelphia collective was

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[72] Letter, Kahn to Doshi, January 24, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection. A correspondence from N. Zukov suggests that Kahn had contacted him to work in Ahmedabad during his November 1962 visit, see Letter, N.Zukov to Kahn (Ahmedabad), January 8, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

[73] Various correspondence between Doshi and Kahn, November 16, 1962 to September 26, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection. Between the months of May and August 1963 there were proposals for Ajit Sengupta and Subhash V. Pranjpe to serve as an assistant in Kahn's office, see "IIM Correspondence to Doshi re: Employment on Project," Box LIK 113, Kahn Collection.

[74] Minutes of the Third Meeting of the Building Committee, Indian Institute of Management Ahmedabad, August 2, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection. The need for some buildings to be ready for occupation by 1st July 1964 was raised due to start of the Institute's first MBA course in July 1964.

[75] Letter, Doshi to Kahn, September 26, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

transformed yet again.[76] The departure of Komendant had already brought about considerable changes in the design process of the Dhaka and Ahmedabad projects, and with the addition of these new members the design developments for the IIM project was to take a completely different direction.

After Komendant's withdrawal in mid 1963, while in the process of reconsidering the decision to engage concrete Kahn was reminded of an old ally that he had sighted in abundance during his last trip to Dhaka – brick. Growing up in the exposed brick surroundings of Philadelphia, Kahn had always been comfortable with the material, and ever since his stint in Rome in the early 1950s he had harboured great admiration for the possibilities afforded to architecture by this humble material. Over the course of the decade since his return from Rome the office had even engaged brick in some of its projects, albeit in a limited capacity.[77] So with the absence of Komendant's support and the consequent loss of trust in concrete, Kahn found himself drawn once again to the safety of brick. Furthermore, considering the existing cultural patterns of the Bengal region, the decision to engage brick would correspond with a notion of contextual appropriateness which could serve as a strong rationale to justify this change.[78] Bengal was a region abundant in alluvium due to the massive river networks of the Ganges and Brahmaputra flowing through it and this had always ensured an endless supply of good bricks. Accordingly, the region had developed a rich history of brick construction and the local construction industry had continued along these lines until the recent onslaught of concrete.[79] Indeed, with a considerable lack in the supply of concrete the clients had

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[76] Telegram, Kahn to Doshi, November 7, 1963, "IIM Cablegrams to/from Doshi," Box LIK 113, Kahn Collection.

[77] The effects of the Roman sojourn in returning Kahn to an aesthetic of masonry massing has been argued by many authors. However, it is also worth noting that in the projects for the Yale Art Gallery as well as the Richards Medical Towers, which are often offered in support of this argument, brick was limited to an aesthetic role as an infill and was not employed for its structural properties. Kahn's use of brick in these projects will be discussed in the next section.

[78] Komendant recalls the abundance of brick that they had witnessed on their site visit in March 1963. On this trip they were accompanied by local architect Muzharul Islam who offered his insights into the building tradition of Bengal. Komendant also recalls a short visit to Calcutta and other sites in India. See Komendant, *18 Years with Architect Louis I. Kahn*.

[79] The persistence of brick in the architecture of Bengal was prompted by two specific factors. Firstly, as the seat of Gautam Buddha it allowed for a stronger presence of the Buddhist tradition with its numerous brick *stupas* and *viharas*. Secondly, being located on the east end of India it had remained shielded from the Islamic onslaught which came from the Central Asian plains west of India. See George Michell, *The Islamic Heritage of Bengal*, Protection of the Cultural Heritage. Research Papers (Paris: UNESCO, 1984). It has also been argued that Kahn was himself inspired by the Buddhist monasteries in Nalanda, but even though Komendant recalls him travelling into West Bengal there is no evidence of his visit to the site at Nalanda. For the shift in the architectural vocabulary that came with the incursion of European modernist ideals see projects such as the Public Library and Art College designed by Muzharul Islam in 1955.

themselves repeatedly suggested the alternative of engaging brick. Therefore, as Kahn reverted from the initial proposal to unreservedly introduce concrete into the architectural vocabulary for this new nation, brick offered a safe alternative. After further discussions, the design for the Dhaka project was modified and apart from the Main Assembly Building, which had already been approved for construction in concrete, the lesser functions of housing were relegated to brick. As Kahn noted; "Other buildings related to the lake or grounds will be of masonry construction following the principles of architecture which respect the influence of indigenous conditions from which all architecture gets its beginnings."[80] By the month of October, before Doshi and Thackeray landed in Philadelphia, the decision to develop the housing for the Dhaka project in brick had already been finalised.

Even before Doshi and Thackeray's arrival Kahn was already reassessing the strategy for his involvement in Ahmedabad in the light of the problems faced in engaging concrete for the Dhaka project. Indeed Kahn's obligations with the IIM project were much more limited compared to the Dhaka project, where he was required to design a capital complex of international importance, and this prompted him to alter the initial approach. Furthermore, during his August 1963 visit to Ahmedabad the clients had raised concerns over cost implications of Kahn's proposal as well as put forward a need for part of the structure to be ready for occupation by July 1964.[81] This created a pressing need to come up with a simple and quick solution that would aid the comprehension of the design by the still not well developed local team in Ahmedabad. As a result, following from the Dhaka example, Kahn sought to develop the lesser functions of *housing* with the help of the existing construction practices in Ahmedabad. This was done with a further understanding that the initial design intent would be maintained for the Main School Building, which would be developed further in accordance with previous aspirations. (Fig. 7.14 - 7.17) Kahn was already aware of his local collaborator B.V. Doshi's schemes for the PRL and ATIRA housing, which had been a huge success with the clients, and decided to engage these as the basis for rethinking the housing for the IIM project. (Fig. 7.18) Therefore, in the months before the arrival of the new members from Ahmedabad, the reorganized Philadhpia

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[80] Kahn quoted in Ronner, Jhaveri, and Vasella, *Louis I.*, 255.

[81] Minutes of the Third Meeting of the Building Committee, Indian Institute of Management Ahmedabad, August 2, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection. For details of the costs submitted to the Building Committee see "IIM Construction Estimates," Box LIK 113, Kahn Collection.
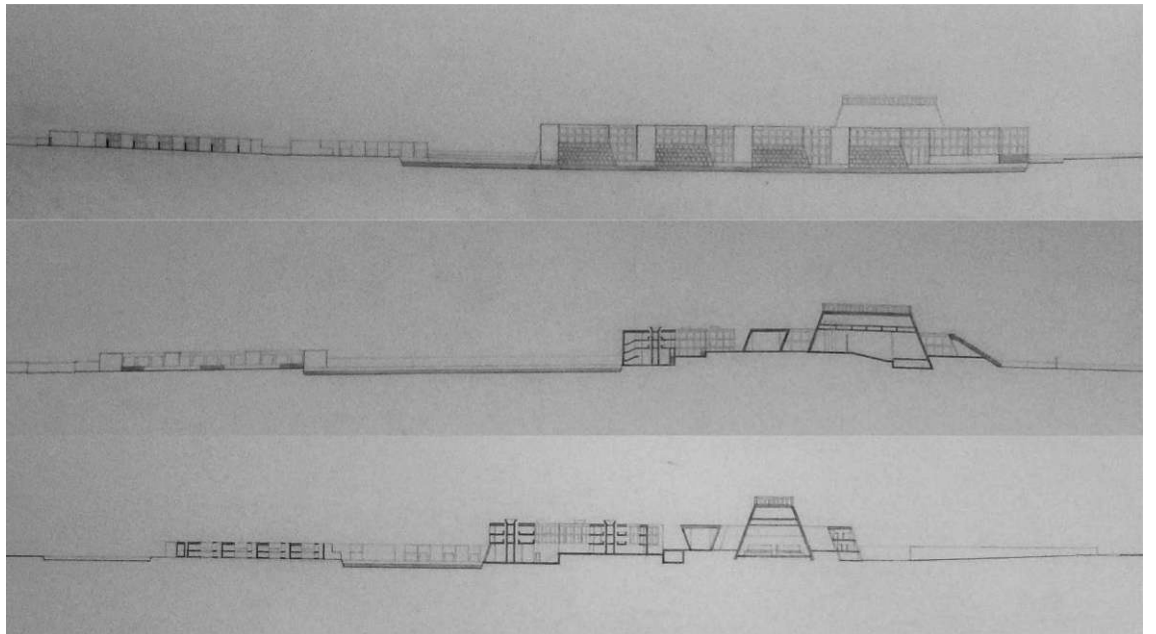
Fig. 7.14. Site sections for IIM project, July 1963.
(*Source:* "Early Design Drawings – 9/11/1962 – 12/1963," Box LIK 645, Kahn Collection.)
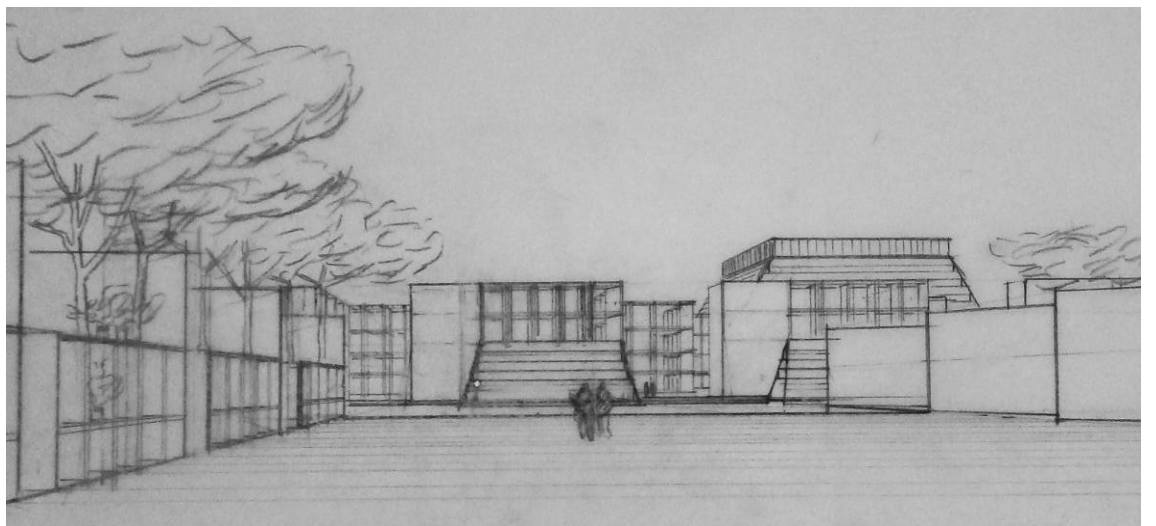
Fig. 7.15. Perspective sketch of Dormitories with Main School building in background, July 1963.
(*Source:* "Early Design Drawings – 9/11/1962 – 12/1963," Box LIK 645, Kahn Collection.)
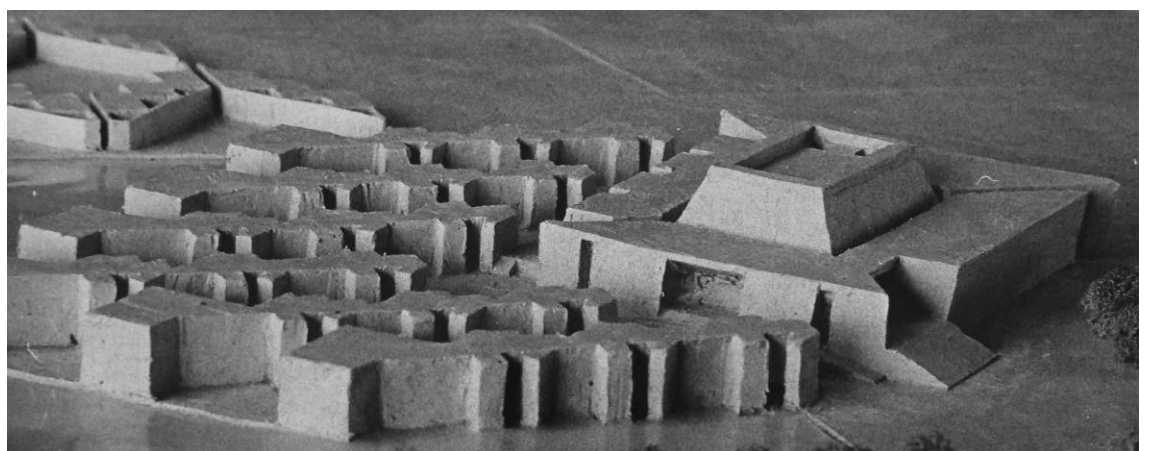
Fig. 7.16. Preliminary model showing detail of Main School Building.
(*Source:* "IIM Construction Photos," Box LIK 645, Kahn Collection.)

LONGITUDINAL SECTION
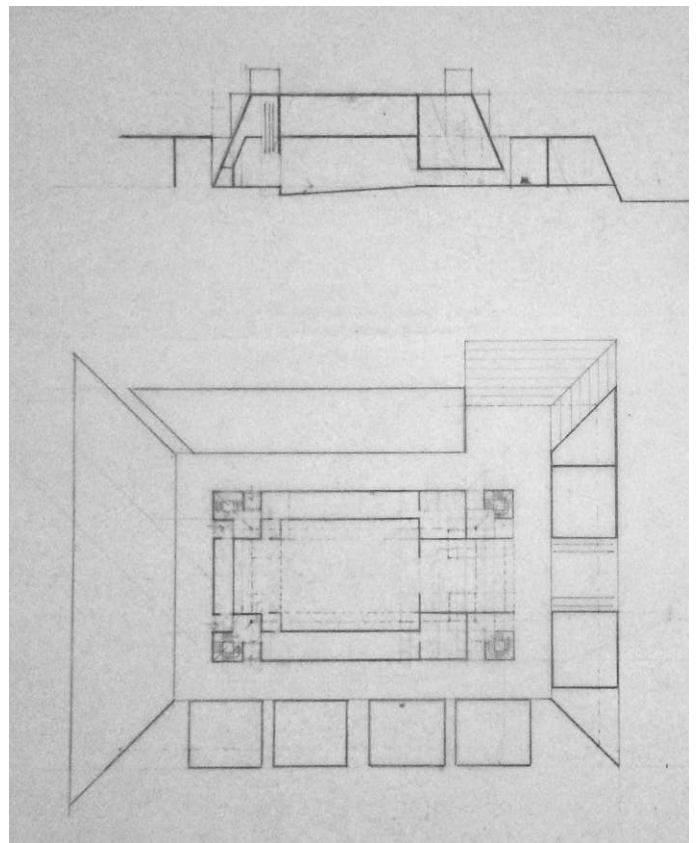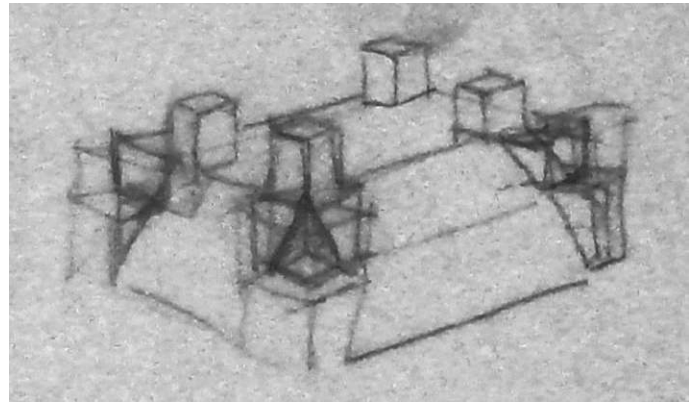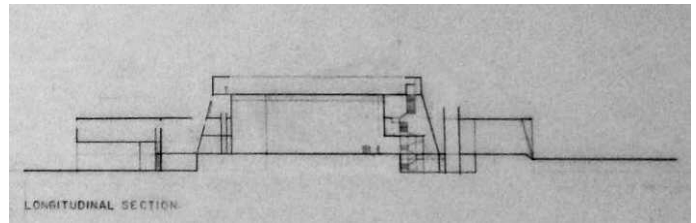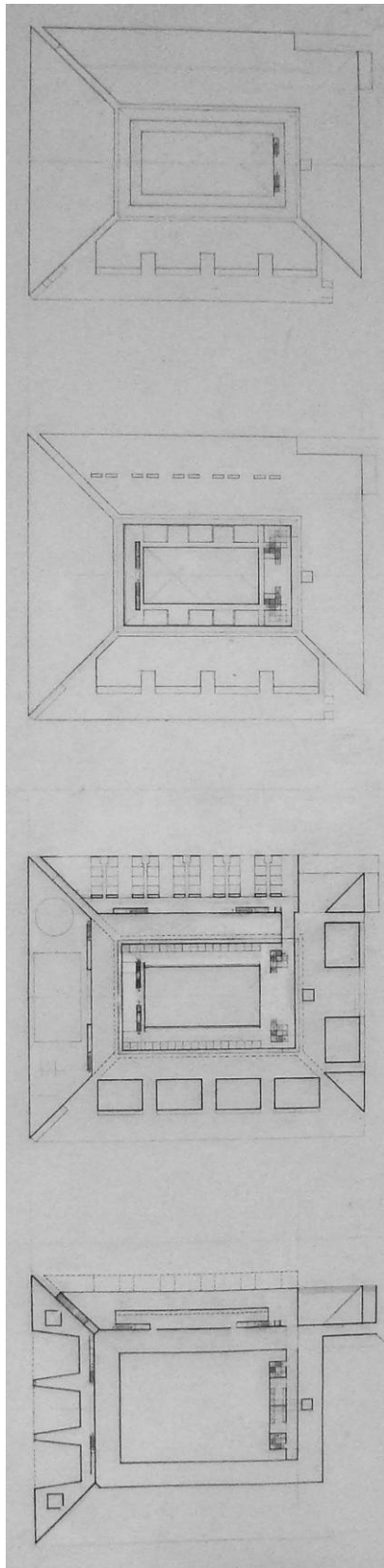
The above drawing shows a later variation where the four towers were incorporated into the initial tapered section of the School Building. This is an undated drawing but forms part of a set from late 1963.

Fig. 7.17. Development of the tapered shell design for the Main School Building, late 1963. (*Source:* "Early Design Drawings – 9/11/1962 – 12/1963," Box LIK 645, Kahn Collection.)
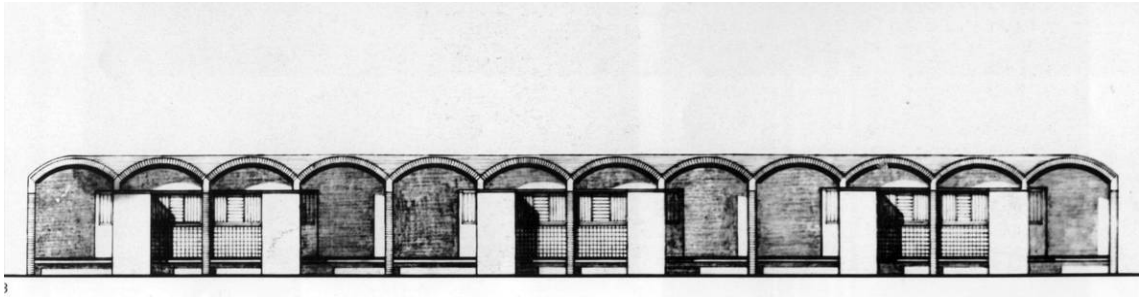
Fig. 7.18. Housing Projects for ATIRA and PRL, Ahmedabad, India, architect B.V. Doshi.
(*Source:* Curtis, *Balkrishna Doshi: An Architecture for India*, 51-52)

Collective directed its efforts towards familiarizing itself with the drawings for the PRL and ATIRA housing that had been sent over from Ahmedabad.[82]

When Doshi and Thackeray arrived in Philadelphia on 13th November 1963 the decision to engage the local traditions for the design of the housing for the Ahmedabad project was already in place. With the arrival of the new members fresh discussions were resumed within a newly reconstituted collective that now excluded Komendant and included the two representatives from Ahmedabad. Over the course of the next two weeks both Doshi and Thackeray were given primacy in leading the discussions as they took charge of explaining the existing patterns of construction they had jointly encountered in the projects for Vastu Shilpa Architects. Based on his previous work Doshi offered the suggestion that the housing for the IIM project be developed through a vocabulary that continued with the existing pattern of concrete for the flooring and a composite of brickwork and plaster for the walls. Kahn was already eager to exploit the existing traditions in the interest of time and effort and showed keen appreciation for Doshi's sketch prepared on 26th of November discussing his proposal.[83] An intense rethinking of the construction details for the IIM project followed where the staff at Philadelphia joined the new members in exploring local building traditions of Ahmedabad and developing a completely different construction vocabulary than previously intended.

Over the period of the next month several new construction details and materials were incorporated into the design which reflected the assimilation of the associations of Doshi and Thackeray into the design process. Some of these details, such as the vaulted roofing system, were directly related to the ATIRA and PRL housing projects discussed before while others, such as the use of bamboo and even coconut shells to provide further insulation from the harsh summer sun, were more reflective of the traditional methods already prevalent in Ahmedabad. (Fig. 7.19, 7.20 and 7.21) The engagement of these details and materials were most explicitly discussed in a meeting held on 12th December 1963 where two members from the initial collective, David Karp and David Wisdom, joined the newest arrival, M.Y. Thackeray, to rethink construction of the IIM

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[82] The drawings for "PRL Housing" and "Staff Quarters for ATIRA Ahmedabad" developed by Vastu-Shilpa Architects are available from "IIM Early Doshi Drawings," Box LIK 113, Kahn Collection. Further documentation on area and cost statements for the PRL Housing project is available from "IIM First Programs," Box LIK 113, Kahn Collection. All show annotations by Kahn.

