



Sketch of the Sanctuary of Athena, Delphi, Greece by Louis Kahn, 1951

The Architecture of Interpretation

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THE ARCHITECTURE OF INTERPRETATION

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Dedication

To Professor Lydia Goehr for interpreting the journey
and for future Fitch Scholars to illuminate the way.

*The significant problems we face cannot be solved by the same level of
thinking that created them. - Albert Einstein*

In the dim light at the top of the stairway, the antique molding planes crowd side-by-side on makeshift wooden shelves like small, thin, earth-toned volumes in the library of some antiquarian scholar. Scores of these well-worn tools range along the narrow corridor of the carriage house attic that serves as an office for Historic New England, the oldest preservation organization in the country.

The tools are a benefactor's gift from one generation to another. They are still occasionally used when construction projects do not require large quantities of machine-produced, architectural millwork. Like oral history projected across time by traditional storytellers, architecture sustains comprehension through the utility of tools linking craftsmanship past to present. It is this connection between old and new that enlightens experience and enhances appreciation. It is the role that interpretation plays in giving purpose to the practice of preservation.

Acknowledgements

Recycling

Interpretation is all about *re-creation*, the recycling of history from a fresh point of view. It requires insight - the sight within. Louis Kahn said all creation exists within oneself, as always. He rejected principles of black-box architecture espoused by many of his contemporaries. He found inspiration in light rather than darkness.

For over a year now I have been living with the subject of Louis Kahn and the Trenton Bathhouse, enriched by the diversity of views shared by those whose lives have been touched and irrevocably altered by his work. It seemed a simple beginning. A major discovery along the way was the realization of the incredible complexity and integrity that Kahn imbued in his designs for the Jewish Community Center. And for him this was just the start - his seminal creation.

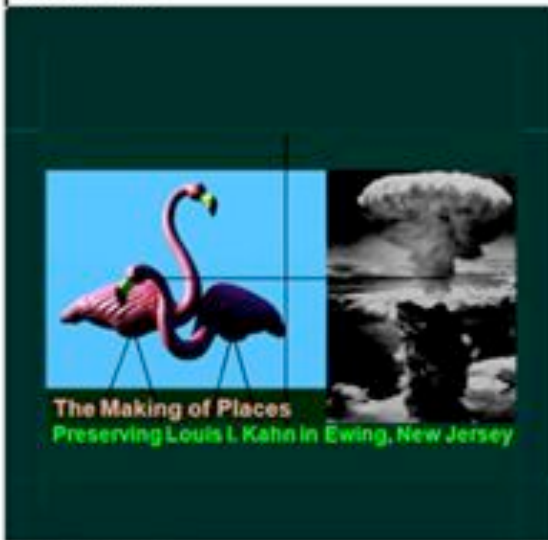
The structure of this thesis has evolved and matured with the growth in understanding of the implications of Kahn's work and the responsibilities we as architects, preservationists and citizens assume in guiding the interpretation of these landmark buildings for the benefit of communities yet unknown. Louis Kahn never stopped questioning the possible, knowing that the discovery of irrefutable answers was a futile undertaking. With an awareness of that sight within, he energetically encourages us to wonder and to re-create. Let a new cycle begin.



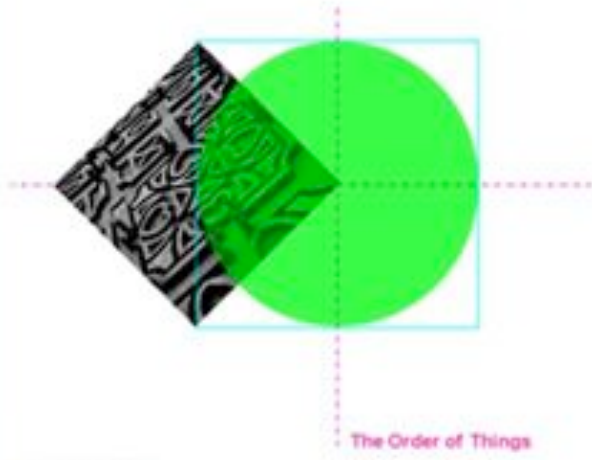
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Synopsis

The world knows it simply as the Trenton Bathhouse. In truth, this designation is not entirely accurate; some parts, in fact, are not true at all. Still, almost from the beginning, since the time the Jewish Community Center was constructed in the small, suburban community of Ewing, New Jersey, in the 1950s, this is how the self-professed seminal work of Louis Kahn's architectural career has been identified.