[83] "Lou likes Doshi's sketch of 11-26-63." Note in unknown handwriting, November 29, 1963, "School of Management – Meeting Notes," Box LIK 113.
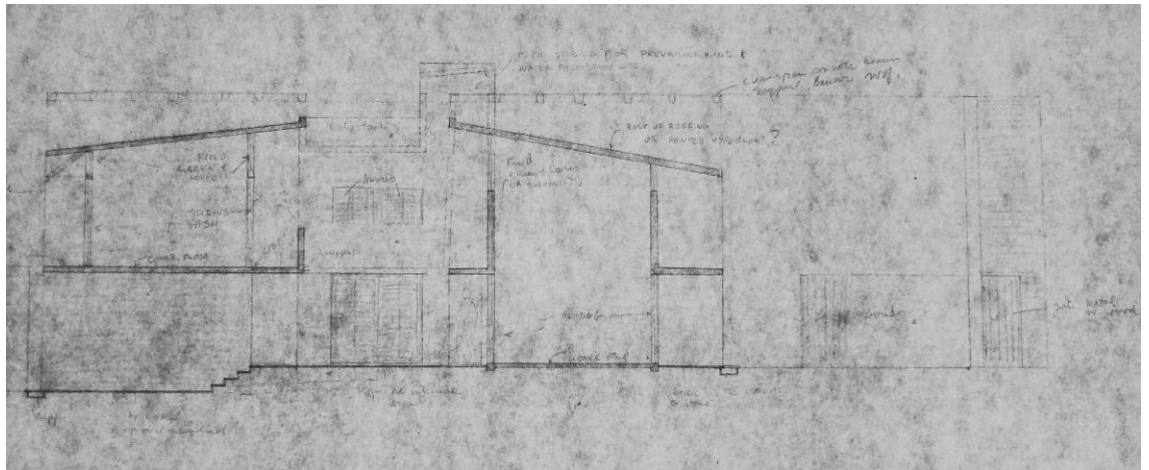
Fig. 7.19. Housing section, late 1963 (Annotation: "clearspan concrete bean support bamboo roof").
(*Source:* "Housing 1963-68," Box LIK 645, Kahn Collection.)
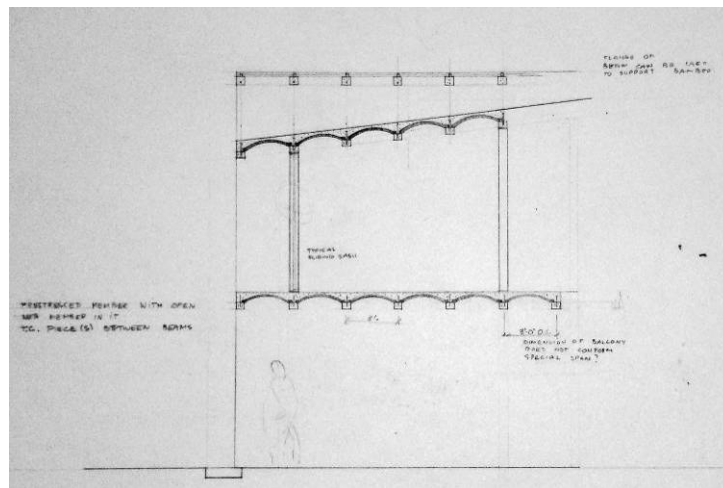
Fig. 7.20. Housing section showing further incorporation of vaulted roofing system, late 1963.
(*Source:* "Housing 1963-68," Box LIK 645, Kahn Collection.)
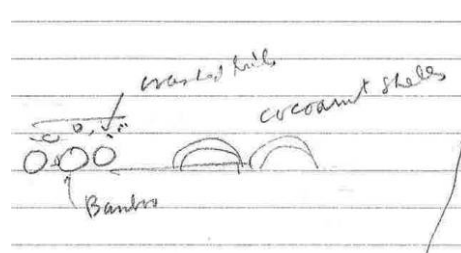
Fig. 7.21. Notes from meeting held on December 12, 1963. (Bamboo & Coconut Shells).
(*Source:* "IIM – Thackeray, Wisdom, Dave Karp Notes 12/2/63," Box LIK 113, Kahn Collection.)

housing.[84] During the course of this meeting the three individuals deliberated upon the existing techniques for wall and roof construction in Ahmedabad with a specific focus on design for a "one or two story building." Among other details the benefits of using a 9" load bearing brick wall for the construction of the housing blocks was also discussed. After considering different alternatives it was decided that the preferred option was a dual layered construction where a 9" load bearing wall on the inside was supplemented with an exterior brick-on-edge wall. (Fig. 7.22) The two walls would stand on either side of a 2" air gap and be held together with the help of galvanized wall ties. With the view of the environmental conditions present in Ahmedabad the merits of plastering such a brick wall in order to aid "cleanliness" and water protection were also contemplated. With a prior approval from Kahn this system of construction was subsequently adopted for the development of the IIM housing and by the time Doshi left for India the initial intent for a predominantly concrete construction was altered to accommodate, amongst other details, a plastered brick wall vocabulary.

It is evident that the events that led to the inclusion of brick into the IIM project were not different in nature than the ones that brought about the involvement of Kahn himself. And furthermore, that this inclusion was not the result of an autonomous process of choice where Kahn, as an architect, was merely attempting to showcase his technical mastery over the material subject. Kahn himself rarely denied the fact that brick was not his choice for the Dhaka and IIM projects and was to later recall how he had initially "resisted this change."[85] The changeover from concrete to brick can of course be explained as a function of some economic concerns and there is no doubt that economic factors were in play during the course of this transformation. Yet, justifying this outcome merely through a socio-economic perspective denies the importance of the particular conditions created by the falling out between Kahn and Komendant. In the absence of Komendant, Kahn's association with concrete had become susceptible to onslaughts by other members of the new collective who brought their own associations into the mix. As the importance of the respective local team members continued to gradually increase within the architectural collectives for both the Dhaka and IIM projects the design process metamorphosed accordingly to accommodate this new set of associations. Therefore the reappearance of brick during the late 1963 and early 1964

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[84] See "IIM – Thackeray, Wisdom, Dave Karp Notes 12/2/63," Box LIK 113, Kahn Collection.

[85] Kahn quoted in Peter S. Reed, "Sher-e-Bangla Nagar, Capital of Bangladesh," in *Louis I. Kahn: In the Realm of Architecture*, ed. David B. Brownlee and David G. De Long (New York: Rizzoli International Pub., 1991), 380.
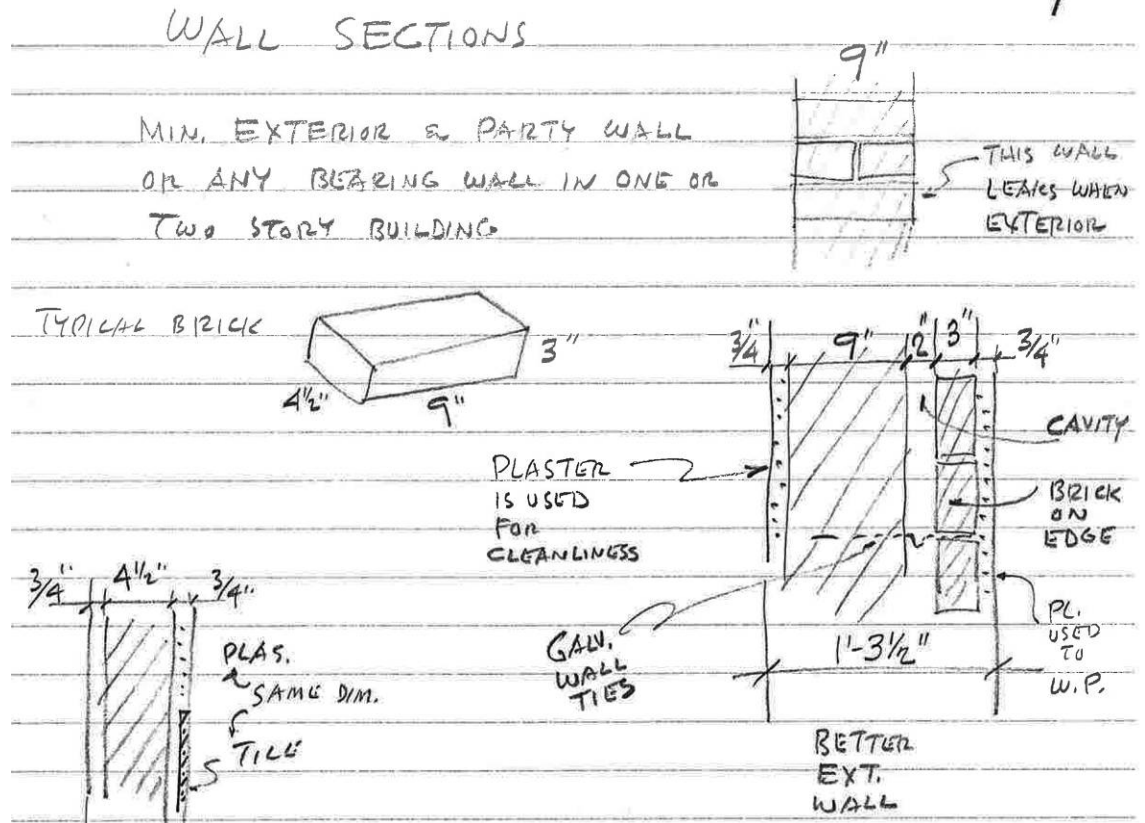
Fig. 7.22. Notes from meeting held on December 12, 1963, discussing wall section.
(*Source:* "IIM – Thackeray, Wisdom, Dave Karp Notes 12/2/63," Box LIK 113, Kahn Collection.)
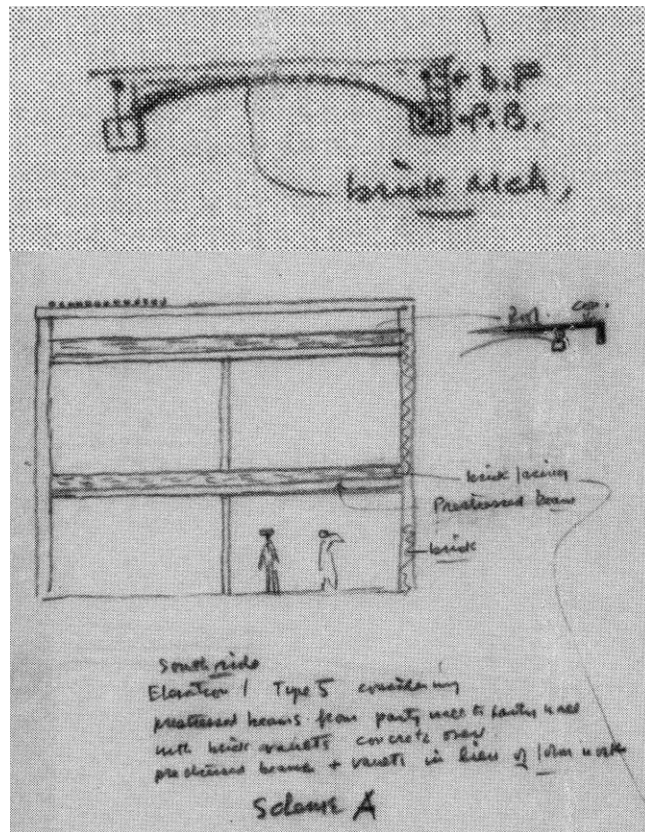
Fig. 7.23. Louis Kahn's sketches for housing, discussing use of brick vaults.
(*Source:* No.645.136, *The Louis I. Kahn Archive,* Vol 4., Garland Architectural Archives)

period was clearly the result of the changing nature of the architectural collective where newer associations were working to translate any goal that might have been identified with the original Philadelphia practice, responsible for the Salk project.

Kahn's Goal, translated

The initial designs for the IIM project, which had developed out of the efforts of the Philadelphia collective responsible for the Salk project, had clearly set a goal commensurate with its previous associations and concrete had assumed its rightful spot at the forefront. With the changes in the structure of the collective that took place over the later half of 1963 this status of prominence afforded to concrete was compromised by the arrival of brick. However, this is not to say that brick had suddenly replaced concrete at the helm. The IIM project was still slated to continue with concrete for the more important structures of the Main School Building and the plastered brick vocabulary was restricted to the lesser functions of housing.[86] Therefore the arrival of brick did not subsume the initial goal but merely translated it, as the new collective made way for brick alongside concrete. Further changes to the design of the IIM project were suspended until Kahn's return, who was away till January 1964 on a trip to Pakistan and India. Upon his return, as Kahn worked to incorporate brick into a revised goal for the IIM project the initial rationale of exploiting local practices was modified in the light of Kahn's reinterpretation of the design context.

During his latest visit to Pakistan Kahn had renegotiated the scope of his involvement in Dhaka from the design of the Assembly Building complex on a 200 acre site to a 1000 acre redevelopment of the entire master plan for the new capital, and finally signed an agreement with the Government of Pakistan allowing him to set up a field office staffed with representatives from Philadelphia.[87] This increased scope as well as greater control over the Dhaka project strengthened his already burgeoning conviction to establish an architectural statement of international importance. He, therefore, perceived a need to go beyond a mere adoption of local construction techniques, which reflected the

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[86] The discussions to incorporate local building traditions that were held at the end of 1963 were mostly concerned with the impending construction of the housing blocks which were to be completed for occupation by end of May 1964. At this stage neither the Main School Building not the Dormitories had been developed in significant detail to deliver a final verdict on construction techniques.

[87] The consistent desire to expand the scope of the project from 200 acres to 1000 acres is documented in several exchanges between Kahn and the authorities in Pakistan over the entire period of 1963. See discussion in Peter S. Reed, "Sher-e-Bangla Nagar, Capital of Bangladesh." The agreement with the Government of Pakistan was signed on January 9, 1964. See Agreement, January9, 1964, "PAKCAP Contract," Box LIK 116, Kahn Collection.

"influence of indigenous conditions," and actually strive to bring forth the "total concept [which may be] recognised by [the] world as [an expression of] great value given for ages by Pakistan."[88] Indeed, Pakistan, until very recently, had been a part of a single united India and the hastily drawn borders at the end of colonization had not generated a tremendous difference in the cultural outlook between the two countries. Therefore, this desire to recognise an enduring expression of Pakistan further affected the way Kahn read the design context offered by the project in Ahmedabad. Furthermore, the developments in the Gandhinagar project over the December-January period meant that there was a distinct possibility of Kahn's involvement in developing a project for his Indian clients which was very similar to the task in Dhaka.[89] Indeed during his January trip to India before signing the contract with the Pakistani authorities, the details of the Gandhinagar project were discussed in detail with Kasturbhai Lalbhai.[90] From the perspective of a foreigner who had spent limited time in both cities, then, Ahmedabad like Dhaka grew to represent a very similar context, of an emerging third world nation in the distant East, and the task of generating an international expression for this seemed to overtake as the prime objective of the design exercise. Consequently, over the period of the next few months, while the two projects for Dhaka and Ahmedabad continued to develop alongside each other in the Philadelphia office, they assumed very similar design characteristics which confused the local traditions of the two sites into a single conception of the South Asian context.

Soon after Kahn's return from his trip in January 1964, the design for the Dhaka Assembly project went through a major process of deliberation where further design details were developed. The Assembly building itself assumed a more monumental characteristic with eight separate structural units forming its octagonal perimeter and massive circular apertures adorning its facade. In rethinking the design of the hostels

[88] Telegram, Kahn to Buell, November 18, 1963, "Second Capital – Pakistan Cablegrams to/from Kafiluddin Ahmad August 27, 192 through Nov. 26, 1963," Box 117, Kahn Collection.

[89] Discussions regarding Kahn's involvement in the Gandhinagar project were revived in November 1963 when Doshi arrived in Philadelphia. See Letter, Kahn to Kasturbhai Lalbhai, November 20, 1963, "India – Gujarat Government," Box LIK 85, Kahn Collection. Kahn continued to negotiate the terms of engagement over the December-January period and was subsequently requested to contact the PWD Chief Engineer, Mr. Kantawala regarding the same in February 1964. See Letter, Doshi to Kahn, February 5, 1964, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

[90] Kahn was in Ahmedabad to attend the Fifth Meeting of the Building Committee held on January 2, 1964. He was also invited by Kasturbhai Lalbhai to accompany him on a trip to visit some architectural sites in Rajasthan. See Letter, Doshi to Kahn (c/o Kassibuddin Ahmad, Pakistan), December 23, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

Kahn worked to develop a similar vocabulary and experimented with different options for the openings of the glare walls. (Fig. 7.24) Here he was to note, "The various explorations I have made of possible openings, some reminiscent of the past, are not really concrete forms although I think some of them are more so than others."[91] He had already witnessed the superior quality of bricks and brickwork available within the Bengali context, and soon adopted an exposed brick vocabulary for the development of the hostels. As he turned his attention to the IIM project Kahn discovered the new details that had been developed with the inputs of Thackeray and Doshi in late 1963. Doshi had already left Philadelphia and Kahn took to reinterpreting these suggestions towards adopting local building traditions in the light of his new found desire to generate an architectural expression for the South Asian context. In particular the suggestion for engaging brick for the IIM project was recognised as offering a similar design context to Dhaka and an exposed brick vocabulary was approved for Ahmedabad as well. Viewing the two projects through his singularizing lens Kahn was unable to recognise the finer differences in the brick traditions of the two sites. Therefore, even though the brickwork of the drought prone lands of Ahmedabad was not comparable to the brickwork originating from the rich alluvium of Bengal, Kahn subjected the projects on both sites to very similar design processes.

Even as he had placed his trust in the brick traditions of South Asia, Kahn was not well versed in the construction context of either Dhaka or Ahmedabad and therefore proceeded with the development of this exposed brick vocabulary in the light of his own previous experiences. Kahn had already worked in association with brick for a number of projects in America. In fact since his return from the Roman sojourn of 1950-51 brick had been a faithful companion in Kahn's shift to monumental civic architecture. The projects from this period, such as the Yale Art Gallery and the Richards Medical Towers, were better known for the innovative systems adopted for their structure and services (and these were duly rendered in concrete) but it was the use of brick that allowed them to integrate with their surroundings. Therefore, brick played a significant role in accomplishing the task of forming a link between the historical past and the technologically minded present that had become the growing concern of the contemporary generation.[92] However, the engagement of brick within such a context

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[91] Ronner, Jhaveri, and Vasella, *Louis I. Kahn*, 253.

[92] For the role played by brick in allowing Kahn's architecture to serve as a link between "abstract architectural memory" and "progressive advanced technology" see discussions in Brownlee and De Long, *Louis I. Kahn*, as well as Kenneth Frampton, "Louis Kahn: Modernization and the New Monumentality,
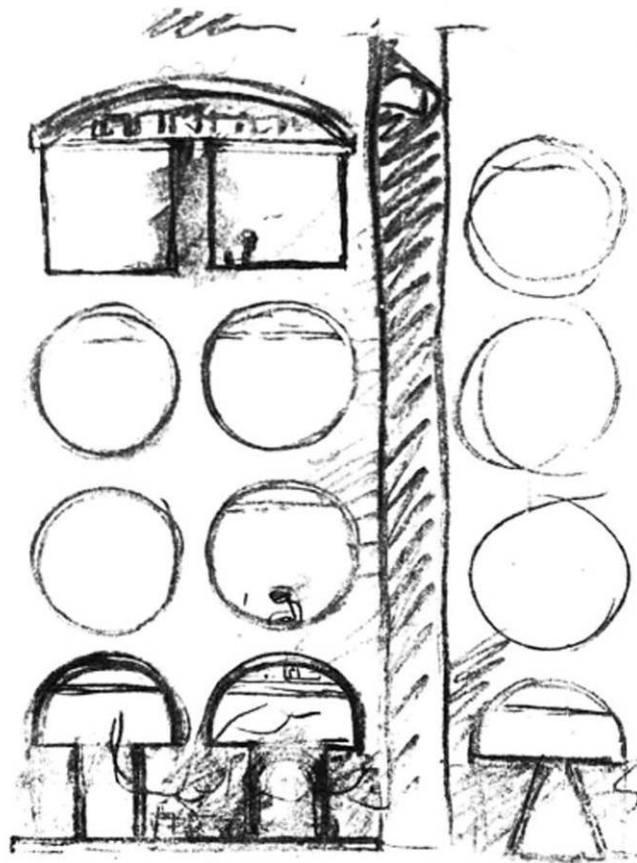
Fig. 7.24. Elevation sketch, study of openings for Dhaka project, 1964.
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn*, 253.)
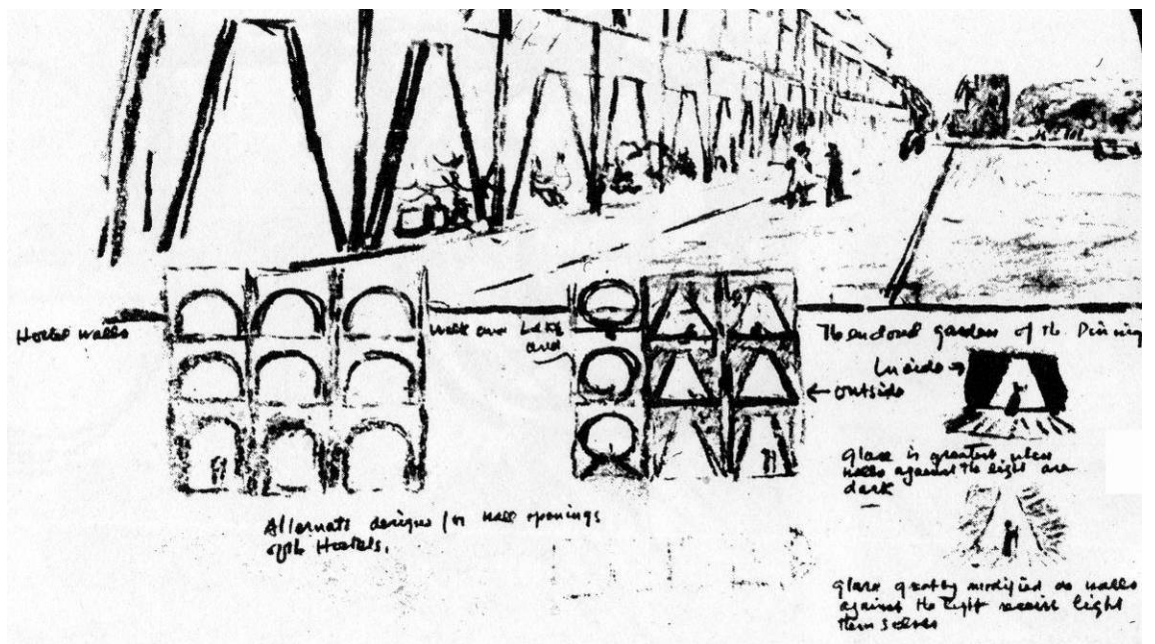
Fig. 7.25. Study of openings for Dhaka Hostels, 1964
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn*, 253.)

meant that it remained limited to a nostalgic cladding and was not recognized for its other architectonic characteristics.[93] It is not surprising that this would be the case in mid-twentieth century America where the program of the Modern Movement had by now established itself in such a way that the developments in the construction industry worked to replace the labour intensive visions of brick with the myth of concrete as the "precise 'machine-age' material."[94] Having limited his professional endeavours to this American context, Kahn's understanding of materials was a reflection of the construction industry he was reliant upon. In his American projects, therefore, Kahn employed brick merely as an aesthetic link to the past (strengthened now by his Roman experience), while never really recognizing the mass and plasticity that came as a result of relating with the material structurally.[95] Not aware of the differences that brick would assume within the context of the Indian sub-continent Kahn continued to approach the design for the Dhaka and Ahmedabad projects in the light of such previous associations with brick in America.

As the exposed brick vocabulary was uniformly applied across the two projects in the light of Kahn's assumption of a common South Asian context, the design development during the early months of 1964 disregarded any recent efforts to build upon local construction traditions and merely appropriated brick for the formal vocabulary developed initially. Accordingly, in the drawings produced during this period there was an evident struggle to appropriate exposed brick construction towards developing large openings, which were an essential part of the original idiom of "glare walls." (Fig. 7.25) The coincidence of the adopted construction system with the Roman precedents for these glare walls further helped in bypassing any desire to reconsider the local building traditions in further detail, and the resultant designs assumed an interpretation which was yet another reflection of the Philadelphia practice. For the Dhaka project this meant

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1944-1972," in *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, ed. John Cava (Cambridge, Mass.: MIT Press, 1995).

[93] At the Yale Art Gallery, as Leslie notes, "the masonry walls were built with a custom-sized brick, whose square proportions suggested that they did not have the traditional bearing function of a standard, rectangular brick." See Leslie, *Louis I. Kahn*, 76. Also, Reyner Banham recognised Yale as being questionably Brutalist and noted that "its honesty lies chiefly in its frank admission of Kahn's inability to think of a better way of covering this facade with glass." See Reyner Banham, *The New Brutalism: Ethic or Aesthetic?*, Documents of Modern Architecture (London: Architectural Press, 1966), 44.

[94] Banham, *The New Brutalism*, 16.