For preservationists, how we choose to frame a subject largely determines how its history is remembered. The emphasis of interpretation significantly influences our perceptions as information is transferred to succeeding generations. *The Architecture of Interpretation* takes advantage of the unique opportunity that exists to explore strategies for interpretation concurrently with preservation plans that are being developed for Louis Kahn's landmark buildings in New Jersey. The thesis offers the proposition that an appropriate strategy for preservation rests within the interpretation of the site as a community of relationships generating the power of self-discovery. This realization is supported but not constrained by circumstances of time and place, of age and experience, of history and the material world. These conditions exist at the edge of consciousness and hold connections to reality but are external factors. The force awakening enlightenment rests within each of us. Louis Kahn expressed as much when he observed that, "Wonder in us...is a record of the way we were made. It is, one may call it, a seed... [I]n wonder lies the source of all that we'll ever learn or feel." ¹

¹ *Louis Kahn: Essential Texts*, Edited by Robert Twombly (New York: Norton & Company, 2003) p.152.

I believe wonder is the motivator of knowledge. And knowledge is nothing until it comes to a kind of sense of order, a sense of the harmony of systems.² ... I believe that what was has always been, and what is has always been, and what will be has always been. I don't think the circumstantial play from year to year and era to era means anything, but what has become available to you from time to time as expressive instinct does.³

The architecture of interpretation can address the general, comprehensive quality of a site's structure or, equally as valid, can focus on the interdependence between specific buildings. For this study, the Jewish Community Center is described by a range of interactions that define community.⁴ Chapter 1 introduces the interpretive theories of Freeman Tilden and his assertion that the purpose of interpretation is not to instruct but to provoke, to reveal rather than to communicate. John Veverka, author and international interpretative planner, takes up Tilden's discussion and demonstrates the need to engage

² Louis Kahn, "Law and Rule in Architecture," *Essential Texts* (Princeton, 1961) p.124.

³ Ibid: p.278.

"Built into us is a reverence for the elements, for water, for light, for air -- a deep reverence for the animal world and the green world. But, like everything which is deeply rooted in feeling and part of our psychic existence, it does, not come forth easily."

"Design is a circumstantial act. It is a battle with our human nature, with the nature of nature, with the laws of nature, with the rules of man, and with principles. One must see all this to put it into being. Design is a material thing. It makes dimensions. It makes sizes. Form is a realization of the difference between one thing and another, a realization of what characterizes it. Form is not a design; it is not a shape, not a dimension. It is not a material thing."

Louis Kahn, Essential Texts, p.119.

⁴ "All of Kahn's solutions show that he was able to synthesize commonsense practicality and consideration for economically sound building with a concern for human interaction and the broadest conceptions of institutional use. These became hallmarks of his later, more elaborate projects... While Kahn's clients exhibited no effort to understand his designs and were rarely satisfied with his conceptions, their patronage challenged him to create some of his best work."

Solomon, Susan G. *Louis I. Kahn's Trenton Jewish Community Center* (New York: Princeton Architectural Press, 2000) p3.

the visitor in a conversation about historic significance. He asks why a visitor should care about the meaning of landmarks and then questions what he should do about such concerns. He challenges: How is this understanding useful? What value does it offer?

Sam H. Ham, author and professor of communication psychology and tourism at the University of Idaho's Department of Conservation, ends the interpretive debate with the apparently indifferent rhetorical question, "So what?" He insists that effective communication is essential to convey significance. Louis Kahn understood the imperative to record the essence of one's experiences. He wrote, "The reason for man's living is to express. And art is his medium."⁵ He concludes that attention must be paid to the need to preserve the cultural expressions of man's art, "his reason for living."

Chapter 2 presents a summary of how the Bathhouse and the other buildings of the Jewish Community Center came to be. The role of participants and what they sought to achieve is explored against a background of significant social, economic, political and institutional changes experienced during the 1950s with the creation of suburban America. Chapters 3 and 4 describe how themes such as time, order and style can be introduced to highlight the unique character of the buildings created for the Community Center. The fifth chapter demonstrates that communities exist as a compilation of specially structured interactions that help to define common values. Four buildings offer opportunities for the development of interpretive programs: the Day Camp, the

⁵ Twombly, Robert. *Louis Kahn Essential Texts* (New York: W.W. Norton & Company, 2003) p.198.

Bathhouse, a 1950s suburban house and the main Community Center building designed by Kelly & Gruzen in 1961. Chapters 6 and 7 analyze the Day Camp and the Bathhouse in greater detail revealing the architectural character of each building's design. The introduction of topics of *youth* and *maturity* provide a standard of evaluation for the theme *Discovering Community*.

Whereas the topics *youth* and *maturity* can be considered developmental and non-elective, the topics *family structure* and *tribal alliance*, the focus of Chapter 8, are hierarchical and progressively selective. Here, interpretation shifts from the commonality of an individual's perspective to the complexity of social interactions that define community as a composite of diverse elements. Interpretation allows the realization of the power of relationships to broaden perspectives and to validate personal values. Individual growth is projected into a matrix of family and community relationships. Chapter 9 outlines a plan for interpretation of the four buildings in the study that supports Tilden's requirements to provoke interest, to relate to common experience, to provide meaning and to unify an understanding of a natural order. A distinction is made in the focus of the interpretive program proposed for each building.

In closing, Chapter 10 provides a summary of the changing environment into which plans for the Jewish Community Center were created. Against this background, Louis Kahn's innovative architecture is viewed. The power of interpretation is shown to be in the connection it can provide for understanding what is similar and what is different between two states of mind. Between now and then.

The thesis explores the question of what is an appropriate interpretation for the landmark buildings Louis Kahn designed for the Jewish Community Center in Ewing, New Jersey. The methodology used includes a review of Kahn's discussions and writings about principles represented in his architecture; an evaluation of the views of key participants in the development of plans for the Jewish Community Center as well as the design of other projects undertaken during this phase of Kahn's career; the research of documents in the Louis I. Kahn Archives at the University of Pennsylvania as well as other reference material; the evaluation of current preservation proposals under consideration and an examination of several interpretive concepts that highlight different aspects of the significance of the historic site.



First Sketch of Bathhouse (Detail): Louis Kahn, February 1955
(Source: Louis Kahn Archives, University of Pennsylvania)

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Chapter 1. A Matter of Interpretation

It's not what you look at that matters, it's what you see.

- Henry David Thoreau (1817-1862) ¹

Eye of the Beholder

The root of the word preservation is found in the Latin *praeservare* - to observe beforehand. What is interesting in the word's etymology is its connection to *observation*, to see through the present some prior stage of evolution. Preservation frames the perception of history in the middle ground of a state of becoming, of premonition. This awareness is manifest in an understanding of the larger context that exists beyond the limits of an individual object or event. The bridge between icon and meaning is structured through interpretation. Interpretation allows the revelation that is the moral of a story, the code of civilization. Lacking this link, the awareness of an artifact's significance, in terms of its inherent art, may remain undiminished but its cultural relevance is critically compromised.

As Thoreau observed almost two centuries ago, it is association, rather than the object itself, that yields comprehension. This emphasis on context is becoming more pronounced as increasing efforts are directed toward the preservation of significant architecture of the late 20th century. With the dawn of the atomic age that ended WWII, world-wide social, cultural, economic, technological and environmental references were fundamentally altered. Today, as progress is effectively shrinking the world and accelerating time, one can reasonably argue that the gap between the built environment and architectural intentions has never been wider. As a result, the art of interpretation is

assuming new standing in an elevated position of importance. For the ability of trans-generational communication to survive, preservation must successfully accommodate this new order.

To promote an understanding of the role of interpretation in preservation action, the Interpretation and Education Division of California's State Parks published the *Basic Interpretation Handbook* in 2003, setting out guidelines for landmark interpretation.² The introduction differentiates *information* from *meaning* and suggests that the latter is comprehended through an association of and a perceived relationship between various disparate elements.³ The idea that interpretation tells the story of interconnections between resources and the visitor to a historic site has been underscored by Tom Walker of the United States Department of the Interior. "When done properly, interpretation can bring about an increased awareness and can influence people's behavior... Interpretation is done for visitors who choose to attend the program or read the brochure or wayside exhibit. Therefore, interpretation must directly relate to the visitor's interest and needs and is done using varied creative approaches."⁴

The dynamics that Walker implies require engagement for the object of preservation to transcend through interpretation to a revelation of meaning. It is because of this essential interaction that interpretation, as a structure of communication, must respond in dialogue to a distinctively different set of requirements than those fundamental to the silent language of preservation. These requirements of engagement were first codified by author and philosopher Freeman Tilden (1883-1980) in his 1957 manifesto, *Interpreting Our Heritage*.

*The chief aim of interpretation is not instruction but provocation... [Interpretation] aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information... Information, as such, is not interpretation... Interpretation is revelation based upon information. But they are entirely different things. Interpretation is the revelation of a larger truth that lies behind any statement of fact.*⁵

Tilden's Theories of Interpretation⁶

Interpretation is an art which combines many arts whether the materials presented are scientific, historical or architectural. Any art is in some degree teachable.

Interpretation addressed to children should not be a dilution of the presentation to adults, but should follow a fundamentally different approach. To be at its best it will require a separate program.