[95] Soon after the Yale Art Gallery project, which has often been accorded with signifying Kahn's return to mass, Kahn formed an alliance with August Komendant, and by the time of the Richards Medical Towers project the concerns of structural innovations in concrete had subsumed any developing desire to address the structural integrity of brick as a load bearing material.

that the design of the hostels incorporated brick to reflect almost a similar formal characteristic as the Assembly Building which was being detailed in concrete. (Fig. 7.26) While for the Ahmedabad project, the design of the dormitories as well as the school building were changed to reflect a formal character not very different from the large exposed brick openings being developed for Dhaka. (Fig. 7.27) Accordingly, a new site plan was generated for the IIM project and these drawings were sent over to Ahmedabad for further work.[96] (Fig. 7.29 and 7.30)

This translation of the initial goal, where the IIM project was intended to build upon an exposed concrete vocabulary of the Meeting House for the Salk Institute project, to a rendering of these massive forms in exposed brick was already in place by March 1964 when Thackeray was joined by a young graduate architect from Ahmedabad, Chandrasen Kapadia.[97] Over the next three months Thackeray and Kapadia worked to develop this new goal for the IIM project in Philadelphia while Kahn made regular trips to India to ensure that the new vision was conveyed to the authorities in Ahmedabad.[98] Vikram Sarabhai's requirement for having a number of structures ready for occupation by July hardly seemed feasible but nevertheless Thackeray returned to India by June to aid the beginning of the construction process. The work done during this period of March - June 1964 had been focused on an appropriation of Kahn's aesthetic vocabulary and the development of construction details had remained neglected. It was almost as if there was an implicit assumption that the existing practices in Ahmedabad would be conducive to this new brick vocabulary and the construction details did not command priority. Therefore, when Thackeray returned to India the development of the construction details became the responsibility of yet another architectural collective gathering in Ahmedabad.

Although Kahn and the reorganised collective in Philadelphia had worked to firmly establish this new goal for the IIM project, the assumptions made by Kahn in formulating this vision had failed to acknowledge certain conditions that would eventually work to change this goal yet again. Firstly, the brick in its Ahmedabad

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[96] See Letter, Doshi to Kahn, April 15, 1964, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

[97] Letter, N.V.L. Narasimhan (Secretary, National Design Institute) to M.Y. Thackeray (Kahn's office), March 17, 1964, "National Design Institute Accounting," Box LIK 84, Kahn Collection.

[98] Kahn travelled to Ahmedabad for the Sixth Meeting of the Building Committee held on April 27, 1964. He then returned on May 16, 1964 during his visit to Pakistan to further the process of the Gandhinagar project which had recently been granted. See Letter, S.N. Banker to Kahn, May 8, 1964, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.
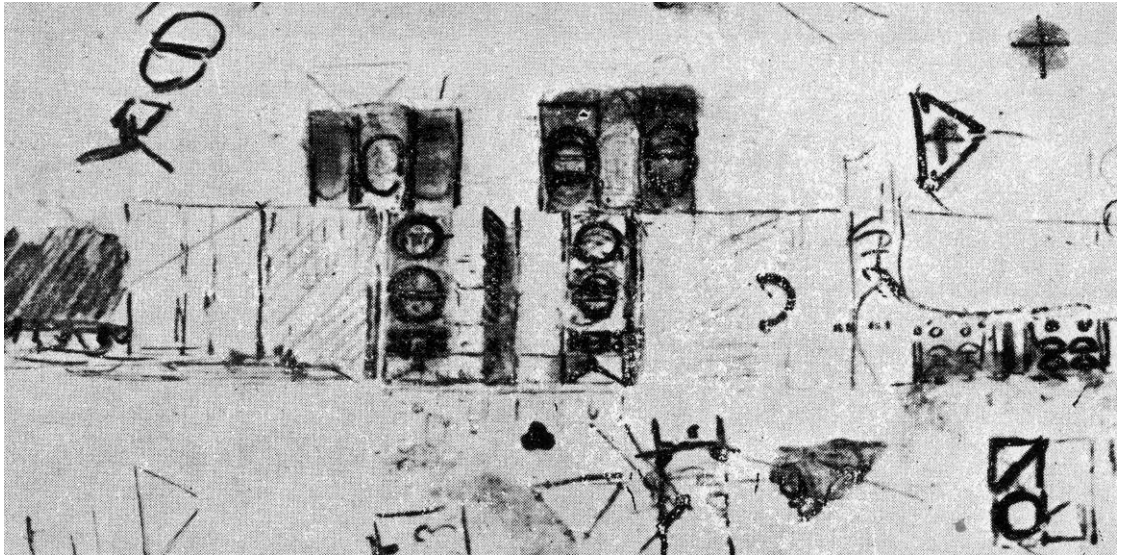
Fig. 7.26. Sketch showing Dhaka Hostels with Assembly Building in the background.
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn.*)
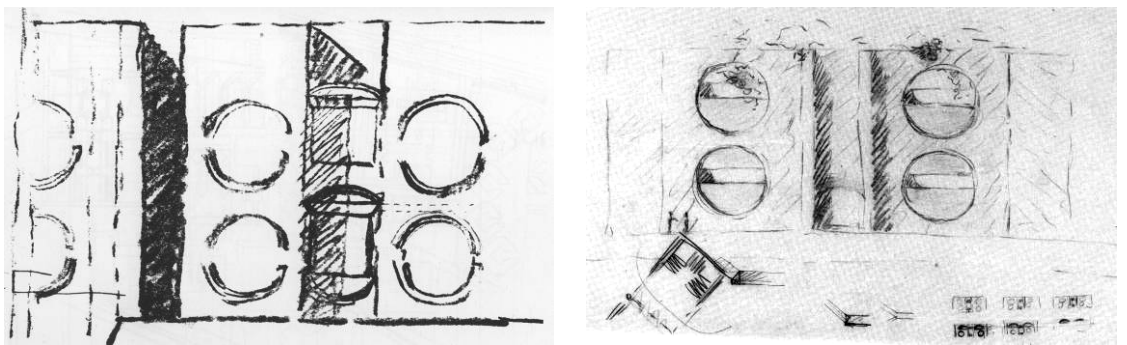
Fig. 7.27. Sketch for Dhaka project (L) and IIM project (R) showing similar formal expression,1964.
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn.*)
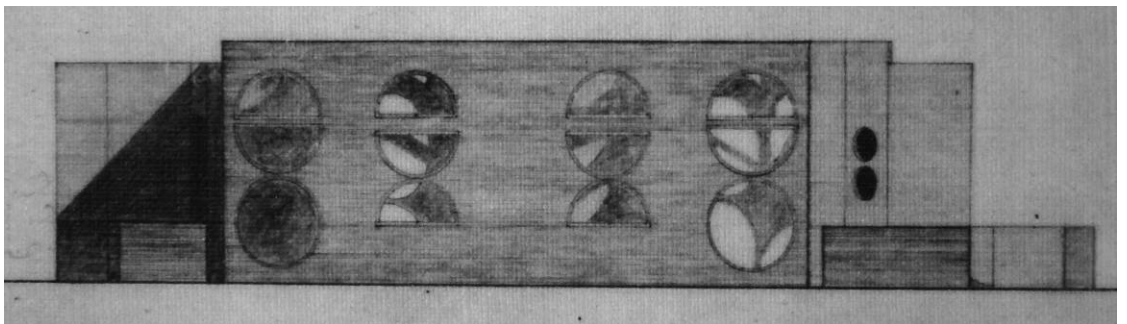
Fig. 7.28. Elevation for IIM School Building, mid 1964.
(*Source:* Publications Department, Indian Institute of Management.)
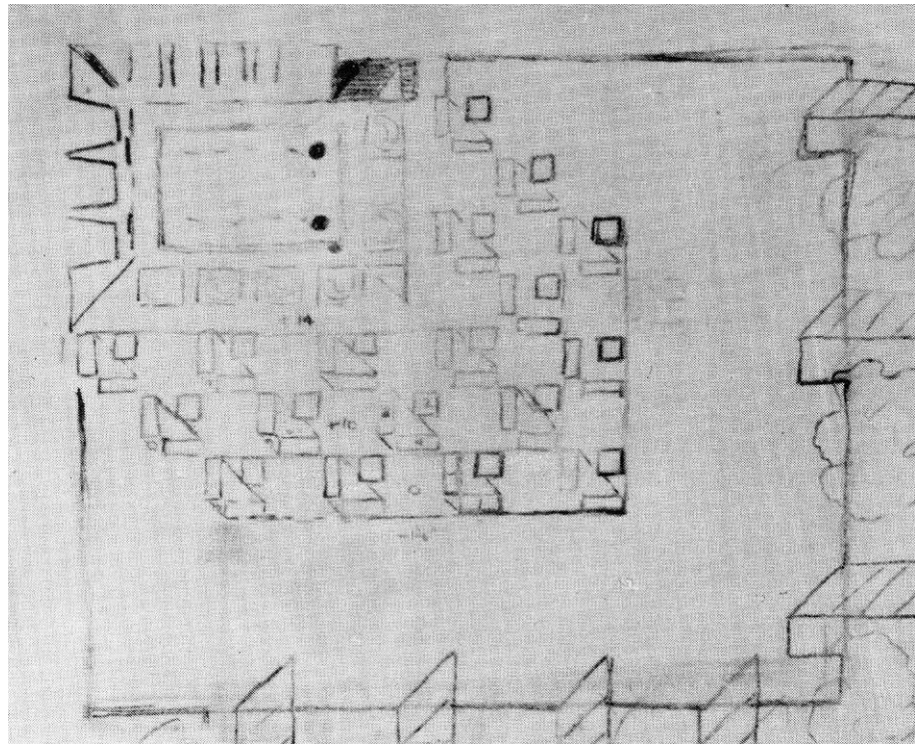
Fig. 7.29. Site plan sketch, intermediate version, early 1964.
(Shows revised design for Dormitories while the School building continues with the previous design)
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn,* 268.)
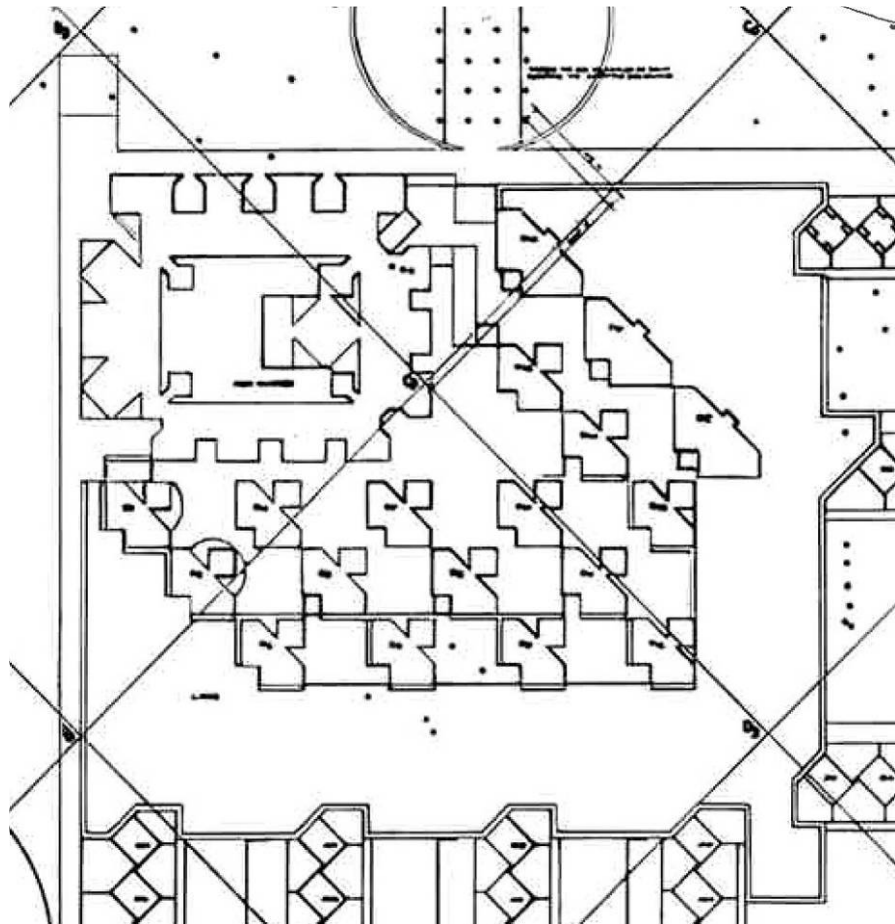
Fig. 7.30. Site plan. mid 1964.
(Shows revised design for School building to reflect new vocabulary)
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn,* 269.)

context was categorically different than its American or Bengali counterparts. Not only were the production and assembly processes unlike the mechanized traditions of the American construction industry but the very raw materials that the Ahmedabad brick was composed of posited conditions that could not mirror the traditions of Bengal.[99] Furthermore the development of construction documentation within Ahmedabad meant that the drawings prepared in Philadelphia would need to be interpreted by myriad agencies which would further affect the final execution of the design. As the pressure to start construction on the Dhaka project began to mount, and the Gandhinagar project eventually dropped out over the next few months, Kahn's visits to Ahmedabad ceased.[100] Kahn was not able to return to Ahmedabad until the end of the year when the construction on the project was well underway, and during these months the already revised goal continued to undergo another process of translation at the hands of the Ahmedabad Collective.[101]

The Expanding Collective at Ahmedabad

While the early part of 1964 was spent recasting the IIM project into a new mould that was commensurate with the goal of the Philadelphia collective, the agencies in Ahmedabad were steadily gathering to constitute yet another collective that needed to be reckoned with. The impact of the changes in Ahmedabad had already been felt in Philadelphia with the arrival of the new members, who had worked to translate the original goal considerably with their inputs. However, the influence of these new agencies would not remain limited to the minor suggestions offered within the context of the Philadelphia practice, because with the task of developing the construction documentation within the context of Ahmedabad the role of the new collective grew considerably in importance. Also, contrary to Kahn's belief, this team of professionals in Ahmedabad was not a mere extension of his Philadelphia office working to realise the designs developed in America. Instead, by engaging its own set of associations, this

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[99] The difference of the clay type available in the Gangetic belt to the soil of peninsular India and its effect on the quality of bricks is documented in Ashok Tiwari and Gurdeep Singh, *Scientific Study of Production of Building Bricks around Ahmedabad* (Ahmedabad: CEPT, 1995).

[100] Between the months of July and September, 1964, Kahn corresponded with the PWD Chief Engineer, Mr. Kantawala to renegotiate the terms of his engagement on the Gandhinagar project. As the authorities failed to agree with his terms Kahn denied the commission in September, 1964 vide Letter, Kahn to Kantawala, September 18, 1964, "India – Gujarat Government," Box LIK 85, Kahn Collection.

[101] Construction started in October 1964. Letter, Doshi to Chandrasen Kapadia (in Philadelphia), November 2, 1964, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

confluence of designers and consultants developed into an entity in its own right, and formed a parallel force in the development of the IIM project as the Ahmedabad Collective. By the time of the beginning of the actual production in October 1964, then, the Ahmedabad Collective had become an inescapable reality working to translate the goals set out by the office in Philadelphia.

The most significant component of this Ahmedabad Collective was the architectural team being developed at NDI. According to the original agreement, this project team was supposed to be composed of, in addition to the local collaborating architect B.V. Doshi, a set of "graduate architects" engaged by NDI. Since the majority of the members of this team were supposed to be fresh graduates, it may be assumed that their knowledge of the construction industry would be restricted to the limited theoretical exposure available through textbooks. In such a scenario it was expected that Kahn, who was to serve as their mentor in the service-cum-training model, would easily be able to train these graduate architects in a construction system that were not necessarily a reflection of the local industry. However, as the reality of the circumstances was to dictate, the members eventually recruited for the NIID team were not such a set of experience-free inquisitive minds available for a remoulding by Kahn.

The selection of these graduate architects was supposed to be solely dependant on the governing body of the NDI. However, with the lack of timely execution of this recruitment process the Sarabhais, as the head of the Governing Council, turned to the recommendations offered by their consultant and close ally B.V. Doshi. This had already led to the appointment of M.Y. Thackeray, who was working with Doshi's practice at Vastu-Shilpa Architects at the time of his employment in September 1963.[102] Thackeray's appointment as the most senior member of the project team being developed at NDI, then, had further consequences for the way this team would develop. Soon, other people who were involved with Doshi's practice found their way into the project team at NDI. Chandrasen Kapadia, who followed Thackeray to Philadelphia in March 1964, was a former trainee from Doshi's office. Similarly, M.S. Satsangi, who was recruited by Thackeray upon his return from Philadelphia in mid 1964, had also worked as a trainee with Vastu-Shilpa Architects in 1962.[103] As a result of this process the initial separation between the project team at NIID and Doshi's existing practice at

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[102] Letter, Doshi to Kahn, September 26, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

[103] M.S. Satsangi, interview by author, New Delhi, India, January 4, 2008.

Vastu-Shilpa Architects was blurred.[104] Therefore, although these affiliates of the NIID team still fulfilled the requirements of being graduate architects, as specified in the India Report, they were not the fresh minds free of prejudice that the Eames had envisioned. By sharing their training experience at Doshi's office they had also come to share a preconception about the workings of the construction industry and this would continue to colour their contributions to the IIM project, particularly with the imminent task of developing construction documentation.

With the impending construction of the IIM Project, yet another agency that became an essential part of the growing collective in Ahmedabad in 1964 was the construction firm Gannon Dunkerley and Company Limited (hereafter Gannon Dunkerley). Gannon Dunkerley was an emerging consultancy that had a short but intense history in construction.[105] The firm had only entered the field of civil engineering in the 1930s, and with the advent of the Second World War had established itself as an important player by serving the growing need for roads, bridges and even airstrips. With a subsequent change in management, which took place just before India's independence from British rule, the firm grew into a public limited company in 1948 and became a definitive participant in the development endeavours for the new nation. With its experience in the public sector, it soon became one of the pioneers in the adoption of the emerging reinforced concrete technologies of the 1950s and thereby served as the perfect choice for Le Corbusier's projects in Ahmedabad. Even after Le Corbusier's departure the firm continued to retain strong favour in the social nexus that was formed as a result of these architectural ventures and was subsequently chosen for several projects commissioned by Sheth Kasturbhai Lalbhai and designed by B.V. Doshi, such as the L.D. Institute of Indology, and the ATIRA and PRL Housing.[106] Therefore, the involvement of the firm of Gannon Dunkerley for the IIM project was yet another extension of the architectural network that found its common centre in the figure of B.V. Doshi and his experiences in Ahmedabad.

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[104] It is worth noting that Anant D. Raje, who was not associated with the NIID or the IIM at this stage but started working at Kahn's office in Philadelphia later that year, was also a former associate of Doshi and had worked on the PRL housing project. Raje would go on to play a crucial role in the execution of the IIM project after 1969 when NDI's involvement in the project would come to an end.

[105] A short history of the firm is available from Gannon Dunkerley & Co., "History," http://www.gannondunkerley.com/history.htm (accessed January 12, 2009).

[106] For details of the involvement of Gannon Dunkerley & Co. in these projects, see William J.R. Curtis, *Balkrishna Doshi: An Architecture for India* (New York: Rizzoli, 1988).

Aside from the design team at NIID and the construction team composed of the employees from Gannon Dunkerley, the growing collective at Ahmedabad also involved several other consultants and organisations which were indirectly responsible for the production of the construction documents. However, as a part of the increasingly restricted nexus of design professionals anchored around Doshi's Ahmedabad practice their input too remained commensurate with the workings of this office. Indeed, several of them, such as Mahendra Raj, Sharad Shah, R.N. Vakil and K.B. Mehta, had previously worked with Doshi on various projects and helped define the methods of his practice.[107] Therefore, the Ahmedabad Collective surely and steadily grew to represent an architectural tradition that was rooted in the experiences of Doshi and his practice in Ahmedabad.

When Thackeray returned from Philadelphia in June 1964 the construction documentation for the IIM project had yet to be developed. On the other hand the beginning of the construction was more than overdue and the clients were getting impatient. Therefore, this newly formed Ahmedabad Collective worked to rapidly translate the often diagrammatic drawings sent from Philadelphia into construction documents. With the impending construction, which began soon afterwards in October 1964, the drawings frequently changed hands without going through a thorough detailing process and the various agencies were left to rely on their previous associations to interpret them. Owing to the skewed development of this Ahmedabad Collective, which had resulted in the members finding a common anchor in the practices of Doshi's office, such a task of interpretation would continue to invoke shared associations. Accordingly, the drawings sent from Philadelphia were appropriated for construction in a mode that was increasingly distinct from the intended goal of the Philadelphia office and corresponded instead to the patterns forming around Doshi's practice in Ahmedabad at the time. In addition to this, the continued absence of Kahn, or even the much promised representative from the Philadelphia office, during this period further allowed for such a translation of goals to be achieved without much resistance.[108] Even as actual construction began later that year the structures being built

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[107] See Curtis, *Balkrishna Doshi*, 182.

[108] In spite of several correspondences between Kahn and Doshi over 1963 and Kahn's initial assurance to send either Buell, Kleinsasser or Vallhonrat over from Philadelphia this exchange of staff between Philadelphia and Ahmedabad had never materialised. For instance, see Letter, Kahn to Doshi, January 24, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection, and Letter, Doshi to Kahn, May 22, 1963, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

on site remained the result of this reinterpretation that was reflective of a tradition born out of Doshi's experiences.

A Parallel Goal in 'Brutalist' Ahmedabad

B.V. Doshi had arrived in Ahmedabad merely five years before the IIM project was launched, and even then he was only around to oversee the construction of Le Corbusier's projects in the city. Before accompanying Le Corbusier to India in 1955 he had spent the previous four years working as an apprentice at the French master's Paris atelier and had been imbued with the architectural vocabulary being developed in the office at the time.[109] Le Corbusier, as a pioneer of the Modern Movement, was well known for his work with concrete, which, by offering the possibility of thinner architectural members, had already allowed him to develop an architectural vocabulary of more permeable forms. However, by the post-war years, when Doshi arrived at his office, Le Corbusier was experimenting with developing a monumental vocabulary that was dictated by the surface attributes of yet another form of concrete - *béton brut*. Work had already started on the project for the *Unité d'Habitation* in Marseilles and the architectural idiom that would soon gain worldwide appeal under the title of Brutalism had become a mark of the Paris atelier. (Fig. 7.31) As a result, the monumental forms of Chandigarh, that Doshi had the privilege to work on, were steeped in this newly emerging vocabulary of post-war modernism. Many of Le Corbusier's projects that were simultaneously developed for Ahmedabad were then also a result of a similar Brutalist mode of architectural design. Therefore, by the time Doshi arrived in Ahmedabad he was clearly a product of the architectural tradition at Le Corbusier's atelier in Paris and aligned with such a Brutalist idiom.

It is undeniable that it was Le Corbusier's post-war works that came to define the idea of Brutalism. This is because, even though the term acquired numerous ethical and aesthetic formulations over the period of its brief existence in architectural discourse, as Reyner Banham discerned, by 1956 Le Corbusier's *Maisons Jaoul* had become the definitive model for Brutalism.[110] (Fig. 7.32) Developed between the birth of this Brutalist style with the *Unité d'Habitation* and the authoritative rendering of the *Maisons Jaoul*, Le Corbusier's projects for India were thus quintessentially 'Brutalist'

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[109] For an introduction to Doshi's formative years at Le Corbusier's office in Paris, see Curtis, *Balkrishna Doshi*, 12.