Tilden's Principles of Interpretation⁷

1. Provoke curiosity and interest: The chief aim of interpretation is not instruction, but provocation. *Provoke the interest of the audience.*
2. Relate to everyday experiences: Any interpretation that does not somehow relate what is being displayed or being described to something within the personality or experience of the visitor will be sterile. *Relate to the everyday lives of the audience.*
3. Reveal a memorable experience: Interpretation is revelation based upon information. Information, as such, is not interpretation. However, all interpretation includes information. But they are entirely different things. *Reveal the main point through a unique ending or viewpoint.*
4. Address the whole story using a unifying theme: Interpretation should aim to present a whole rather than a part and must address itself to the whole person rather than any phase. *Address the whole; focus on illustrating a theme.*

Through his work and in his writings, Tilden sought to define what is essential in the relationship between man and nature, the revelation of a larger order giving meaning to everyday concerns. He was a naturalist at heart who felt compelled to express the

structural science of his philosophies through the poetic power of the language of his writing. He saw interpretation as a communication process, one that provokes, relates, and reveals a unified message to the viewer.⁸ He looked at the world and saw a different universe; he wrote of the ordinary to describe the profound.

Are You Now or Have You Ever Been?

You come among us at the most perfect time of year, sir.

Why is that?

Because it's May, sir. May.

It's September.

Innes scrunched his face.

*Why, sir, it's May of 1774...*⁹

When reporter Alan Solomon of *The Chicago Tribune* visited the living museum of Colonial Williamsburg in the fall of 2006, he happened upon history that was not only out-of-date but also out-of-season. For supporters of this interpretive theme, the time warp is considered completely appropriate. The problem in this dual conceit is that there is something persistent in the moment-to-moment reality of the seasons that is harder to resist than an awareness of the minute-to-minute progress of time. For Colonial Williamsburg, the slice of history chosen to be preserved is the period 1698 to 1781 during which Williamsburg was the center of government for British rule in the colony - until the April day in 1781 when Benedict Arnold liberated the city from English domination. By September, the Battle of Yorktown had won America's freedom and the English were gone for good.¹⁰ The period of interpretation for the living museum is set in the spring of 1774. English Governor Dunmore (John Murray, fourth Earl of Dunmore) has dissolved the Virginia House of Burgesses following the colonists'

proclamation that June 1, 1774, will be a day of “fasting, humiliation, and prayer” in support of the Massachusetts Bay Colony and in protest of the closing of the port of Boston by the British following the Boston Tea Party. Things are about to change. It is the eve of the American Revolution.



African American interpreters were added to the story of life in Colonial Williamsburg in 1982. (Source: Colonial Williamsburg Foundation, nytimes.com/2007).

Over the years, since the beginning of restoration in 1926, pioneering work at Colonial Williamsburg has continued to break new ground for preservation in areas of research, conservation, restoration and interpretation. Continued public interest and support reflect the success of original objectives identified by the Colonial Williamsburg Foundation in its development plans for the historic site. But competition from other arenas of entertainment and recreation is leaving Williamsburg an ever-decreasing slice of the heritage tourism financial pie.¹¹ As preservation priorities begin to cross the economic boundary between authenticity and entertainment, serious questions of the intentions of historic interpretation arise. There is a delicate balance between Tilden's principles of interpretation - to provoke, relate, reveal, unify - and demands for profit when trying to capture the public's attention.

Robert C. Wilburn, President and Chief Executive Officer of the Colonial Williamsburg Foundation, describes the organization's mission as supporting three primary interests.

*The first is preservation - stewardship - preserving the buildings and the artifacts for future generations. The second part of our mission is presentation – outreach - using our buildings and artifacts to reach as many people as possible, on-site and off, and with the story of the values and ideals that were born in Williamsburg. And the third part of our mission is financial - running Colonial Williamsburg in a responsible manner so that we have the resources to fulfill the other two parts of our mission.*¹²

He charts the challenges of surviving and maintaining relevance in the ever more competitive realm of cultural tourism. "Our world is changing. MTV, a new "family-friendly" Las Vegas, the Internet. As museums, we are competing for people's precious time. And whether or not we want to admit it, we are not just competing with other museums. We are competing with places like Yellowstone, Universal Studios, people's backyard, Washington, D.C. Disney has attractions opening this year in both Florida and California, and has spent over a billion dollars on each one." ¹³

The central problem here is the competitive urgency itself. Racing down the road in a desperate attempt to keep ahead of the Disneys of the world may serve only to exacerbate the critical mistake of dashing off in the wrong direction in the first place. The key to success for historic interpretation resides in an expression of what is unique rather than a claim of apparent superiority. Unfortunately, as the difference between Disneyland and Williamsburg is intentionally obfuscated, the historic validity of Williamsburg is subjugated to the fantasy world of a totally fabricated, cartoon facsimile of reality. This is

a game that most players, burdened with a legacy of history, cannot win.¹⁴ What is most likely to be lost in the shuffle is the vital connection to a real world of time and place, the essence of a landmark's originality. The nature of interpretation of a historic truth can be entertaining. What is essential, however, is maintaining an awareness of the continuum between past and present. Entertainment by itself exists as an escape from the actual reality that history records. The historic truth, the moral of the story, must illuminate as well as entertain.