[110] Banham, *The New Brutalism*, 85.
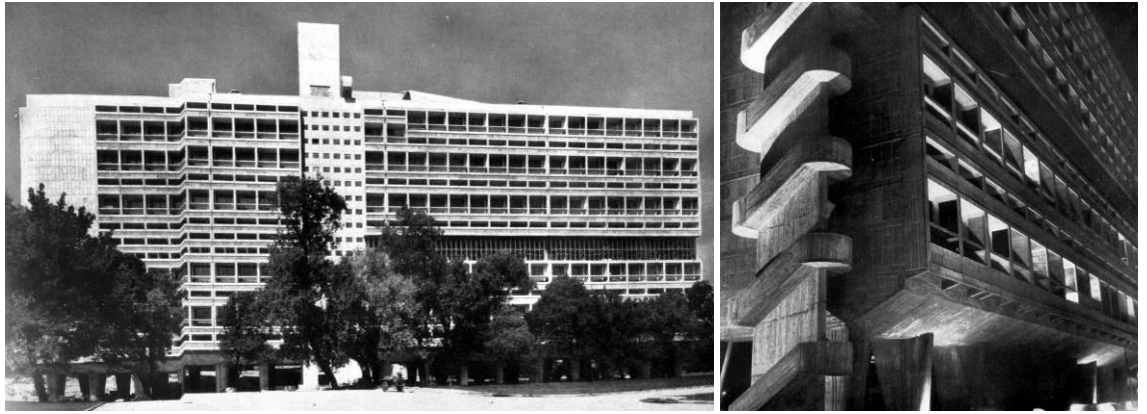
Fig. 7.31. Unité d'Habitation, Marseilles, France, architect Le Corbusier.
(*Source:* Le Corbuiser, *Oeuvre Complete,*Vol.5.)
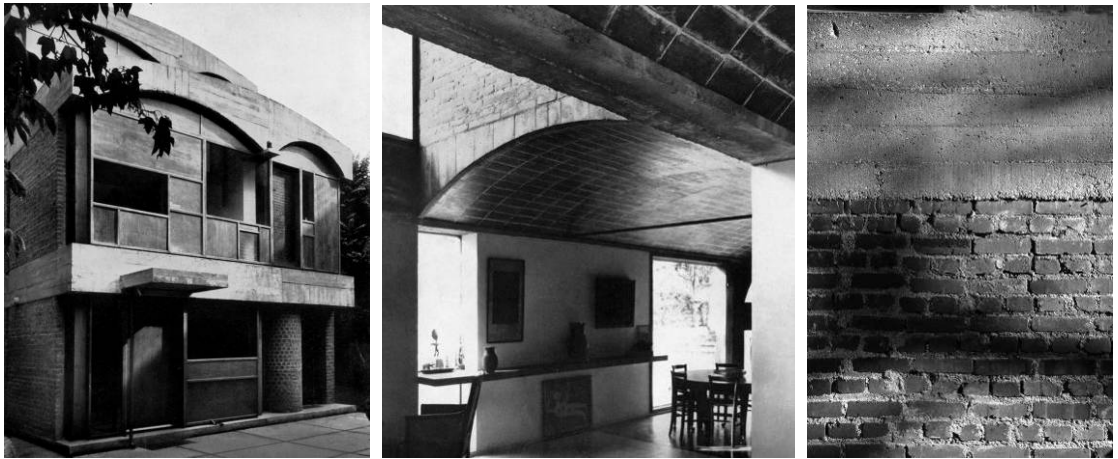
Fig. 7.32. Maisons Jaoul, Neuilly, Paris, France, architect Le Corbusier.
(*Source:* Le Corbuiser, *Oeuvre Complete,*Vol.6.*/ Detail: Photograph by author.*)

Fig. 7.33. Mill Owners Association Bldg. and Shodhan House, Ahmedabad, India, architect Le Corbusier.
(*Source: Photograph by author, 2007.*)

in character.[111] The style had developed when the decision to incorporate *béton brut* for the *Unité d'Habitation* resulted in a stark aesthetic exploiting the crudities of the material. The production of *béton brut*, for Le Corbusier, dictated an aesthetic where the marks of the process of labour which were indelibly printed onto the material needed to be exposed. Although in its theoretical interpretation in Europe this intent was recognized as an expression of the "nature" of the material (later typified in the "frank" display of "raw, untreated material"), for Le Corbusier it had also been a demonstration of the social process of production. Le Corbusier's new rendering was aimed at fighting the pre-war myth of concrete as the "precise 'machine-age' material" and revealing the "vagaries of weather and human fallibility" inherent in its production.[112] Within the Indian context this desire to reveal "human fallibility" took on a stronger appeal as Le Corbusier could now reflect the labour intensive-processes representative of the social structure of the developing world into his new idiom for the new nation by focusing on the imprecision of the finished product. The employment of Brutalism in India was, therefore, a direct expression of this production system and came to reflect the crudeness of a human endeavour struggling to match steps with an increasingly mechanized West.

With the recasting of the aesthetic crudities of the material as an expression of the social struggle, the Brutalist tradition brought by Corbusier introduced concrete to India in a form that was meant to *celebrate* the crudeness of human labour. The initial desire to critique the understanding of concrete as a precise industrial material may have been suited to the European context, but within India, where concrete had not been engaged in any considerable manner, this stylistic ploy came to define a general attitude towards architectural construction. Accordingly, the lack of skill in the construction industry became understood as a stylistic choice born of this new ideological import from Europe. It may be argued that within such a context concrete came to embody some of the problems that Anatole de Baudot had predicted would follow in case *béton armé* came to win over *ciment armé*. As a celebration of crudeness, this use of concrete not only treated the material as being subservient to human convenience but actually lauded

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[111] The role of Le Corbusier's projects in India in defining the Brutalist style was also acknowledged by Banham. He notes, however, that the impact of these projects was considered of little importance to the Western discourse on Brutalism as they were disregarded by "those European countries like England where colonialist habits of simultaneous sympathy and contempt for Indians persisted among the educated classes." See Banham, *The New Brutalism*, 86.

[112] Banham, *The New Brutalism*, 16.

the failure to engage with the material in any significant depth. The buildings of Ahmedabad that were designed as a direct expression of this architectural style, and whose construction Doshi was here to oversee, therefore became the reference for this celebration of the crudeness of human labour in architectural production. (Fig. 7.33)

The general attitude towards construction offered by the Brutalist style in India was not limited to the use of concrete, and also affected the status of other materials in the construction industry. In spite of the major focus on propagating the use of *béton brut*, Le Corbusier had himself engaged bricks in some of his projects for both Chandigarh and Ahmedabad. While in Chandigarh these interjections were limited to lesser housing facilities, for Ahmedabad brick was first included for the design of the museum building at *Sanskar Kendra*. (Fig. 7.34) Here, even though the brick was merely employed as a facade for an otherwise predominantly concrete structure, it still served as an important component of the building's aesthetics. The first floor façade of the building, which stood floating above the ground supported on an array of concrete columns, was wrapped in a 3" thick brick-on-edge envelope that formed an aesthetic cover for the museum space inside. (Fig. 7.35) Even in this simple formal arrangement of a rectangular box on stilts the intent to showcase the crudeness of the labour process in both the production and laying of the brick was obvious, and the imperfections were not only left bare to be witnessed but actually exaggerated.[113] The employment of brick was further instated into the Brutalist idiom with the private residence for the Sarabhais (Fig. 7.36) until it finally became established as an integral part of the style with the "*briques apparantes*" rendering of the Maisons Jaoul in 1956. It is this reinterpretation of brick and concrete as reservoirs of human fallibility that Le Corbusier left with Doshi and the construction industry of Ahmedabad, when he returned to his native France.

Doshi's decision to stay back in Ahmedabad and start his own practice clearly stood to build upon this Corbusian legacy in order to bring the general architecture of Ahmedabad at par with the endeavours of the modern master. Therefore, in the short span before the beginning of the IIM project, Doshi's Ahmedabad practice worked to incorporate the lessons he had inherited from the French master in a reassessment of the entire architectural heritage of India, or at least Ahmedabad. This was evident in his design for the L.D. Institute of Indology, where he had appropriated characteristic elements of the old *haveli* form (the traditional residential dwelling typology comprising

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[113] Mahendra Raj, interview by author, New Delhi, India, January 7, 2008.

Fig. 7.34. Sanskar Kendra, Museum building, Ahmedabad, India, architect Le Corbusier.
(*Source: Photograph by author, 2007.*)

Fig. 7.35. Sanskar Kendra, detail of brick facade.
(*Source: Photograph by author, 2007.*)
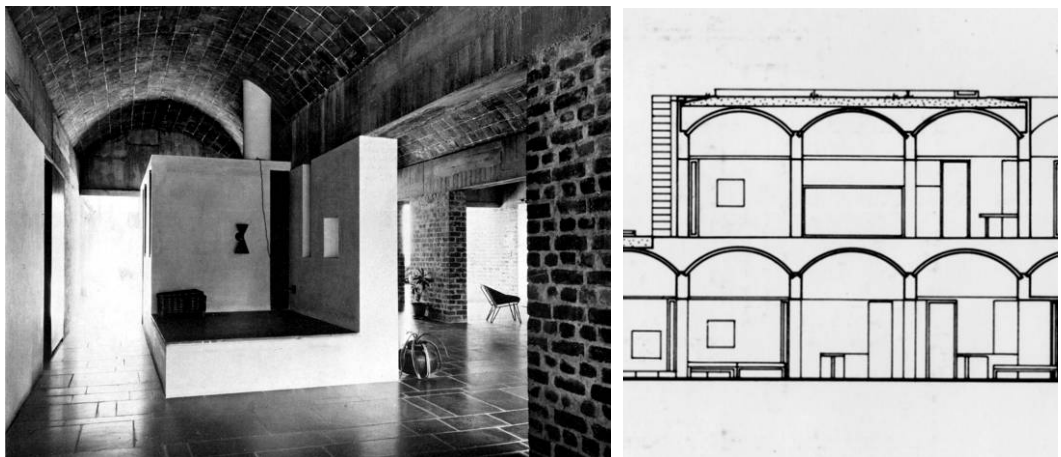
Fig. 7.36. Sarabhai House, Ahmedabad, India, architect Le Corbusier.
(*Source:* Le Corbuiser, *Oeuvre Complete,* Vol.6.)

the dense inner-city fabric of Gujarat's older towns) to be rendered in exposed concrete commensurate with the Brutalist vocabulary. (Fig. 7.37) This initial effort was indeed the result of a puerile struggle where the aesthetics of an alien material *béton brut* were merely transposed onto an identifiable historical form. However, Doshi's subsequent attempts at generating a marriage of the local context and the new theoretical framework of Brutalism yielded slightly less naive results when he developed his schemes for the PRL and ATIRA housing complexes. (Fig. 7.38) Even though these designs were more responsive to certain climatic aspects of the local context, they were still steeped in the Brutalist aesthetic accorded to brick by Le Corbusier's efforts at the Sanskar Kendra and Sarabhai house. Therefore, by the time the IIM project was started Doshi's practice was completely engaged in a paradigm of architecture that was reflective of the Brutalist tradition established by Corbusier's works in the city. Furthermore, since all these projects had been developed in association with the construction firm of Gannon Dunkerley (as well as several other consultants who later came to be involved with the IIM project), when the process of construction documentation was started in 1964 the various agencies involved found a common reference in this tradition of construction.

Kahn's Goal, translated again

The design team at NIID had been involved in the development of drawings for the IIM project throughout 1964. During the early part of the year, when the diagrammatic sketches sent from Philadelphia were being developed into design drawings, there was ample correspondence with the Philadelphia office and the process of translation was closely supervised. This was not only because two members from the Ahmedabad team, namely Thackeray and Kapadia, were stationed in Philadelphia, but also because Kahn made regular trips to India following his appointment for the Gandhinagar project. However, this condition changed after Thackeray's return from Philadelphia in June 1964 as Kahn's frequent visits also ceased shortly afterwards. Over the next few months, while responsibilities of the design team in Ahmedabad increased tremendously with the development of the construction documentation, the correspondence with Philadelphia showed a decline. Within such a scenario, any gaps in information left by the Philadelphia office were duly filled by the individuals in Ahmedabad based on their previous understanding. Doshi had previously worked with Le Corbusier and now Thackeray had returned from a six month stint under Kahn himself. Therefore, under the supervision of both Doshi and Thackeray these team members felt confident in

Fig. 7.37. L.D. Institute of Indology, Ahmedabad, India, architect B.V. Doshi.
(*Source:* Curtis, *Balkrishna Doshi: An Architecture for India*, 16)

Fig. 7.38. ATIRA Housing, Ahmedabad, India, architect B.V.Doshi.
(*Source: Photograph by author, 2007.*)

interpreting the work of a foreign architect of international repute and continued to develop the construction drawings accordingly.

As a result of this shift in the patterns of working, and the increased input from the members of the design team in Ahmedabad, the construction drawings for the IIM project went through a process of translation that worked to alter the intent of the Philadelphia Collective. Even though the documents forwarded from Philadelphia were clear on the intent to employ exposed brick, the inability in drawing to explain the nature of the material with any specificity beyond its generic technical definition allowed the NIID team to interpret it in the light of their previous experiences with a Corbusian Brutalist tradition. In addition to this, the trust displayed by Kahn in Doshi's abilities to engage an appropriate construction system for the speedy development of the housing and dormitory buildings meant that the deviation from established trends was not required. Therefore, the members of the NIID team saw no reason to rethink Kahn's appropriation of brick in a different light than what they had already experienced with Doshi's work in Ahmedabad. Furthermore, since many of them had worked with Doshi's office previously, they were already aware of the drawing conventions adopted for the ATIRA and PRL housing, which still served as the basis of discussion for the IIM project. As a result, they continued to adopt the patterns developed for these projects in their preparation of the construction drawings for the IIM. This pattern of working retained favour with Doshi, who was the local consultant and oversaw the entire process, and the construction documentation for the IIM project was finally prepared to reflect an understanding of brick construction which was different from the intention of the Philadelphia Collective.

The drawings prepared by the architectural team at NIID were then forwarded to various consultants as well as the construction firm of Gannon Dunkerley for the purpose of construction planning. Once again, many of these consultants had worked with Doshi's practice in the past and the adoption of an established local convention in the drawings of the IIM project meant that these drawings would continue to be interpreted in the light of these previous experiences. Furthermore, the construction firm of Gannon Dunkerley had not only worked for Doshi but was also responsible for the execution of the projects designed by Le Corbusier. Therefore, in the efforts to appropriate the drawings forwarded by the design team at NIID for on-site construction, the firm never questioned the intent of the drawings to communicate anything other than the patterns of construction that it was already accustomed to. Accordingly, by the time

the design decisions which originated in Kahn's office in Philadelphia reached the construction site in Vastrapur they had already been translated into the Brutalist tradition that was prevalent in the construction industry of Ahmedabad at the time.

As a result of this translation of goals, the construction of the initial buildings at site was begun in October 1964 with an understanding of brick that was reflective of the Corbusian legacy. The bricks, which were produced at the local kilns in the western reaches of Ahmedabad, were developed through labour intensive methods of clay preparation. The local soil was collected and tempered through manual processes before being hand-moulded for burning in clamp kilns.[114] (Fig. 7.39 a-c) Both the inconsistencies in the manual processes of clay preparation as well as the inappropriate clay type available for brick manufacture within the geological limits of the Ahmedabad region led to massive variation in the finished product.[115] However, these inaccuracies in production, which would quite clearly affect the quality of exposed brick construction required for the IIM project, did not receive much opposition from the consultants. This attitude of indifference could of course be justified through a concern for time and cost as the project needed to be constructed rapidly. But more importantly, the local consultants were aware that these errors in production were now more acceptable for the clients since the aesthetics dictated by Brutalism revelled in the celebration of such displays of human fallibility. Therefore, the bricks were approved for construction and the existing brick kilns worked to serve the needs of the IIM project, which was scheduled for completion by April of the following year.[116]

Once these inconsistent batches of bricks reached the construction site in Vastrapur they were further laid out by unskilled labour in regular English bond pattern. (Fig. 7.40) This choice of bonding pattern is also telling about the approach to the process of construction prevalent in Ahmedabad at the time, as it was born of two separate concerns that had been established as a norm over the previous years.[117] Firstly, the general experience of using brick in a construction vocabulary that would anticipate the rendering of its uneven face in plaster had already reduced the need for any

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[114] Bhadresh Oza (B.R. Bricks), interview by author, Ahmedabad, India, December 18, 2007.

[115] Tiwari and Singh, *Scientific Study of Production of Building Bricks around Ahmedabad*.

[116] Letter, Doshi to Chandrasen Kapadia (Philadelphia Office), November 2, 1964, "National Design Institute – All Correspondence 5/61 to 12/65," Box LIK 113, Kahn Collection.

[117] In discussion with N.R. Desai (Site Engineer for IIM Project), interview by author, Ahmedabad, India, December 18, 2007.

Fig. 7.39a. Tempering and mixing of clay done by hand before being transported for moulding.
(*Source: Photograph by author, Ahmedabad, 2007.*)

Fig. 7.39b. Moulding process includes throwing the clay mix into metal mould, and shaping by hand.
(*Source: Photograph by author, Ahmedabad, 2007.*)

Fig. 7.39c. Brick is turned out of the mould and stacked for drying before firing.
(*Source: Photograph by author, Ahmedabad, 2007.*)

consideration to the aesthetics of the bonding pattern. The limited number of exposed brick constructions around the city were merely buildings that could not afford the process of plastering at the time of their construction and had to continue with bare brick walls.[118] This practice of construction did not necessarily change over time, but the status accorded to the bare brick rendering evolved after the few Brutalist examples inspired by Le Corbusier continued to adopt this vocabulary. Therefore, the use of English bond for the IIM project was foremost a reflection of this norm in construction where bricks were considered as structural elements that needed to be necessarily rendered in plaster to make them aesthetically pleasing. In addition to this, the employment of unskilled labour for construction raised a pragmatic concern regarding factoring in for human error. Here, the use of a simpler bonding pattern based on alternate series of headers and stretchers insured that the instances of error that might slow down the process of construction would be minimised. Therefore, the other reason for employing the English bond was aimed at reducing the workload of supervising the unskilled labour that would execute the structures on site. In short, the entire rationale behind the adoption of construction methods was dictated by the simultaneous lack of connection with the material and a confused ideological stance which celebrated the limitations of the human labour.

The changes brought about to the IIM project as a result of this approach of the Ahmedabad Collective has prompted some authors to retrospectively categorize the project as a Brutalist endeavour by Kahn. However, considering Kahn's previous associations with brick and the subsequent events that took place in Ahmedabad it is evident that this adoption of a Brutalist aesthetic was not commensurate with Kahn's now already revised goal for the IIM project. Kahn's previous associations with brick at the Richards Medical Towers, or more recently at the Unitarian Church in Rochester, had taken place within the context of the American construction industry whose mechanised processes ensured a level of precision that Kahn had come to take for granted. Following from these experiences, when Kahn formulated a revised goal to incorporate an exposed brick vocabulary for the IIM project it was intended to be yet another one in the line of brick structures that his Philadelphia practice had already spawned. However, the increasing influence of the architectural collective at Ahmedabad worked to translate this revised goal yet again, as it introduced elements of the Brutalist vocabulary that it carried from its own previous associations.

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[118] Kulbhushan Jain, interview by author, Ahmedabad, India, December 1, 2007.

That Kahn was unaware of this process of translation, which was taking place in his absence from Ahmedabad, is clear from the events of December 1964 when Kahn returned to India to personally inspect the ongoing construction at site. By this time the construction of several housing blocks had been completed and two dormitory buildings had been built up to the first floor level. (Fig. 7.41) Upon his arrival in Ahmedabad, Kahn was completely taken aback with the on site results. Regarding the source of his disappointment, Doshi notes: "During the initial stages, not realising that Lou [Louis Kahn] is not Corbusier, we built all the brick foundations of the dormitory blocks in the manner we had done for Corbusier's projects."[119] Accordingly, Kahn ordered for the construction process to be stopped. The events that took place subsequently would change the entire course of the IIM project and bring about yet another revision of the goals. But to understand the conditions that allowed for these events to take place we must first take into account the parallel goal of the material protagonist – Brick.

Brick's Goal

By the 1930s, even as it was clearly losing out to concrete as the quintessential material of the Modern Movement in Europe, brick was beginning to experience a different fate in the Indian subcontinent. In Europe, the political win of *béton armé* over *ciment armé* at the end of the first decade had eliminated the possibility of a mutually respectful partnership between brick and concrete, such as Baudot had attempted at the Church of St. Jean de Montmartre. The vehement denial of a historicist connection by the European Modernists further alienated brick from the architectural collectives that it had served for several centuries. However, the social realities of the Indian sub-continent were divorced from this European trend and the advent of Modernism within its colonised context had not taken on such a strong exclusion of a building tradition that had developed over several centuries. Indeed the advent of Modernism in India was not so much a result of a technological revolution as a socially minded one. Therefore, although an Indian understanding of Modernism was equally vested in the functionalist paradigm and denied any ornamentation that represented the decadence of the bygone era, it did not disallow the possibility that the answer to this may lie in yet another past. Whether this would assume a form that borrowed from Gothic, Persian, Roman or even Harappan precedents was yet to be ascertained, but brick seemed poised to take centre stage in the course of its further becoming.

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[119] Doshi, *Architectural Legacies of Ahmedabad: Canvas of Modern Masters*, 19.

Fig. 7.40. Construction begins at the IIM site in Ahmedabad, 1964.
(*Source:* Publications Department, Indian Institute of Management.)

Fig. 7.41. Construction of dormitory building reaches first floor level, 1964.
(*Source:* NID Archives, National Institute of Design, Ahmedabad, India)

The prominence of brick within the architectural collectives in India was undeniable even with the revivalist trends that had dominated the architecture of the subcontinent during the late nineteenth and the early twentieth century period. However, with the construction of the Garrison Church of St. Martin in 1930 brick had finally established a place for itself in the impending shift to a modernist tradition, and was set to define the developments of this new idiom on the subcontinent. Indeed, the prominence accorded to brick had only been possible due to the unfaltering support of Arthur Shoosmith and his mentor Sir Edwin Lutyens, who commanded a position of great influence within the colonial context of India. The combination of power over the local populace coupled with their reverence for brick had insured that the colonial hierarchy was exploited to afford the finest treatment for the manufacture and laying of bricks. However, the appropriateness of brick as the only suitable alternative for an Indian Modernism was undeniable, and, as Gavin Stamp noted in his retrospective on the end of the Classical tradition in India, Shoosmith's recognition of brick's potential in defining the future of modernism in India "has yet to be proved wrong."[120] This belief was also shared by other members of the Rationalist school during the 1930s and with their efforts the realm of brick in its new modern guise subsequently spread to the farthest reaches of the subcontinent.

Over the course of the next two decades figures like Walter George and Claude Batley, who were contemporaries of Shoosmith, had helped establish this new idiom of brick through both their efforts in practice and the burgeoning architectural education system. While, in the northern part of India, Walter George continued with Shoosmith's legacy in the capital region of Delhi, Claude Batley was responsible for taking this trend with him to Bombay. Between his involvements with the architectural practice of Gregson, Batley and King, which was responsible for training many influential figures of the next generation, and the J.J. School of Art in Bombay, Batley had single-handedly insured the future of this tradition.[121] The parallel developments in the political arena with the ideology of *khadi* propagated by Mahatma Gandhi had also done much to further this cause of brick. In addition to the rationalist drive of the foreigners, brick now also satisfied the nationalist desires of the local populace and this further insured the

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[120] Stamp, "India: End of the Classical Tradition," 81.

[121] During the 1930s and 1940s there were some ongoing attempts at eclecticism, dubbed as the Modern India Architecture Movement, as well as periodic interjections by foreign architects trained in the International Style, but the efforts of Batley helped this tradition to prevail. See discussion in Lang, *A Concise History of Modern Architecture in India*.

continued relevance of this new idiom of brick. Therefore, through a complex network of events that took place over the 1930s and the 1940s, brick had established itself at the forefront of the modern architectural collectives in the subcontinent and was ready to take this new idiom further as an expression for independent India.

This standing of prominence acquired by brick was, however, undermined with the arrival of Independence when the importation of European ideas allowed for a momentary rise of concrete. The assassination of Mahatma Gandhi soon after Independence in 1948 had also enabled an entirely different vision for the development of free India to take hold. The new vision originated from the first Prime Minister Jawaharlal Nehru's firm belief in the idea that social advancement was dependent on technological progress. Nehru, unlike Gandhi, had been partial to the notions of Western progress and accordingly his plans for an independent India involved rapid industrialisation and corresponding economic growth.[122] As a result of this shift, India was destined to adopt an ideological pathway of *mechanization* that it had managed to avoid for so long under the philosophical influence of figures like Gandhi. Seen through this new ideological lens of mechanisation the understanding of modernism was transformed to a technologically minded restructuring of social conditions, and India came to follow in the footsteps of what had previously constituted a European struggle for modernisation. In architecture, this desire to replicate the European model was evident in Nehru's decision to invite Le Corbusier to define a new pathway for architecture in India based on his European experiences.[123] Le Corbusier was a champion of the Modern Movement in Europe and his arrival further allowed for the import of the European penchant for concrete as the quintessential material representative of this idiom. In light of the importance already accorded to Le Corbusier and the fact that his efforts were supported by Prime Minister Nehru himself, this new idiom gained force and concrete came to replace brick within the modern architectural collectives in India.

Even though these events over the first half of the 1950s had allowed for the rise of concrete, it nevertheless remained an alien import and was discordant with the architectural developments which had worked to establish the dominion of brick in the

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[122] Nehru's vision for India as involving a Western model of industrialisation has been discussed in several sources. For an introduction see Sunil Khilnani, *The Idea of India* (London: Hamish Hamilton, 1997).

[123] In reference to the architectural commission for Chandigarh, Nehru noted that "it hits you on the head ... and the one thing India requires ... is to be hit on the head." See Khilnani, *The Idea of India*.

subcontinent. Within the context of the late 1950s, then, one thing that could be theoretically identified as a potential *goal* for brick as an architectural material in India was a reversal of this incursion of concrete. The incongruity of the imported definition of modern architecture was evident, and by the end of the decade even the new cohort of foreign trained architects, who had assumed control in the wake of the European master's inquest, were beginning to come to terms with the realities of the subcontinent. As these attempts to engage the traditional context of building in India progressed the undeniable place commanded by brick within such a context became apparent. In Ahmedabad this was evident in B.V. Doshi's experiments with the ATIRA and PRL housing, where brick was once again engaged as a representative of local context. Indeed, these examples were still steeped in the Brutalist style and had not been able to divorce itself completely from an aesthetic tradition established by Le Corbusier. Therefore, to recapture the imagination of the architectural collectives in India and return to its formal standing of prominence, brick now needed to divorce itself from the immediate and foreign context of the European precedents and invoke yet another set of associations from its past.

In previous attempts to engage the glorious past of brick references had been made to the Gothic and Persian precedents, which were rife within the colonial context of India.[124] However, in post-colonial India these allusions to architectural traditions of foreign invaders had lost favour. It is at this stage that the project for Gandhi Samarak Sanghralaya, which was launched in 1958, allowed brick to extricate itself from any reference to the imported European traditions and reconnect with the notions of a Gandhian utopia.[125] (Fig. 7.44) The project was situated at the site of Gandhi's old seat in Ahmedabad, and architect Charles Correa's designs attempted an architectural exploration of various aspects of the Gandhian philosophy. As discussed before, Mahatma Gandhi's ideas in respect to architecture were not very well defined. However, the utopian model of village economy that Gandhi had constructed in likeness of the Harappan examples had always focused on a relationship of mutual growth between humans and materials in architecture, similar to his own ideological liaison with the *charkha*. Gandhi's arguments for the absolute and unconditional investment of individuals in a neighbourhood economy and the extension of this to material resources,

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[124] See discussion on the Garrison Church of St. Martin and the effects on the architectural teachings of Claude Batley in Chapter 6.

[125] For a description of the project and arguments regarding its basis in Gandhian ideas, see Sherban Cantacuzino, *Charles Correa*, Architects of the Third World (Singapore: Concept Media, 1984), 11,16.

Fig. 7.42. Examples of brick architecture from various periods in Ahmedabad's history.
(L) The old city wall ; (R) The I.P. Mission School
(*Source: Photograph by author, Ahmedabad, 2007.*)
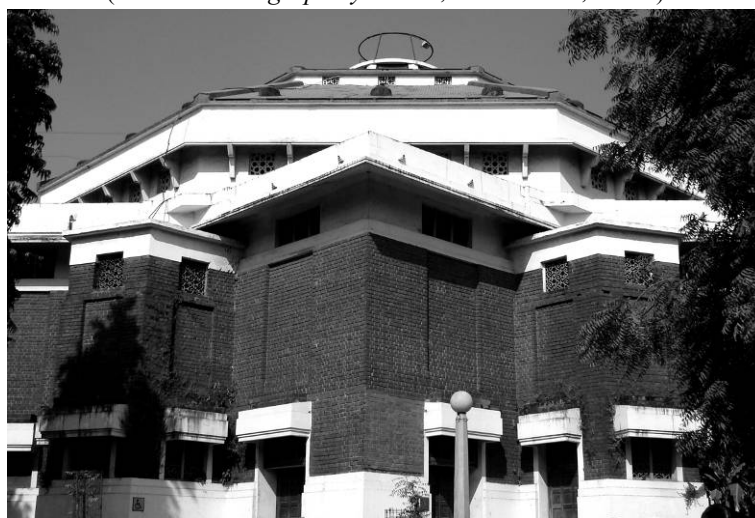
Fig. 7.43. Ahmedabad Town Hall, Ahmedabad, India, architect Claude Batley.
(*Source: Photograph by author, Ahmedabad, 2007.*)

Fig. 7.44. Gandhi Samarak Sanghralaya, Ahmedabad, India, architect Charles Correa
(*Source: Photograph by author, Ahmedabad, 2007.*)

which were assumed as an integral part of this village unit, required for the two components of this utopian model to be involved in a process of reciprocal development. Therefore, with the turn of the decade this need for reinstating a tradition of mutual becoming had assumed the place of a second *goal* for brick within the architectural context of India.

The beginning of the 1960s brought yet another event to bear upon this twofold *goal*, where brick was not only supposed to displace concrete and assume its previous position at the forefront of the architectural collective but do so through a relationship of mutual respect with its human counterparts. The discovery of the Harappan site of Lothal, where excavation works extended until 1962, reinforced the idea of a Gandhian vision for independent India.[126] (Fig. 7.45 a-c) As a model of the secular society of the Harappan civilisation, it helped recount Gandhi's arguments for a neighbourhood economy, and the necessity of mechanisation and industrialisation as proposed by Nehru came into question. Furthermore, as a utopia that was India's 'original' past it eliminated the need for looking at European models for development. Therefore, even as the award of the IIM project was being finalised, the conditions for brick to achieve this twofold *goal* were becoming ripe. Indeed, Lothal's proximity to the Ahmedabad region, located less than hundred kilometres from the site of IIM at Vastrapur, had also helped change perceptions in this former seat of the Mahatma. Finally, with Nehru's death in 1964 the ideological backing for a vision of mechanized progress was removed, and it was in the very year of Nehru's death that brick witnessed the biggest event of its comeback on the site of IIM.

The Experimental Arch – Becoming of Kahn-brick

When Kahn left for Ahmedabad on the 12th of December 1964 he was still vested in the idea of a brick structure at IIM commensurate with his previous experiences.[127] With this image in his mind, travelling via New York and Bombay he finally arrived at Ahmedabad on the 14th of December to conduct a quick site inspection. The trip was short, merely two weeks, and Kahn intended to perform a routine assessment where he would generally endorse the ongoing works and deal with minor problems before returning to Philadelphia by the year end. However, the visit to the site proved

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[126] S.R. Rao published his findings of the excavations at Lothal in 1962, in S.R. Rao, "The Excavations at Lothal," *Lalit Kala* 3-4 (1962). Also see S. R. Rao, *Lothal and the Indus Civilization* (New York: Asia Pub. House, 1973).

[127] Travel itinerary, "National Design institute: Incidentals (tickets, etc.)," Box LIK 113, Kahn Collection.

Fig. 7.45a. The excavation site for the Harrapan settlement at Lothal, Gujarat.
(*Source: Photograph by author, 2007.*)

Fig. 7.45b. Detail of brick wall, Lothal, Gujarat.
(*Source: Photograph by author, 2007.*)

Fig. 7.45c. Detail of brick wall, Lothal, Gujarat.
(*Source: Photograph by author, 2007.*)

otherwise and Kahn was confronted with a scene unlike what he had imagined sitting in the confines of his Philadelphia office. In the coarsely formed and inelegantly laid brickwork of the partially finished dormitory blocks at IIM there was no reflection of the grandeur or monumentality that Kahn had come to associate with the material through his past experiences. The translation of goals in the interpretation of the drawings sent over from Philadelphia was obvious, and the effect of the Ahmedabad Collective had all but subsumed the image that Kahn had set out to achieve. Kahn was extremely distraught with this state of affairs and the course the project had taken in his absence, and therefore ordered for the construction to be brought to an immediate standstill.

As Kahn reviewed the situation he came to the realization that the impact of the Ahmedabad collective was unavoidable, and needed to be incorporated more thoroughly than he had previously envisaged. The condition on site was a clear indicator of the fact that the exploitation of existing construction methods from a purely utilitarian perspective was not enough to appreciate its full bearing on the process of production. But more important than any understanding of construction practices, Kahn recognized the source of this translation of goals in the elemental basis of the brick. The human-centric attitude towards materials that the recent tradition of Brutalism had afforded to Ahmedabad was not entirely distinct from the tradition that Kahn had encountered in the context of his own practice in the past.[128] But his own ideas on architecture had come to change over the previous five years, and confronted with such a vastly different interpretation of the material within the Indian context he was forced to reconsider it in the light of his recent theoretical leanings. Consequently Kahn came to the conclusion that this condition of *breakdown* in the communication of intents that he had witnessed at the IIM site was a result of brick, and the aspirations or goals it may have brought to the process of construction.

Kahn's own personal process of becoming over the past few years had made him particularly sensitive to the possibility of such an influence of the non-human world. Ever since the mid 1950s Kahn had increasingly become aware of the need to situate an understanding of his individual self in the context of the surrounding existence, and this

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[128] This is in reference to Kahn's experiences with the techno-futuristic architecture of the likes of Buckminster Fuller which was available to him through his proximity to Anne Tyng. See discussion in Sarah Williams Goldhagen, *Louis Kahn's Situated Modernism* (New Haven, CT: Yale University Press, 2001).

had launched him on an ontological quest. In the light of his previous associations with the ideas of Lewis Mumford and Josef Albers, this quest for self had led to recognition of the impact that the surrounding world of objects have on the nature of being. As a result, Kahn had already grown exceedingly notional in his personal reflections on architecture, where he used the vocabulary of "order" and "design" to contemplate "what a building wants to be." As he continued to ponder the relevance of Mumford's arguments about humans being continuously enabled by the non-human world of tools and machines, in the context of his experiences with Albers, who offered a similar understanding of the contributions of the artistic medium, Kahn turned ever more philosophical in his approach to the architectural process.[129] Finally, faced with the situation in Ahmedabad, Kahn was able to appreciate how the reason for the translation of his goals could actually be situated in a parallel goal that originated from the material context of the brick.

Although Kahn seemed to recognize the importance of the role played by brick in the resistance to his goals for the IIM project, he remained unsure about how such a parallel goal for brick could be identified, much less incorporated into the vision for the project. It was clear that any rethinking of the design and construction process in order to integrate such a goal carried out from the confines of his hotel room in Ahmedabad would merely replicate the problem of the previous attempts and continue to be a reflection of his past associations with the material. Therefore, Kahn was convinced that the solution to this dilemma could only be found by investing himself as well as other members of the design team in Ahmedabad further into the context of construction, and attempting a more absolute encounter with the material. With this determination to engage in a *primordial* encounter with the material, Kahn launched an exercise to construct an experimental structure whose only objective was to establish a better understanding of brick through the construction of the most elemental of architectural forms – an arch. Accordingly, Kahn returned to the site with representatives from the entire Ahmedabad collective, including members of the NIID project team, Doshi's practice at Vastu Shilpa Architects, as well as the construction team of Gannon Dunkerley, and began construction of the *Experimental Arch*. (Fig. 7.46)

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[129] It is worth noting that Lewis Mumford was also teaching at the University of Pennsylvania by this time, where Kahn had assumed a teaching position after finishing his engagement with Yale University in 1955.
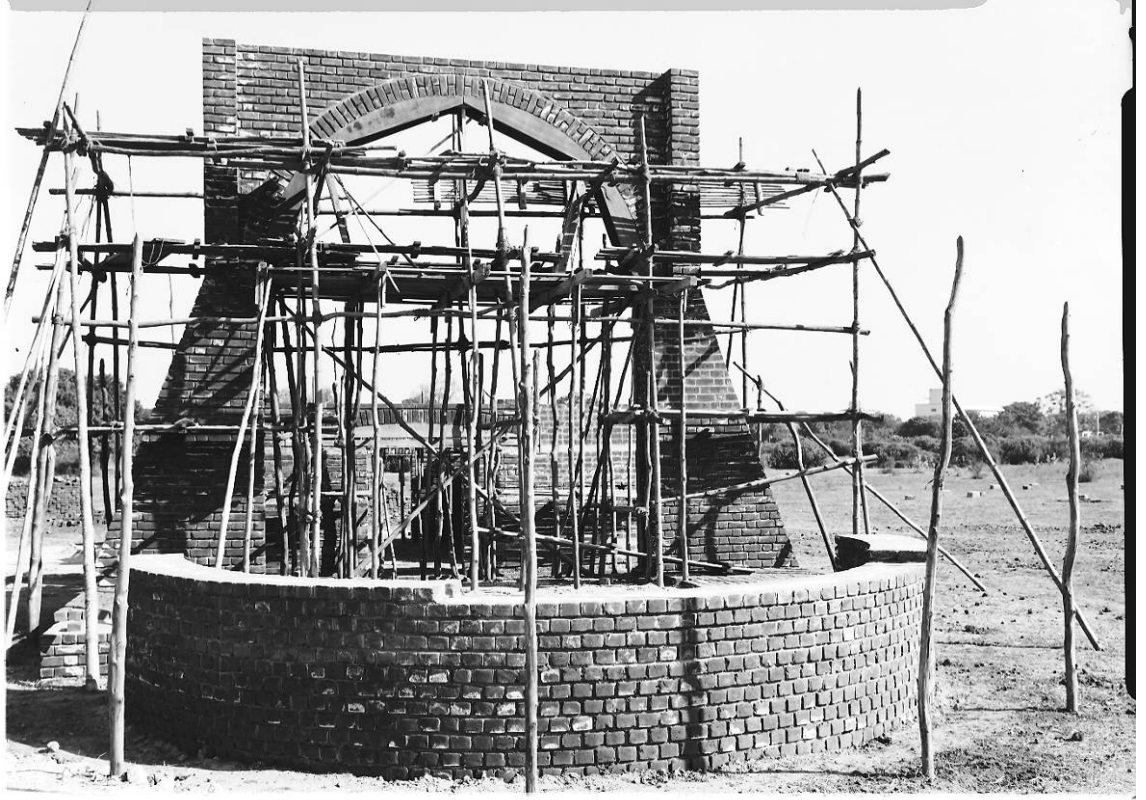
Fig. 7.46. Experimental Arch, December 1964.
(*Source:* NID Archives, National Institute of Design, Ahmedabad, India.)

Fig. 7.47. Experimental Arch complex.
(*Source:* Publications Department, Indian Institute of Management.)

In the process of constructing the *Experimental Arch* the various members of the design team were supposed to observe the otherwise routine process of masons and bricklayers erecting a brick structure and contemplate the dealings with brick more thoroughly. The exercise was set up to cast aside any preconceived notions of brick and brickwork and engage with the material at a primordial level, so as to bring to the fore those aspects of the material that were subsumed by a socialized understanding of the construction process. The existing conditions that Kahn had encountered at the IIM site were very similar to the Heideggerian description of a "breakdown" and he already recognized this condition as a function of the "obstinacy" or, in Kahn's own words, the "stubbornness" of brick.[130] Therefore, much like Heidegger's arguments for a "dealing" with objects, Kahn's notions for the exercise were aimed at transcending a preformed mental conception of the material in order to return to the thing itself, in all its complexity. By constructing the *Experimental Arch* Kahn hoped to open the *blackbox* of brick and brickwork that had formed as a consequence of customary experience and which potentially rendered any intentions originating from the material invisible in conventional design considerations.

As the gathering of architects and engineers, and construction labourers proceeded with building the *Experimental Arch* the initial moments did not yield much result in the way of conflict of opinions. [131] This was primarily because, for the most part, the masons and bricklayers working in the construction pit continued to operate out of their collective memory of a daily engagement with brick. The group of on-looking architects and engineers had little to offer, as their own relationship with the material was limited to the more abstract realm of academic training and was too removed to alter the course of the vested engagement of the bricklayers. The minor interjections that this group of architects and engineers did put forward were limited to an imposition of what was regarded as technical skills and was merely aimed at attaining a higher level of consistency across the construction, which would only serve to make the structure identifiable as a singular object and further render any marks of materiality invisible. Even Kahn had little to offer at this point other than encouraging an engagement of all participants so as to allow for newer perspectives to emerge. He soon came to the realization that in sharing a professional bias towards the process every member of this

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[130] Kahn quoted in Alessandra Latour, *Louis I. Kahn: Writings, Lectures, Interviews* (New York: Rizzoli, 1991), 288.

[131] The details of the events at site have been reconstructed from conversation with M.S. Satsangi, interview by author, New Delhi, India, January 4, 2008.

group would continue to "comply" with certain forms of human *practice* and thereby relinquish any possibility of a truly *interobjective* encounter.[132]

It is at this juncture that a final act of translation took place – this time a *translation* of *actants*. Once Kahn was able to cast aside any rational and professional basis for engaging with brick the construction exercise created an opportunity for an empathetic connection to develop between the two protagonists. Identifying with the material at an intuitive level, which was free of the socialized preconceptions of construction techniques, Kahn was finally able to discover a primordial basis for his interactions with the brick. Here we can argue that a kind of folding of our human and non-human protagonists came into effect that Latour describes in his work on *technical mediation* as the birth of a hybrid entity, a "someone something else." *Kahn-brick* was born. Kahn was to later describe this experience of translation as a *dialogue* with the brick, or as Heidegger would put it, a realization of "being spoken to."

As work on the *Experimental Arch* proceeded, the impact of this translation of actants became evident. Kahn stopped the ongoing construction with a brief and equally unqualified interjection that it did not "feel right."[133] He did not bother to explain his objections any further, nor could he, as he was not imposing a preformed notion of technical mastery over the object, but merely acting as a spokesperson for the brick. Having connected with the brick at an empathetic level his human powers of locution were now not merely a reserve of his previous architectural experiences but also served to express the goals of brick – as the voice of a hybrid entity *Kahn-brick*. Accordingly then, Kahn continued to repeatedly reject the efforts of the bricklayers to offer an alternate solution without providing a different course of action by himself. This process continued over a period of time until the undefined desires of this hybrid entity were satisfied by the efforts of M.S. Satsangi, the new recruit on the NIID team. Before the end of the day, Satsangi himself descended into the construction pit and began to engage with the brick outside the confines of his previous experiences and training to resolve the dilemma posed by Kahn's new stance. As a result of this exercise of

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[132] This argument is based on the idea of engineering professional operating as a constituent element of the *blackbox* of brickwork engineering. For the theoretical arguments that most closely reflect this see Bruno Latour, "When Things Strike Back: A Possible Contribution of 'Science Studies' to the Social Sciences," *The British Journal of Sociology* 51, no. 1 (2000). Also see Schatzki's arguments on the nature of "Xing" outlined in Theodore R. Schatzki, *Social Practices: A Wittgensteinian Approach to Human Activity and the Social* (New York: Cambridge University Press, 1996).

[133] M.S. Satsangi, interview by author, New Delhi, India, January 4, 2008.

enabling by various actants without any particular recourse to a display of mastery – a *fait-faire* – a new bonding pattern for the construction of the structure emerged. And in this minor gesture, which was later recognized as a mere rejection of a brick bond detail known as the *queen closer*, the future of the IIM project stood transformed. Over the course of the next few days the construction of the *Experimental Arch* was completed not as an exercise of translating abstract paper drawings onto real but inert material forms but instead as a "continuous happening" resulting from a ceaseless and dialogic encounter with the material. (Fig. 7.47)

A New Actant and a New Goal

The appropriateness of engaging this hybrid formulation of *Kahn-brick* in a historical discourse is a matter of theoretical debate in the field of philosophy, or even linguistics. But in its simplest interpretation, the argument for the fusion of the separate agencies of Kahn and brick into this hybrid entity of *Kahn-brick* allows for two very important considerations regarding these events of December 1964 to come forward. First of all the formulation helps eradicate the myth surrounding the construction of the *Experimental Arch* which regards Kahn as a master and the erection of this structure as a display of this mastery over the brick. Kahn's role in the construction of the *Experimental Arch* was not that of a technical expert. Indeed, he had no idea of what he wanted from the bricklayers or how they could achieve it. He merely stood there and endlessly repeated that what they were offering was not commensurate with what the brick wanted. Therefore, not only was the construction of the *Experimental Arch* not a display of technical mastery, but on the contrary it was intended to deny the very possibility of such a mastery over the material.

On the other hand, the formulation of the title *Kahn-brick* is ideal in expressing the renewed status that both Kahn and brick came to acquire within the Ahmedabad collective subsequent to the construction of the *Experimental Arch*. As the consulting architect for the project Kahn already commanded a position of high regard amongst the members of the project team, and by serving as a spokesperson for the brick – subordinating his personal will to a parallel goal emerging from the material – he had now helped to elevate the status of brick within this collective. By tying *Kahn* and *brick* together in a single formulation, the *hyphen* thus helps represent the loss of distinction between the two otherwise separate entities for the members of the project team who found it impossible to distinguish between the goals of the two and continued to accord

them similar status. Therefore, engaging such an unconventional formulation of *Kahn-brick* not only helps cast a fresh light on the relevance of the *Experimental Arch*, but also helps explain the subsequent transformations that took place in the workings of the entire Ahmedabad collective.

This translation of actants could also be articulated as a more readily acceptable argument for the *reflection* of goals themselves, where the existence of brick's goals, defined within the context of India of the early 1960s, actually allowed for certain associations from Kahn's own past rather than others to assume stronger force in the course of this architectural venture.

We have already established that the period of late 1940s and early 1950s was a time of great upheaval in Kahn's life as he was involved in the exploration of an individual identity. Architecturally, this quest for individuation had compelled him to abandon a past of community oriented architecture and get involved in the rising trend of designing symbolic landmarks representative of the modern age. The architectural discourse of the time was predominantly concerned with the rapidly changing technological context of the construction industry and Kahn was forced to come to terms with an architectural vocabulary that was a reflection of complex mathematical deliberations. Kahn was never personally comfortable with such a theoretical approach to architecture and this transformation had only come into effect due to his new affiliation with individuals involved in such a discourse at both a professional and personal level. Since the split of his partnership with Oscar Stonorov and the growing personal ties with Anne Tyng, Kahn had come to be involved in the nexus of practitioners that were based around the theoretical works of Buckminster Fuller. With his further engagement with the academic circle at Yale, Kahn was finally consumed by the techno-futuristic efficiencies of Buckminster Fuller and the utopian view of the future they promised. Indeed these visions comprised of complex geometries rendered in steel whose glossy embellishment free surface seemed to repel all the undesirable references of history and shine forth as a beacon of the future. And accordingly, these years saw Kahn shift from a still largely communitarian design for the Jefferson National Expansion Memorial of 1947 (Fig. 7.48) to the absurd tetrahedral space frame in tubular stainless steel attempted for the Philadelphia City Tower in 1952 (Fig.
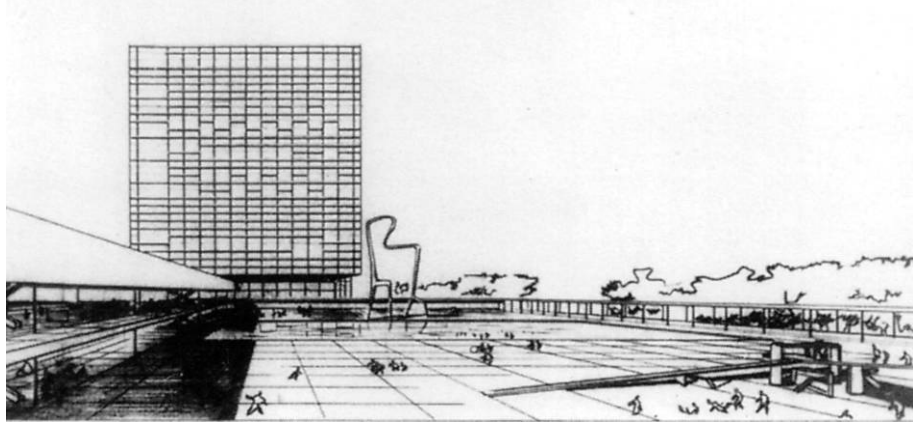
Fig. 7.48. Jefferson National Expansion Memorial project, 1947.
(*Source:* Ksiazek, "Critiques of Liberal Individualism," 57.)
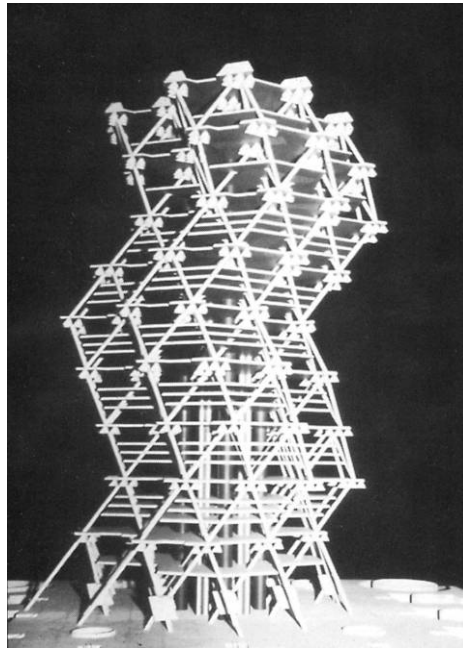
Fig. 7.49. Philadelphia City Tower project, 1952.
(*Source:* Ksiazek, "Critiques of Liberal Individualism," 58.)

Fig. 7.50. Kahn, Self Portrait series, Pencil/Charcoal on Paper, 30cmx22.5cm, 1949.
(*Source:* Hochstim, *The Paintings and Sketches of Louis I. Kahn.*)

7.49).[134] The design forms remained awkward and Kahn was apologetic of his attempts, but in terms of architectural intent he had surely started on a path of contemplating a vision of technological progress, and in it the place of the expanding realm of new and modern building services.

On the other hand, at a personal level the same process of becoming had forced Kahn to recognize a new type of "situatedness" which was not restricted to the human community he had desperately sought to address in the past. Here Kahn was increasingly contemplating a relationship of mutual understanding and an intense and deep connection with the surrounding world. These emotional processes would soon show up in the form of journal entries and even philosophical musings in university lectures, but by late 1940s Kahn was already coping with the symptoms of this internal turmoil in his private drawings and sketches. Kahn had always displayed a keen talent for the visual arts but, as Hochstim notes, the sketches of this period "overshadowed Kahn's marvellous drawings and paintings of the previous thirty-seven years."[135] Hochstim further argues that, in these relatively mature sets of drawings Kahn seemed to have progressed from focusing on the "outer appearance of form" to "an ever deeper penetration of the subjects" such as to reflect the "spirit of the subjects he sketched."[136] Particularly telling was his return to the solace offered by the medium of charcoal, in whose immediacy and spontaneity Kahn found the required support to explore a picture of the inner essence that connected him to all other forms of existence.[137] A poignant example of this exploration is available in a series of self portraits drawn during the decisive year of 1949 which constitute an "unsettling portrayal of a man in turmoil" through a rendering reminiscent of Francis Bacon's "grotesque distortions."[138] (Fig. 7.50) Through an exploration of both medium and form, then, Kahn was intending to seek a basis of the deeper bond which connected him to other things in the process of becoming. Indeed by the middle of the next decade these ideas were reflected more strongly in his theoretical musings, where an attempt to rationalize this process had led to an academic exploration of the "order" of things.

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[134] For discussion of this shift and a detailed exploration of the differences between the Jefferson National Expansion Memorial and the Philadelphia City Tower projects, see Sarah Williams Ksiazek, "Critiques of Liberal Individualism: Louis Kahn's Civic Projects, 1947-57," *Assemblage* 31 (1996).

[135] Jan Hochstim, *The Paintings and Sketches of Louis I. Kahn* (New York: Rizzoli, 1991), 21.

[136] Hochstim, *The Paintings and Sketches of Louis I. Kahn,* 24.

[137] Kahn in conversation with Hochstim, 1972, quoted in Hochstim, *The Paintings and Sketches of Louis I. Kahn,* 29.

[138] Hochstim, *The Paintings and Sketches of Louis I. Kahn,* (Annotation for Img. 274)

As the IIM project began, there is no doubt that Kahn's ongoing experiences in architectural design would have forced him to continue along a path of technological exploration. Throughout his past projects from the Yale Art Gallery, to the AFL-CIO Medical Centre, to the Richards Medical Towers, and finally the Salk Institute he had consistently pursued a pattern which focused on the innovative use of structure and services. And although the shiny steel surfaces of the Philadelphia City Tower had been omitted from these built examples, he had received much recognition for his ability to incorporate technical services through the use of geometrically complex forms. [139] (Fig. 7.51-7.55) However, with the events of 1964 Kahn was now exposed to the goals of brick, which were developing within the Indian context of Ahmedabad to reverse the incursion of a European desire for concrete, and was able to connect to an architectural tradition not based on a complete denial of the material's role. With the further alignment of this objective to the Gandhian idea of a village economy, Kahn also found in it a reflection of that sense of community which had consumed him in his early years. Furthermore, the Harappan examples employed towards the construction of this ideal allowed for another view to developing a utopia, which would still address the modern need for reversing the dramas of historical styles but without resorting to a complete denial of history itself. Kahn's own exposure to the Mumfordian arguments which invoked such a utopian view of the past in the definition of the "Eotechnic phase" had already made him susceptible to such an idea, and he found in this a possible alternative to his more recent technological explorations. Last but not the least, in brick's connection to a tradition of tactile and emotional connection to human counterparts within the Harappan model, Kahn found the desire for mutual becoming that he had yearned for in his own personal process of becoming. In light of such a process of reflection of goals it is clear why the course of technologically minded architecture that Kahn had pursued until recently was suppressed, and the associations concerning a philosophical exploration of mutual becoming of various agents assumed control in the subsequent development of the IIM project.

This intersection of the goals of Kahn and brick has indeed been referred to as a process of *reflection*. However, it must be clarified that it is not a reflection of the kind argued in the psychoanalytical explanations offered by authors like Karl Ochsner, where the

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[139] Kahn's exploration of building services has been often discussed, and considering the functional nature of these projects the resolution of services was an important component of the design process. For further discussion see, Brownlee and De Long, *Louis I. Kahn*. Also, see Leslie, *Louis I. Kahn: Building Art, Building Science.*

Fig. 7.51. Interior view showing ceiling structure, Yale Art Gallery.
(*Source:* McCarter, *Louis I. Kahn*.)
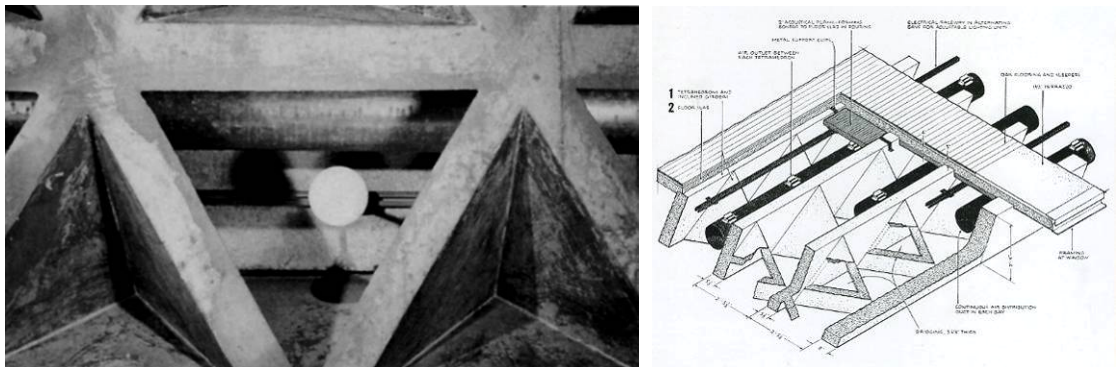
Fig. 7.52. Building services incorporated as part of structure, Yale Art Gallery.
(*Source: (L)* Wiseman, *Louis I. Kahn*, 77.; *(R)* McCarter, *Louis I. Kahn*.)

Fig. 7.53. Interior view showing virendeel girders used for services, AFL-CIO Building.
(*Source:* Leslie, *Louis I. Kahn*, 108.)
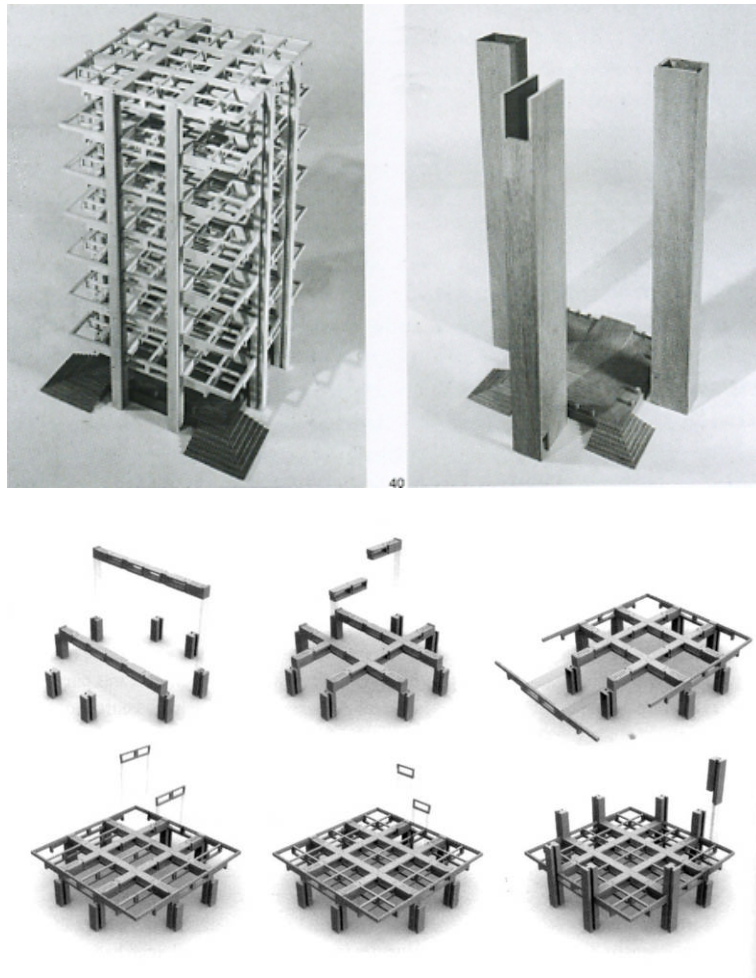
Fig. 7.54. Structural innovation in concrete and brick service towers, Richards Medical Towers.
(*Source:* McCarter, *Louis I. Kahn*, and Leslie, *Louis I. Kahn*.)
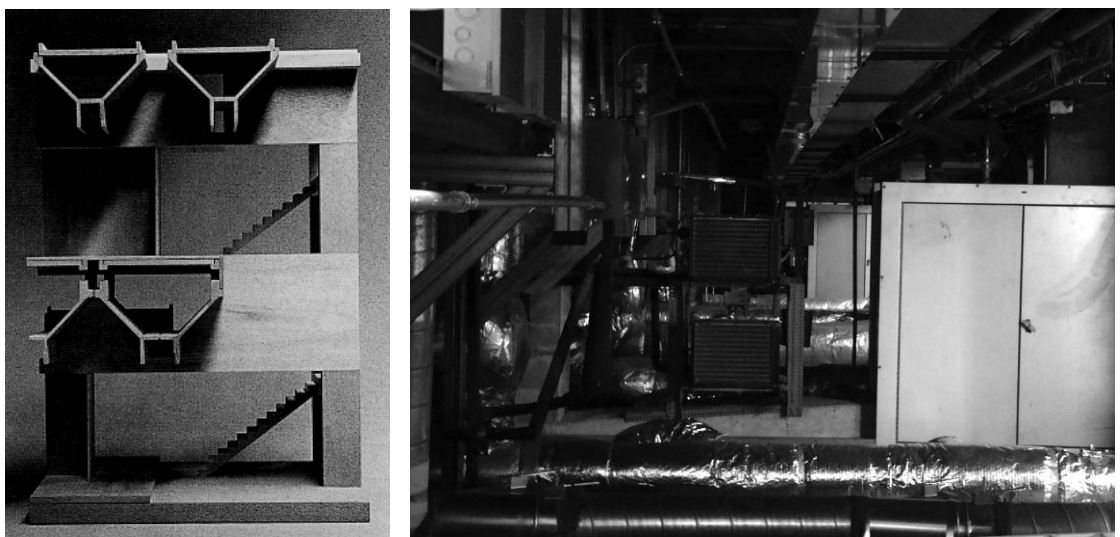
Fig. 7.55. (L) Folded plate system to carry services; (R) View in accessible service area, Salk Institute.
(*Source: (L)* McCarter, *Louis I. Kahn*; *(R) Photograph by author, 2008.*)

ideas originating in the confines of Kahn's mind were merely projected upon the mute and otherwise inert brick. But instead a reflection of characteristics, where the two entities involved in a dialogic relationship allowed for a coming together of shared values through a recognition that the other may be an extension of a common shared goal, or maybe even a shared being. In short, however this argument is formulated, it is evident that the encounter of 1964 led to a coming together of Kahn and brick in a complex and mutually rewarding relationship. Therefore, it may be rightfully argued that by the end of the construction of the *Experimental Arch* a new leadership was established for the IIM project with a corresponding program of action.

That this new leadership was further acknowledged by the members of the Ahmedabad collective is evident from the proceedings of Kahn's meeting with Kasturbhai Lalbhai which took place soon after the *Experimental Arch* was completed. Over the period of the preceding two years, since his appointment as the consulting architect for the IIM project, Kahn had already defined a vision for the project and in several not so amicable exchanges with the clients negotiated a budgetary restructuring for realizing the same.[140] Following the construction of the *Experimental Arch* Kahn was faced with the dilemma of renegotiating the economic implications of yet another change in goals with the clients. When he met with Kasturbhai Lalbhai, Kahn started out with an explanation of the changes that might be anticipated as a result of his recent exercise with the construction team.[141] However, before this proposal could receive any resistance from Lalbhai in terms of the economic implications involved, Kahn quickly relinquished control of the decision making process and offered it as a requirement of brick itself. Kasturbhai Lalbhai was a staunch Gandhian and he soon came to recognize that in honouring the goals of brick, or now *Kahn-brick*, he was furthering the cause of a philosophical ideal for independent India that Gandhi had worked hard to define.[142] The influence of Lalbhai on the social nexus of Ahmedabad was unfaltering and therefore having convinced him Kahn had finally established the new leadership where brick shared a place of equal standing at the front of the collective.[143] The subsequent

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[140] Details for the same are available from "IIM Construction Estimate," Box LIK 113, Kahn Collection. Also see documents on architectural adaptation of programme requirements in "IIM First Programs," Box LIK 113, Kahn Collection.

[141] M.S. Satsangi, interview by author, New Delhi, India, January 4, 2008.

[142] Suresh Banker, interview by author, Ahmedabad, India, December 8, 2007.

[143] This is further evident from the exchange between Lalbhai and Doshi which followed Kahn's presentation. Speaking in the local language of Gujarati, Lalbhai expressed his explicit agreement with Kahn's ideas to Doshi. M.S. Satsangi, interview by author, New Delhi, India, January 4, 2008.

developments of the IIM project then must be seen as a result of this new joint leadership of Kahn and brick and the common goal that they shared in the *composite order* of Kahn/Brick.

Architecture as Process - The legacy of Kahn-Brick

For the first two years of the IIM project the process of architectural production continued with a hierarchical structure where Kahn, as the consulting architect for the project, assumed the foremost position. Within such an arrangement, the members of the project team situated in Ahmedabad were required to gain an understanding of Kahn's goals for the project and work towards serving this end. Since Kahn was not physically present in Ahmedabad, his interactions with the various members of this collective remained limited, and the construction team had no basis of determining this goal except through the drawings sent from Philadelphia. However, following the events of December 1964 a new joint leadership was established, and an alternate course for the IIM project emerged. Within the new hierarchy *Brick* had assumed a position of equivalence alongside *Kahn*, and for those members of the collective who had little contact with Kahn, brick could now help determine a course of action. Since their exposure to Louis Kahn's ideas as an architect was just as limited as their comprehension of brick, both of which they had only encountered through secondary sources, the translation of authority assumed force easily. Consequently, the entire process of architectural production went through some significant changes which not only affected the development of the design for the IIM project but also the future dealings of Kahn and brick.

With the beginning of 1965 several new patterns were developed in Ahmedabad that have been overlooked in conventional historical accounts of the IIM project. The most immediate impact came with the project team at NDI, which had to change its entire approach to the development of design drawings. The problem of interpreting the drawings sent from Philadelphia was not resolved through an imposition of the drawing conventions practiced in Kahn's office, but instead a new convention was set up which was reflective of neither the Philadelphia nor the Ahmedabad practice, and specifically corresponded to the IIM project. The most important aspect of this newly instated convention was that here, instead of arbitrary mathematical conventions, the brick served as the standard unit of measurement. Following his contribution to the events of December 1964, M.S. Satsangi was given charge of developing these new drawings and

by February 1965 several members of the NIID project team such as Narale, Karve and Kannan were involved in redeveloping the drawings for the IIM project according to this new convention. In this new set of drawings each and every brick was properly delineated and the dimensions of formal elements were determined by the exact measurement required for the brick courses. (Fig. 7.56) This was not merely an exercise in detailing a preconceived design form in order to generate a more accurate construction document, but instead the brick became a determinant of intimate design details. Over the subsequent months these practices became even more deeply established as the basic size parameters of 3" and ½" (for the brick and required mortar clearance) came to serve as the standard template for the design of all architectural features. The essential formal elements were no more conceived in absolute units but defined in terms of brick courses and numbers.[144] Eventually, the entire design of the IIM complex changed to reflect these practices and several new details for segmental and flat arches were incorporated into the design form. Even the brick bonding pattern was altered to reflect this change, and while certain structures constructed before December 1964 continued to sport an English bond, all new construction was to be carried out in Flemish bond.[145] Briefly, then, within the practices of the NIID project team brick was elevated to the glory of its Ur days by serving as the centre of all design consideration.

As some of the surviving members of the NIID team recall, adopting this drawing convention did not merely bring about a change in working patterns but actually forced them to reconsider their entire approach to architectural design.[146] In Kahn's continued absence from Ahmedabad they now found themselves answerable to the authority of *Brick*, and this required them to be intimately familiar with this other non-human member of the design collective. In the previous paradigm the brick was considered an inconsequential supplement to a design exercise which primarily involved working with platonic forms. In contrast, the new drawing convention required them to engage with brick beyond its conventional representations in drawing, and this allowed them to develop a more thorough relationship with the material. As Satsangi recalls, "we started seeing the individual brick and the individual joint; that became the focus area of

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[144] Anant Raje, interview by author, Ahmedabad, India, December 15, 2007.

[145] This can easily be perceived even today when part of the structure for the dormitories D12 and D6 as well as some foundations display an English bond exterior while all other structures are in Flemish Bond.

[146] In discussion with Anant Raje, M.S. Satsangi, and Gajanan Upadhyaya, interview by author, 2007.
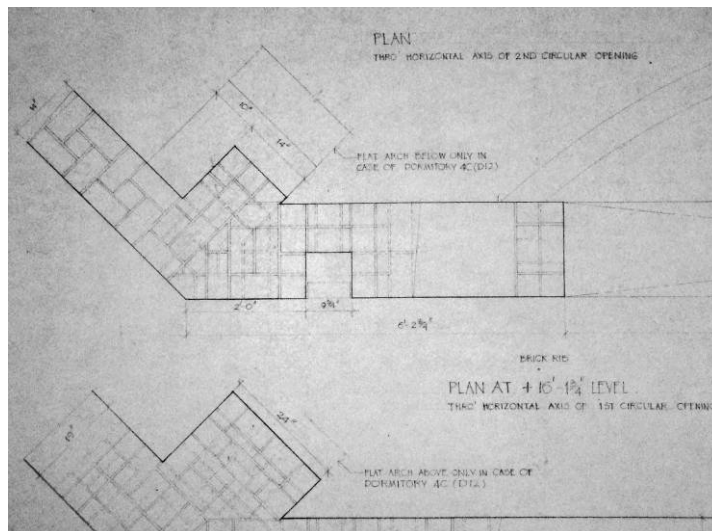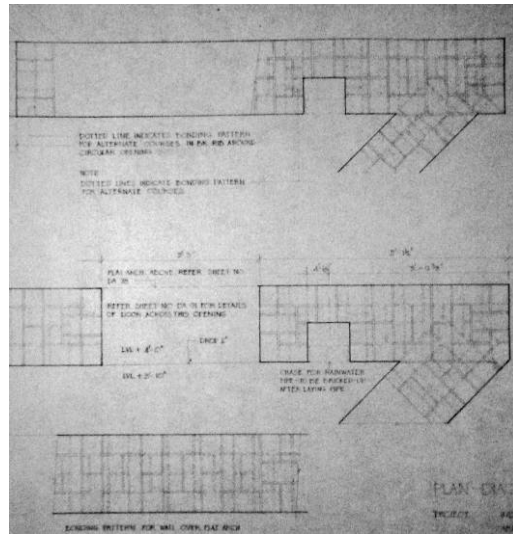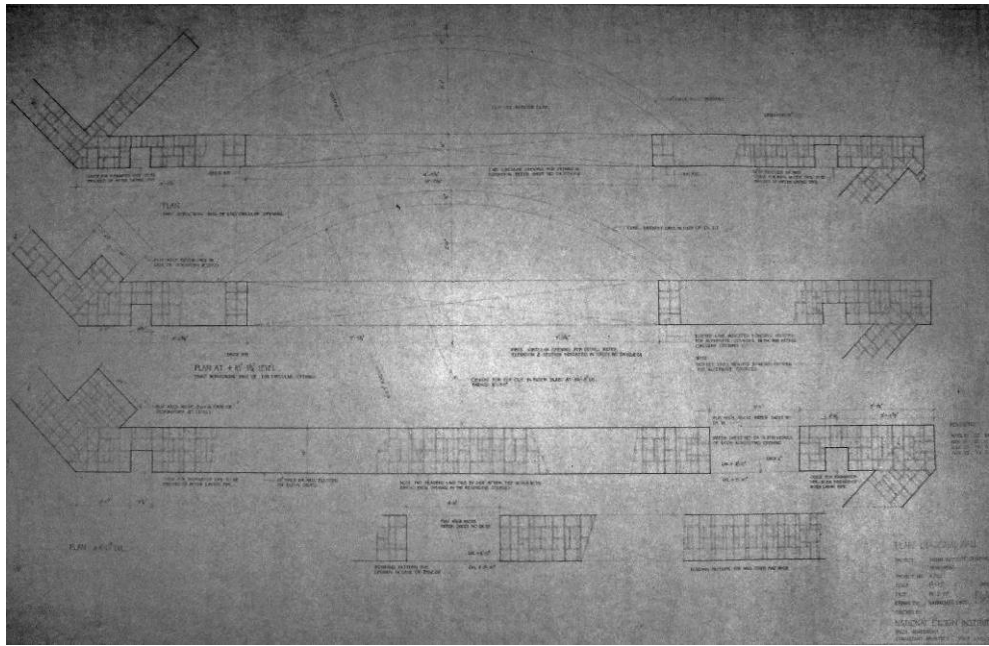
Fig. 7.56. Detail drawings, IIM Project, February 19, 1965.
(*Source:* Box LIK 645, Kahn Collection.)

working."[147] Indeed, by removing any abstract notions of measurement, which served to inadvertently reduce all materials to a single understanding of abstract form, the new practice had brought them closer to the substance of becoming of architecture. Therefore, by embracing this notion of "drawing as one builds" the members of the architectural team at Ahmedabad were able to appreciate the process of architectural design as a situated activity responsive to its material context.

As construction resumed in 1965 the effects of the events of December 1964 were also felt on the building site, where various agencies such as the work supervisors and labourers, which had remained suppressed within the previous hierarchical structure, found a stronger voice in the production process. Ever since the start of the project, Gannon Dunkerley had appointed senior site engineers like S.B. Desai and S.K. Dalal to ensure proper interpretation of the construction drawings sent over by the NDI.[148] As members of the engineering profession, these individuals were responsible for deciphering the technical drawings sent across by the design team through the help of drawing conventions that they had acquired as a part of their professional training. Within such a scenario the responsibility of work supervisors such as Barucha, who was not educated in these drawing conventions, was limited to ensuring that the work was consistently carried out to meet the requirements set up by the site engineers.[149] In the wake of the events of December 1964 Barucha assumed a much stronger role in the decision making process. By descending into the construction pit and working with the labourers he could now lay claim on being in closer contact with the other leader of the project – brick. He was, therefore, able to employ his intuitive connection with the material to define certain construction practices that were adopted in the site work in spite of the documentation forwarded by NDI. Even though this pattern of work was contrary to standard construction practices, the contributions of Barucha were greatly appreciated by the members of the NIID team, who found in his intuitive handling of the construction drawings a better alternative to on-site execution than those offered by the educated and skilled site engineers.[150]

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[147] M.S. Satsangi, interview by author, New Delhi, India, January 4, 2008.

[148] N.J. Panchal (Gannon Dunkerley & Co. Ltd.), interview by author, Ahmedabad, India, December 10, 2007.

[149] In discussion with N.R. Desai (Site Engineer for IIM Project), interview by author, Ahmedabad, India, December 18, 2007.

[150] The contributions of site supervisor Barucha have been acknowledged by several members of the project team in conversation with author. For communications to Kahn's office regarding the same see

This privileged position acquired through a closer proximity to brick was not limited to the level of work supervisors but also extended to the labour force, which now took an active part in the decision making process. Head masons and subcontractors such as Khodidas and Jadavji were actively engaged with work supervisors like Barucha in developing new details.[151] Their contributions were even acknowledged by Kahn who often engaged them in a discussion during his site visits. Even though they lacked a common spoken language, Kahn often found it easier to communicate with these individuals than the engineers on site, as between them they shared a common intuitive connection to the brick. Clearly, then, by serving at close quarters to both Kahn and brick, Khodidas and Jadavji assumed ever stronger roles within the hierarchy of the IIM design team and helped shape the production process. The prominence accorded to these head masons also affected the status of bricklayers and masons involved in other projects closely connected to the IIM project, such as the institutional complex for the NIID which started construction under the supervision of Gautam Sarabhai in mid 1965. The design for the NIID complex had been developed in collaboration with G.S. Ramaswamy of the Structural Engineering Research Centre (SERC) in Roorkee and was intended as an experiment in the construction of concrete funicular shells. However, large parts of the structure were eventually constructed in brick, and the 12.3mx12.3m bare brick shell that the institute now boasts is still attributed to the head mason Premji Kaka Mistry who insisted on this shift in materials.[152] (Fig. 7.57-7.58) Between the two projects for the NIID and IIM, the changes in the hierarchical structure brought about by the events of December 1964 helped elevate the status of the labourer. Since these projects were acknowledged as situated processes of architectural production, the labourer could now assume a greater role in the process by claiming a direct connection with the non-human leadership.

The effects of the 1964 encounter extended beyond the practices in Ahmedabad and Kahn's involvement with the IIM project also went through some considerable changes during 1965. By the middle of the year many more drawings exchanged hands between Philadelphia and Ahmedabad and the details of the IIM project were being developed

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Letter, R.J. Vasavada (NID) to Henry Wilcots, September 26, 1972, "IIM Correspondence 1/1/66 to 3/12/74," Box LIK 113, Kahn Collection.

[151] In discussion with N.R. Desai (Site Engineer for IIM Project), interview by author, Ahmedabad, India, December 18, 2007.

[152] Gajanan Upadhyaya, interview by author, Ahmedabad, India, December 6, 2007.
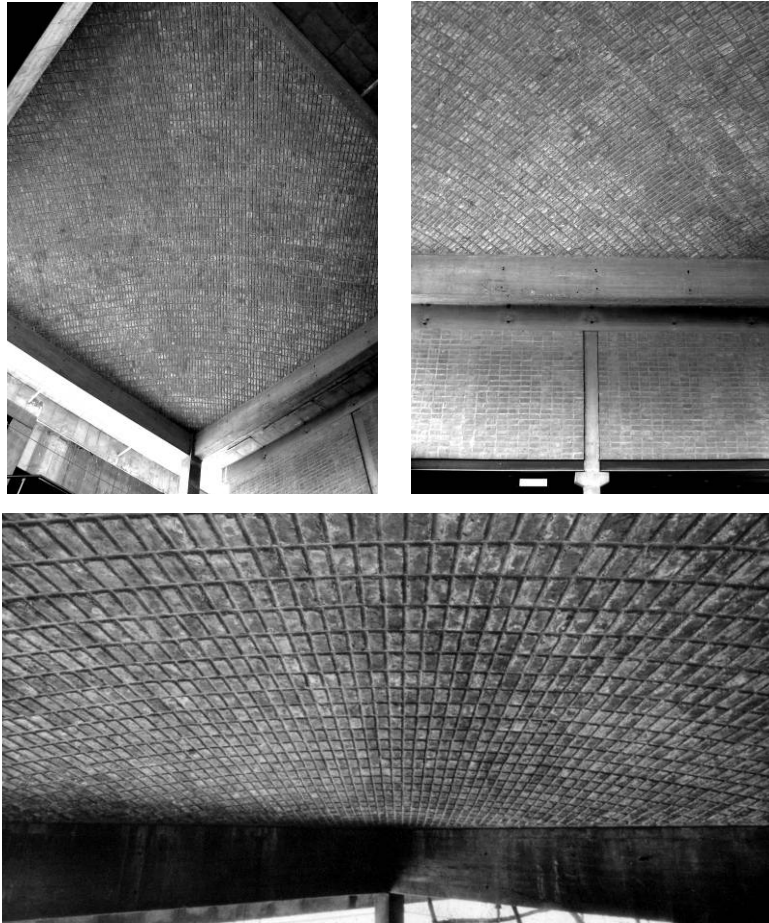
Fig. 7.57. Detail of brick shell, National Institute of Design, Ahmedabad, India.
(*Source: Photograph by author, 2007.*)

Fig. 7.58. Construction photograph, NID brick shell.
(*Source:* NID Archives, National Institute of Design, Ahmedabad, India)

with unprecedented rigour.[153] Although Kahn's previous designs for the projects within the Indian subcontinent had been full of structural interjections by other materials he now worked hard to reflect an exclusive basis of brick in all aspects of the design. Assuming his role as the spokesperson for brick evermore strongly he insisted on incorporating as many instances of structural details involving bricks as possible. He further worked to expand his own understanding of the complex realm of brick beyond the Roman precedents, and accumulated references to other associations which he would share with the design team in Ahmedabad with great passion.[154] This led to the Ahmedabad collective generating dozens of variations on the arch form which have since come to define the project. (In addition to various types of circular openings the final design includes 17 different variations on the arch form.) Developing alongside the NIID institutional complex in 1965 these new designs even acquired formal elements from the project where brick was charting unprecedented territory in the development of brick shells. (Fig. 7.59) The period of 1965 also saw increased correspondence between Kahn and Kasturbhai Lalbhai on the "Indian way of life" and his recognition of the architectural design as a situated process was evident.[155] The intensity of his investment would taper off after 1966 following a major eye operation and the influx of other projects, but the experience of *Kahn* consumed by the aura of *Brick* had firmly established the joint leadership of the project and work in Ahmedabad continued to reflect this idea.[156] When NIID eventually retracted their involvement with the project in June 1969 following major changes in management, Anant Raje from Kahn's office was instated as the local representative in Ahmedabad, and the IIM project continued to reflect this legacy of architectural design as a process intensely responsive to the material context.[157]

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[153] Over the months of May, June and July over 200 drawings were sent back and forth between Philadelphia and Ahmedabad. For details see, correspondence between David Wisdom and Suresh Banker, "IIM Correspondence 1/1/66 to 3/12/74," Box LIK 113, Kahn Collection.

[154] Suresh Banker, interview by author, Ahmedabad, India, December 8, 2007.

[155] For instance see Letter, Lalbhai to Kahn, September 14, 1965, "IIM Correspondence 1/1/66 to 3/12/74," Box LIK 113, Kahn Collection.

[156] Kahn went through an eye operation in 1966 which considerably affected his ability to work. See Telegram, Kahn to Doshi, July 25, 1966, "IIM Cablegrams to/from Doshi," ," Box LIK 113, Kahn Collection. Following this his involvement in the IIM project became considerably reduced. For correspondence outlining this lack of communication, see Letter, Lalbhai to Kahn, February 6, 1967, "IIM Correspondence 1/1/66 to 3/12/74," Box LIK 113, Kahn Collection. This period also witnessed the prospects on acquiring the Gandhinagar project finally coming to an end.

[157] Over the period of 1968 M.Y. Thackeray left NIID and the architectural wing went through some restructuring with Suresh Banker and then Prabhakar Bhagwat assuming headship. Eventually, the initial idea of starting a program in "Industrialized Architecture" was dropped and in 1969 NIID brought its
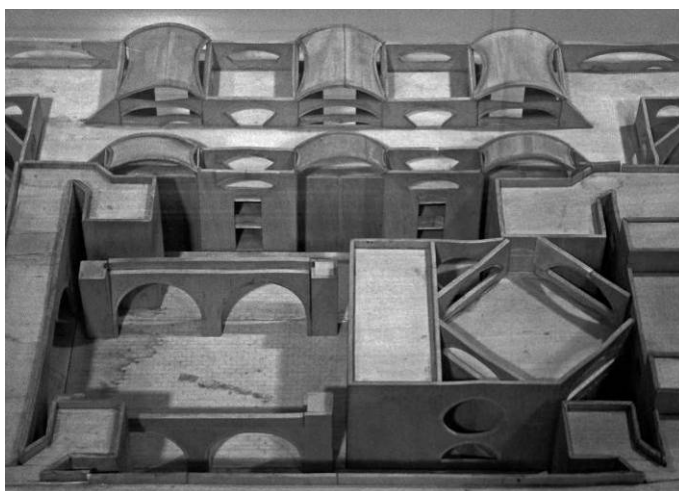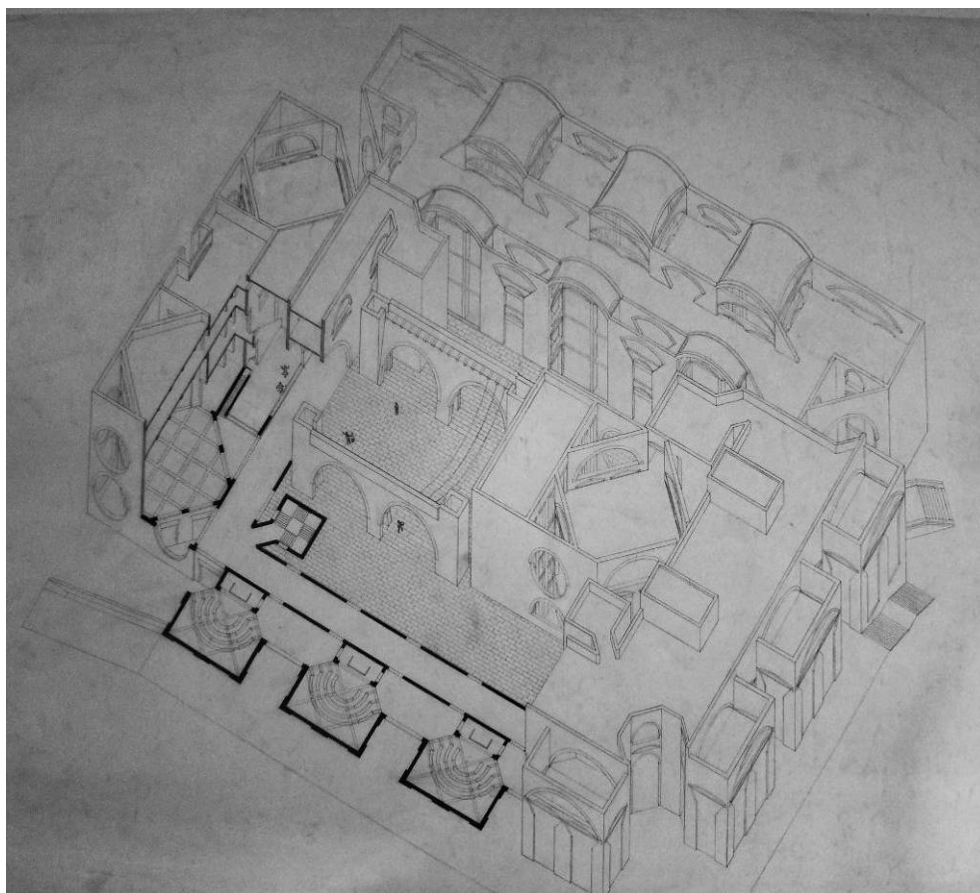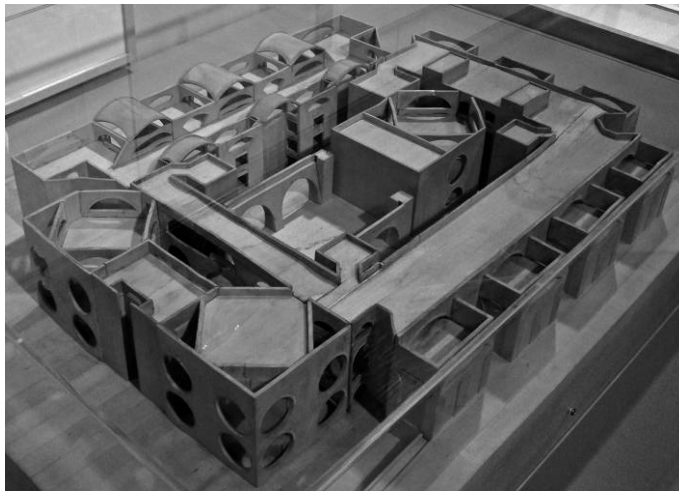
Fig. 7.59. Model and drawing, Revised design for Main School Building, May 1965.
(*Source:* "Drawings – 1965," Box LIK 645, Kahn Collection, photo by author.)

The transformations brought about by the IIM project had also worked to alter the course of both brick as a material in India and Kahn as an architect struggling to come to grips with a changing modernist tradition. Within the Indian context the importance accorded to brick spread to other members of the construction industry in Ahmedabad which were involved with the development and manufacture of the material itself. With highly influential figures like Kasturbhai Lalbhai and one of the topmost construction firms of Gannon Dunkerley behind the IIM endeavour, the Ahmedabad construction industry soon responded to the changes taking place on the IIM site by a corresponding boom in the production of bricks. Several new kilns popped up in the regions of Vadaj, Ghatlodia, Chandlodia, Bhat and Sarkhej to reflect the growing impact of the material.[158] The earlier practice of developing temporary clamp-kilns was gradually being replaced by a stronger commitment to the material, which ensured proper treatment of bricks and better standards of production. This focus on improving production practices was further instated by the Ahmedabad Brick Makers Association, which witnessed a change in leadership in 1965 and had its membership more than double within the following three year period through an intake that was the maximum it would witness for the rest of the century.[159] Under the supervision of the Ahmedabad Brick Makers Association, then, other manufacturers like Prajapati Bababhai Nathalal (B.N. Bricks) and Star Bricks joined the previous manufacturer Somabhai Becharbhai (S.B. Bricks) in ensuring that the best quality bricks were made available for construction on the IIM site.

These changes in the construction industry, coupled with the already growing involvement of the masons and bricklayers, worked to establish *Brick* ever more firmly in the realm of architecture. Indeed the rise in exposed brick architecture in the Indian context which followed the IIM project has been acknowledged by many authors.[160]

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involvement in all architectural projects to an end. See, Letter, Gautam Sarabhai to Kahn, May 29, 1969, "IIM Correspondence 1/1/66 to 3/12/74," Box LIK 113, Kahn Collection.

[158] N.R. Desai, interview by author, Ahmedabad, India, December 18, 2007.

[159] Shri Jaggannath L. Dalvadi assumed the role of the president of the Ahmedabad Brick Makers Association from 1965 to 1968. This period saw the inclusion of 45 new members while the organisation had operated over the last 15 years and only constituted of 35 members. Membership Records, Ahmedabad Brick Makers Association, Ahmedabad, India.

[160] For the basic arguments which have subsequently been repeated elsewhere, see Vikram Bhatt and Peter Scriver, *After the Masters: Contemporary Indian Architecture* (Ahmedabad: Mapin Pub., 1990). Also see Jon T. Lang, Madhavi Desai, and Miki Desai, *Architecture and Independence: The Search for Identity--India 1880 to 1980* (Delhi ; New York: Oxford University Press, 1997).

However, most of these arguments continue to accord this transformation to the 'creative genius' of Louis Kahn as a foreign architect, who set the standard for the local architects to follow. While the impact of Kahn on the architectural profession in India is undeniable, the transformations that came about in the construction context of Ahmedabad cannot be explained through Kahn alone. This is because the use of bricks was not limited to the formal considerations of the few architects involved with the IIM project, whose work could be considered as a direct result of Kahn's mentorship. Instead, the entire construction industry had transformed to reflect a more fundamental change, which had come about as a result of the events of December 1964 and which reinstated brick at the forefront of the collective. This process allowed for a rethinking of brick outside the confines of the existing post-independence customs, where the penchant for the pristine forms of the International Style had led to the practice of plastering brick walls white. Accordingly, in the housing projects developed in 1970s, the exposed brick vocabulary was incorporated more strongly in order to reflect the enhanced status that brick now commanded in public opinion.[161] Therefore, within the Indian context brick had managed its much needed transformation with the help of the encounter with Kahn, and its future dealings within the subcontinent stood transformed as such.

The changes that came about in the workings of Kahn as an architect are easier to recount as these have been documented in greater detail. Over the few years following the 1964 encounter, Kahn's approach to architectural design changed to reflect a stronger presence of brick. In the projects for the Ayub Hospital, the Dominican Mother House, the Fine Arts Centre in Fort Wayne and the Phillips Exeter Academy, which developed within the Philadelphia office during this time, the influence of the IIM experience was clearly visible. For his revised design for the Fine Arts Centre in Fort Wayne, which was completely redeveloped in 1965, Kahn continued to employ a formal vocabulary increasingly reflective of his association with brick in India. (Fig. 7.60-7.61) These drawings were even communicated to the NIID team in Ahmedabad to ensure a relative cohesion of the character of brick across the two projects.[162] Even though this building was to be developed for a completely different context Kahn's

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[161] In discussion with Gautam Bhatia, interview by author, New Delhi, India, January 14, 2008. Gautam Bhatia, who has been introduced earlier as the biographer of Laurie Baker, is involved with an ongoing project to develop a historical account of brick in India.

[162] The drawings for the Fine Arts Centre in Fort Wayne were sent over to Ahmedabad for reference and are available from, PR 109, NID Archives, National Institute of Design, Ahmedabad, India.

Fig. 7.60. Fine Arts Centre, Fort Wayne, USA.
(*Source:* Toshio, *Louis I. Kahn, 1901-1974.*)
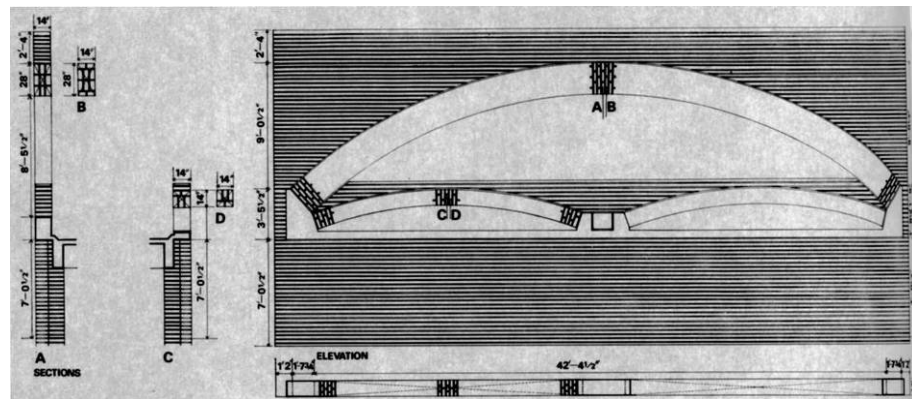
Fig. 7.61. Detail of masonry arch, IIM project.
(*Source:* Toshio, *Louis I. Kahn, 1901-1974.*)

Fig. 7.62. Library, Phillip Exeter Academy, USA.
(*Source:* Wiseman, *Loius I. Kahn,* 181.)

designs replicated several characteristic forms from his IIM experience showcasing his growing penchant for the material. Even in the commission for the library for the Phillips Exeter Academy, which also came by in 1965, Kahn's investment in brick was plainly manifest. (Fig. 7.62) Although the project subsequently explored new spatial configurations to reflect Kahn's philosophical notions of *silence* and *light*, as Brownlee notes, "the load bearing exterior wall [...] reflected his continuing love affair with honest brick construction."[163] These similarities with the IIM project were not limited to general aesthetic concerns, and also affected the process of production where the new drawing convention developed for the IIM project was adopted for these projects as well. (Fig. 7.63) Simply put then, for the period of his most significant involvement with the IIM project until 1967 Kahn's architecture had clearly become the playground of brick.

This transformation in Kahn's approach to architectural design also had profound consequences for his interactions with the architectural legacy of Modernism. It is widely acknowledged that, although operating within the Modernist paradigm, Kahn had approached modernism with a kind of unease and eventually came to change it as a whole.[164] As the "last master," he is credited with scripting some of the most memorable designs of the Modernist era, while simultaneously ushering in Postmodernism. Indeed, this "dubious privilege" of serving as the progenitor of Postmodernist architecture can be accorded to the use of historically suggestive architectural forms that can be easily seen as a precursor to the architectural tradition of Postmodern Historicism. However, a more important contribution to this paradigmatic shift came in the "denial of the creator's dominion as the privileged subject."[165] As Ingersoll notes, this change in approach was based on Kahn's recognition of architecture as a "dialogic process," which served as an "invitation to release posterity from the bond of masters."[166] By transforming Kahn into a hybrid entity which was acutely responsive to the being of brick through dialogic union of the two, it is the event of December 1964 that allowed for a realisation of this dialogic process. The architectural endeavours over the course of the next year furthered the cause of this development, and by early 1966 Kahn was to claim that, "there is no such thing as modern since everything belongs to architecture

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[163] Brownlee and De Long, *Louis I. Kahn*, 130.

[164] Brownlee and De Long, *Louis I. Kahn*, 51.

[165] Richard Ingersoll, "Louis I. Kahn: The Last Master," *Design Book Review* 21, no. Summer (1991), 7.

[166] Ingersoll, "Louis I. Kahn: The Last Master,"7.
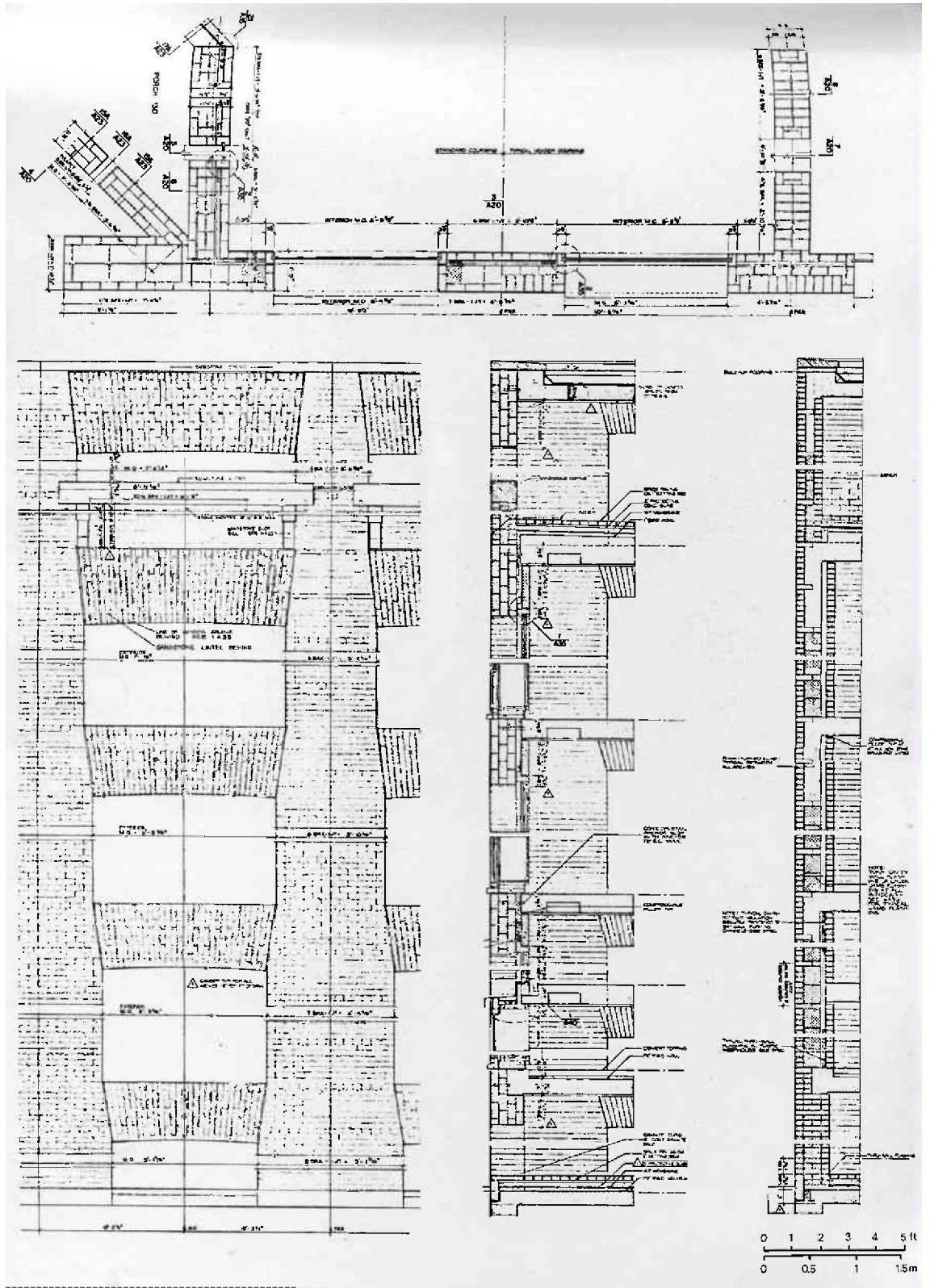
Fig. 7.63. Wall section, Library, Phillip Exeter Academy, USA.
(*Source:* Ronner, Jhaveri, and Vasella, *Louis I. Kahn.*)

that exists in architecture and has its force."[167]   Therefore, the event of the encounter served as the important transformative moment in the development of *Kahn*, and marks the shift from his earlier tenacious experiments with modernism to his later works that inspired the birth of the postmodern era. From the perspective of architectural history, *Kahn* stood transformed as a result of this encounter, and this would be established through numerous accounts of his experience of talking with the brick, which continued over the remainder of his life.[168]

In looking at these transformations brought about after the events of December 1964 it becomes clear that the encounter between Kahn and brick that took place during the construction of the *Experimental Arch* had a profound impact not only on the developments of the IIM project but also the substance of *Kahn* and *Brick*. Fused into an indistinguishable double the two came to reflect an architectural tradition that allowed for architectural production to be understood not as a mere projection of ideas but as a continually transformative *process*.

[167] Louis Kahn, "Address by Louis I. Kahn, April 5, 1966," Boston Society of Architects Journal, no. 1 (1967), available from "Boston Society of Architects," Box LIK 57, Kahn Collection.

[168] Kahn continued to develop his account of the dialogue with the brick over the last five years of his life, and recounted it one last time at an interview at IIM; he died on the way back from this trip. See Amit Srivastava, "In Dialogue with a Brick: Materials, Narrative and Architectural Historiography," in *Panorama to Paradise: Proceedings of SAHANZ XXIV Annual Conference, Adelaide, September 21-24, 2007*, ed. Stephen Loo and Katherine Bartsch, (Adelaide: SAHANZ, 2007).
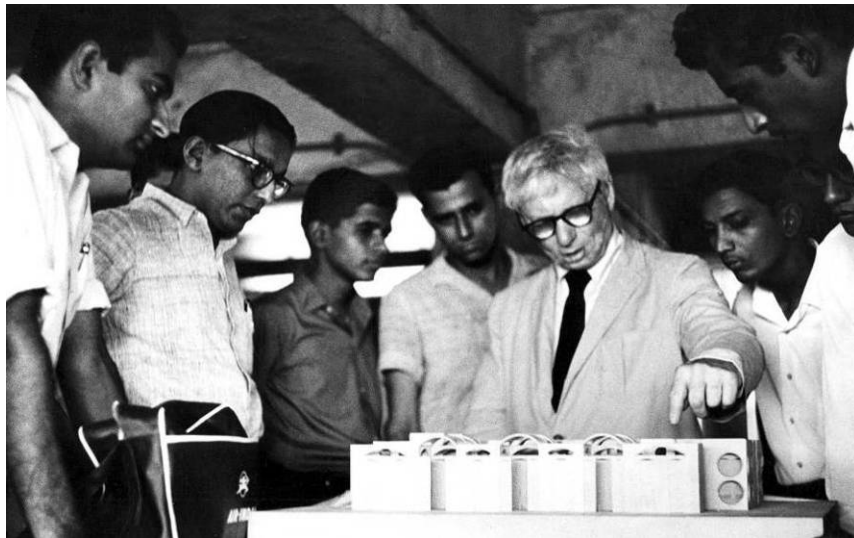
Fig. 7.64. Architectural team at NDI, Ahmedabad, IIM Project.
Sharad Shah, B.V. Doshi, (?), Berger Cooper, Louis Kahn, Padmakar Karve, Narale
(*Source:* NID Archives, National Institute of Design, Ahmedabad, India)

Fig. 7.65. Architectural team at NDI, Ahmedabad, IIM Project.
M.S. Satsangi, Padmakar Karve, Ravi Matthai, Suresh Banker, Chandrasen Kapadia, Louis Kahn
(*Source:* Publications Department, Indian Institute of Management.)

Fig. 7.66. Architectural team at NDI, Ahmedabad, IIM Project.
Mahendra Raj, (?), B.V. Doshi, Padmakar Karve, Narale, Louis Kahn, M.Y. Thackeray, Renee Doring
(*Source:* Publications Department, Indian Institute of Management.)

M.S. Satsangi

N.R. Desai

Mahendra Raj

Anant Raje

Suresh Banker

Prabhakar Bhagwat

Fig. 7.67. Members of the architectural team at NDI involved with the IIM project
(*Source: Photograph by author, 2007-08.*)

The analysis and reinterpretation of the fabled dialogue between Louis Kahn and the brick as a historical event suggests the possibility of an encounter which was more symmetrical than has previously been argued. The exchange was not limited to a projection of preconceived notions originating within the confines of Kahn's mind on an otherwise inert brick, displaying his technical mastery over the material in the artistic production of the IIM project. Instead, the encounter was one in a series of events that allowed for a continuous translation of goals and actants within a heterogeneous process of architectural production. As a result, the exchange can be seen not only to have altered the course of the future development of the IIM project but also to have fundamentally transformed both Kahn and brick. Acknowledging the possibility of this symmetry – the dialogic nature of the exchange – then allows for both, a better understanding of the IIM project as well as an opportunity to appreciate the subsequent contributions of Kahn and brick to architecture in newer ways.

In historically reconstructing the developments of the IIM project, the thesis employs the theoretical premise of *translation* (from Latour's theory of *technical mediation*) to present it as a heterogeneous process of encounters. It thereby helps introduce the role played in this process by several new agencies which have been overlooked in previous accounts. For instance, the in-depth analysis of events that led up to the December 1964 encounter reveals the critical transformations brought about in the structure of the Philadelphia practice during 1963, following from Kahn's altercation with August Komendant and the arrival of new members from Ahmedabad. Through such a reading of events it becomes clear that, for the purpose of constructing a historical narrative Kahn's practice cannot be treated as a singular entity working in a uniform fashion to execute Kahn's will. Instead, the disparate inputs from the various agencies which formed such a collective need to be acknowledged as an integral part of the development of any architectural project. Furthermore, since these various members

often continued to concentrate on different projects, the decisions regarding any single project cannot be viewed in isolation and have to be regarded in the context of parallel developments in other projects (both built and un-built) which were being handled by the office at the same time. In this respect, the interleaving of encounters across various different agencies attempted by this thesis allows for the much required exploration of the connections between (among others) the three projects for the IIM, the Gandhinagar Capital and the Dhaka Assembly which developed alongside each other within Kahn's Philadelphia practice during this period.

The account developed here further helps to situate Kahn's IIM project within the context of the construction industry of Ahmedabad, and the city's fateful tryst with Le Corbusier. Such a historically grounded effort helps fill the long existing gap in the literature, where the local developments that took place in the period between the arrivals of these foreign architects is often disregarded. Although the two figures of Le Corbusier and Louis Kahn are both recognized as major influences on the development of the post-colonial architecture of India, their works have been treated autonomously, as isolated instances of ideological import. Acknowledging both Le Corbusier and Kahn as part of a singular narrative of Ahmedabad's architectural tradition renders it possible to appreciate Kahn's contribution as following into a continually evolving picture of Modernism in India, where the socio-cultural conditions of the city worked to assimilate these disparate influences into a coherent progression. Furthermore, situating the IIM project within the larger socio-political context of the 1960s reveals the impact of seemingly removed political events, both local and global, on the development of individual architectural projects, which stylistically might be characterized in similar ways. Therefore, by tracing associations and connecting sites that simultaneously bring the local and global into play and render these social assemblages bare, the revised historical account not only allows for a greater insight into the discourse of Modern architecture in India, but also avoids the superficial, even contradictory, relegation of both Le Corbusier's as well as Kahn's projects in India to a Brutalist ideology.

Finally, the focus on the detailed progression of events within the development of the IIM project helps highlight the pivotal role played by the construction of the *Experimental Arch* in the process. The seemingly rudimentary construction exercise, which most authors dismiss as an instruction in bricklaying techniques, was a crucial event that not only affected the development of the project itself but also helped trigger a transformation of the entire construction industry of Ahmedabad. Acknowledging the

importance of the *Experimental Arch* beyond a mere technical demonstration, then, allows us to appreciate the contributions made by a wider set of agencies, including the labourers, the site engineers and even the brick manufacturers, which have not previously been considered. Incorporating the contributions of these crucial implementation agencies into the narrative brings forth a more comprehensive picture of the production process of the IIM, and the decisive role it played in the history of architecture in Ahmedabad. On one hand, this revelation is crucial to the understanding of the shift from the European Modernist idiom, which had begun to gain force in the early years of independence, to a specific appropriation of the same towards an identifiably Indian formulation of Modernist impetus. On the other hand, it makes a case for greater importance to be accorded to the structure of the *Experimental Arch* itself, which needs to be recognized in its own right as a marker of this pivotal event in the history of Modern architecture in India.

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As a study in, but also on, the field of architectural historiography, the methodological approach of looking at the event of the encounter as an intersection of the individual histories of Kahn and brick, also opens up avenues to new understanding of the contributions of both, the human and material agencies, to the history of architecture.

In the case of brick and its engagement in India, subsequent to the IIM Ahmedabad project, the current account introduces the possibility of seeing the transformation in brick's circumstances as an extension of a historical process that, although continually affected by external influences, was nevertheless grounded in the local context. It, therefore, incorporates not only the architectural influences of figures like Arthur Shoosmith and Claude Batley, who were involved in propagating an Anglo-Indian concept of Modernism, but also the socio-political context generated by the efforts of figures like Tagore and Gandhi, and the corresponding *swadeshi* movement, to generate a more situated understanding of this historical transformation. Such a viewpoint allows the narrative to extricate itself from the limitations imposed by the existing literature which continues to rely on the *genius* of Kahn as a "modern master" to explain the subsequent resurgence of brick in Indian architecture.

Indeed, including the diverse range of both local and global associations of the material as an integral aspect of its active agency, further allows this historical account to avoid resorting to constructed ontological binaries of 'East' and 'West', which have been a

problematic default of most accounts of post-independence architecture in India. As a repository of these global/local associations the material itself binds the process of construction into a network of world historical events, and eliminates the need to engage the cultural relativism inferred by the notions of the Occident and the Orient. The rejection of these cultural dialectics then creates a genuine possibility to approach architectural history without subordinating it to a particular universalism invested in the Eurocentric understanding of architectural history. In fact, viewed in the context of the continuing process of brick's own becoming and the past associations that it brought to the process of production, the IIM project subordinates itself to a complex understanding of the substance of *Brick*. This theoretically more complex formulation of the material transcends any cultural definition, and therefore serves as a common thread for connecting the various local and global networks of architectural history.

In respect to the generation of such a historical understanding of the substance of *Brick*, the current thesis has offered a fresh perspective by incorporating new archaeological discoveries concerning brick's history, as well as unearthing the connection between important socio-cultural events in history and the development of the material substance. However, a truly embedded cultural biography of *Brick*, such as C.A. Bayly has offered in the context of *khadi* cloth in India, needs to be constructed, and will hopefully serve as the subject for future research.[1]

The transformations brought about in Kahn as a result of the fabled encounter with brick are easier to recognize in the context of his subsequent architectural endeavours, and many authors have already noted his growing fascination with brick in later projects as being reminiscent of the IIM experience. However, the historical account constructed here, which offers the moment of encounter in 1964 as an instance in the becoming of *Kahn* as a human substance, allows for a better understanding of the increasingly esoteric guise that Kahn adopted after his experiences in India. As Sarah Goldhagen has noted:

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[1] See, C.A. Bayly, "The Origins of *Swadeshi* (Home Industry): Cloth and Indian Society, 1700-1930," in *The Social Life of Things: Commodities in Cultural Perspective,* ed. Arjun Appadurai (Cambridge: Cambridge University Press, 1986).

The cumulative impact of these visits on him was enormous; not only did Kahn's architecture change, but also did his manner of locution. Increasingly he spoke in the anagogic language for which he remains well known.[2]

The encounter of 1964 was a culmination of several disparate influences on Kahn's intellectual development. These included his association with extraordinary individuals such as Lewis Mumford, Josef Albers, C.P. Snow and Jonas Salk, but also the distinctive conditions of his own personal life experience which allowed for a specific reading of those other more external influences. Recognizing this complex network of associations as a basis of Kahn's perception of the 1964 encounter, constructs a more informed framework through which to approach the seemingly mystical teachings that came to be identified with him in his later years. As an extension of the arguments laid out in this thesis, these later writings can be acknowledged as Kahn's attempt to communicate the experience of an *active* and *symmetric* exchange with materials, which was rendered incomprehensible due to the epistemological bias of his audience.[3] Furthermore, his final allusion to "all matter is spent light" can be interpreted as an attempt to remove the distinction between humans and non-humans in a shared understanding of architectural history. Kahn's philosophical musings assume greater relevance for architectural history when acknowledged, as the above would indicate, as an argument for the all pervading nature of history that binds humans and non-humans in a single narrative. But this needs to be explored further.

The current thesis offers some insight into a possible exploration of Kahn's intellectual history, which would show his writings as precursors of certain theoretical notions which have only recently become acceptable through the critical investment of theorists like Bruno Latour. Indeed the writings of Alfred North Whitehead, which find repeated mention in Latour's works, also served as an inspiration for some of the ideas explored by Mumford and later appropriated by Kahn. Furthermore, there may be much to be gained by exploring the biological analogy that binds both Latour and Kahn to Jonas Salk, whose Salk Institute served as a site for major transformative events in the life of both individuals. Indeed, a further exploration of these threads will offer greater insight

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[2] Sarah Williams Goldhagen, *Louis Kahn's Situated Modernism* (New Haven, CT: Yale University Press, 2001), 179.

[3] A preliminary study of this proposition is discussed in Amit Srivastava, "In Dialogue with a Brick: Materials, Narrative and Architectural Historiography," in *Panorama to Paradise: Proceedings of SAHANZ XXIV Annual Conference, Adelaide, September 21-24, 2007*, ed. Stephen Loo and Katherine Bartsch, (Adelaide: SAHANZ, 2007).

in situating Kahn at the crossroads of Modernist and Post-Modernist thought, and needs to be taken up as a subject for further research.

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In the end, the arguments for symmetry that have been expounded here in the context of Kahn and brick have great relevance for the field of architectural historiography in general. First of all, the employment of Bruno Latour's theoretical premise to illustrate an empirical case, in itself opens new grounds for the field of architectural historiography. The relevance of Latour's arguments for the discipline of architecture has already been acknowledged by some contemporary research projects, which continue to employ his theories to argue for a different understanding of architecture. But, as Kjetil Fallan has recently noted, these attempts have remained limited to a theoretical appropriation and an empirical study founded on this theoretical premise needs to be attempted.[4] By addressing this complex task of arguing the symmetric involvement of materials in social action through an empirical historical study, the current thesis engages Latour's theoretical model more thoroughly into architectural research than has yet been attempted (to the best of my knowledge), and thereby offers the possibility of understanding architectural production in newer ways. Moreover, by linking Latour's arguments to the more widely discussed contributions of Martin Heidegger's philosophy to architectural thinking, the thesis helps to assimilate this new philosophical contribution into an existing tradition of architectural theory.

In addition to this theoretical contribution, the empirical argument itself serves to reveal new ways of understanding and representing the relationship between architects and materials in architectural production. Within the historical narratives reconstructed here, the arguments for a symmetric exchange have been constructed on the slippery slope of hybrid formulations of *Kahn-brick*, and with a degree of linguistic licence that convention does not easily afford to a discussion of materials. However, regardless of these rhetorical and linguistic conceits, it has been made evident that the encounter between architects and materials in the course of architectural production has to be considered as a continuous process of *translation of goals and actants*. Seen in this light, as a heterogeneous and gradual process of *translation*, the encounter with materials takes on a new significance, where the minutest change in the process of

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[4] Kjetil Fallan, "Architecture in Action: Travelling with Actor-Network Theory in the Land of Architectural Research," *Architectural Theory Review* 13, no. 1 (2008).

production that arises as a result of this encounter can be recognized as equivalent to the contribution of the myriad human agencies which are otherwise excluded from conventional historical accounts. The alternative account provided here has attempted to open up possibilities for architectural historiography to recognize architectural production as a realm of *action* where both humans and non-humans come together in a process of *mediation*. It is hoped that further theoretical and empirical investigations in this vein will help diminish the epistemological barriers that remain, and allow for architectural history to serve as a true reflection of such a process of *mediation*.

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CHAPTER 2

Fig. 2.1. The Modern Paradox.
(Source: Latour and Porter, *We Have Never Been Modern*, 58.)

Fig. 2.2. The locus of the quasi-object.
(Source: Latour and Porter, *We Have Never Been Modern*, 52.)

Fig. 2.3. Translation of Goals and Actants
(Source: Latour, *Pandora's Hope*, 179.)

CHAPTER 6

Fig. 6.1. The "bun-shape" brick with finger-mark patterns from Jericho.
(Source: Campbell, *Brick: A World History*, 26.)

Fig. 6.2. The Harappan Orbit
(Source: Deo Prakash, *Harappan Art*, 41.)

Fig. 6.3. Brickwork from Mohen-jo-daro excavation site.
(Source: (*L*) Deo Prakash, *Harappan Art*, 41;
(*R*) Cichy, Architecture of the Ancient Civilisations, 155.)

Fig. 6.4. Egyptian brickmaking, Wall Painting from the Tomb of Rekh-mi-Re.
(Source: Campbell, *Brick: A World History*, 28-29.)

Fig. 6.5. The Ziggurat at Al-Untesh-Napirisha.
(Source: Campbell, *Brick: A World History*, 32.)

Fig. 6.6. The Frieze of Archers from the Palace of Darius, now at Louvre, Paris .
(Source: *Photograph by author,* 2008.)

Fig. 6.7. Roman Brickwork, showing diagonal cut pieces of slab in embedded in concrete.
(Source: *(L)* Acocella*, Architecture of Place,* 170*; (R) Photograph by author,* 2008.)

Fig. 6.8. Islamic Brickwork, early naked-brick example & subsequent ascent of tiling.
(Source: Campbell, *Brick: A World History*, 74, 153.)

Fig. 6.9. Cathedral of St. Cecile, Albi, France, 'humility' and 'power' of Christianity.
(Source: *Photograph by author,* 2008.)

Fig. 6.10. Detail drawing of the Cottancin system of *ciment armé.*
(Source: Dumont, "The Fortune of a Pioneer.")

Fig. 6.11. The Church of St. Jean de Montmartre, Paris. Front view and detail of structure.
(Source: *Photographs by author,* 2008.)

Fig. 6.12. The Garrison Church of St. Martin, Delhi.
(Source: *Photograph by author,* 2009.)

Fig. 6.13. Construction images, The Garrison Church of St. Martin, Delhi.
(Source: Irving, *Indian Summer*, 335-36.)

Fig. 6.14. Architecture of Laurie Baker; (L) Loyola Hostel, (C) Baker at work, (R) Namboodiri House.
(Source: www.lauriebaker.net*, Photographs by Seema K.K.*)

Fig. 6.15. The Hamlet. Baker at home with brick.
(Source: www.lauriebaker.net*, Photographs by Seema K.K.*)