Ada Louise Huxtable, the legendary architecture critic of *The New York Times*, writes of such potential problems of interpretation in an article published in the *Times* in May 1965. "Williamsburg is an extraordinary, conscientious and expensive exercise in historical playacting in which real and imitation treasures and modern copies are carelessly confused in everyone's mind...Partly because it is so well done, the end effect has been to devalue authenticity and denigrate the genuine heritage of less picturesque periods to which an era and a people gave life."¹⁵ Architectural historian Richard Guy Wilson, chairman of the Department of Architectural History at the University of Virginia, is even less forgiving when he suggests that Colonial Williamsburg is "a superb example of an American suburb of the 1930s with its inauthentically tree-lined streets of Colonial Revival houses and segregated commerce."¹⁶ In terms of interpretation of historic significance, what stands for integrity definitely resides in the eye of the beholder.

The true values that define significance must be expressed if the viewer is to become engaged in a meaningful conversation about history. John Veverka, writing in the *Journal*

for the Society of the Interpretation of Britain's Heritage, attempts to construct an elemental response to the question, "Exactly what is interpretation?" He suggests that what is required is an understanding of the context of two basic conditions, which he poses as two questions:

- 1. Why would a visitor want to know this information?*
- 2. How do you want visitors to use the information? (If they can't use the information, then why are you giving it to them? Why would they want to remember it?)*

Veverka cautions that the validity of this approach can be undermined by other intentions. Economic priorities can easily circumvent historically legitimate considerations. "[I]t is not difficult to find heritage interpretation harnessed to other goals: mindless entertainment, tourist exploitation, propaganda, control, and education in the narrowest sense."¹⁷ He supports the advice of heritage author and communication expert Sam Ham to "put effective communication first and convey a message that answers the question 'so what?' to the factual information."¹⁸

Chapter 2. Irreconcilable Differences

Suburbanizing Ghetto

Interpretation is essentially an expression of values. The priorities that must be negotiated out of such diversity reflect similar difficulties experienced by the Jewish community and its architect in the creation of the Community Center beginning in 1954. Although not clearly identified as such at the time, the opposing values are a desire for assimilation by members of the Jewish community into the new suburbia on the one hand and a philosophical commitment by the architect to a differentiation of the Jewish institution on the other.¹⁹

Louis Kahn was awarded the commission to design the Jewish Community Center in the fall of 1954. He had just finished construction of the first major building of his private practice, the addition to the Yale University Art Gallery in New Haven, Connecticut (1953). Kahn's Philadelphia office was then selected for the New Jersey project over two other leading firms, Percival Goodman of New York City and Kelly & Gruzen of Trenton, New Jersey. Design work for the Jewish Community Center began in February 1955. A contract for architectural services was not signed, however, until almost four months later when preliminary drawings were ready to be issued for contractor bidding. Louis Kahn spent the next six years working on the project. His plans for the main Community Center building were never implemented. Only his designs for the Bathhouse (1955) and the Day Camp Pavilions (1957) were completed. But they were enough to project a pathway that would guide him to the discovery of his future masterworks.

By the end of 1955, two critical changes in the leadership of the Jewish Community Center in New Jersey ultimately led to a breakdown in the relationship between Kahn and members of the Jewish Community Center. A new Administrative Director, Alexander Stein, with his own priorities for the facility being planned in Ewing, was hired to run the Community Center. Even more significant to the continued survival of Kahn's tenuous position, however, was the retirement of Harvey Saaz, chairman of the Jewish Community Center Association and Kahn's critically essential patron for support of his design concepts. Saaz was forced to resign from participation in the planning work due to serious personal illness. He died the following spring. The conflict in priorities between Louis Kahn and his client reflected a fundamental difference in values that informed how intentions for the project were translated into the design of buildings for the Community Center. An over-arching desire of members of the Jewish community was their assimilation into the new suburban culture to which they were neither subtly nor infrequently denied access. This concern sat diametrically counter to Kahn's broadly philosophical commitment to an expression of the values that gave distinction to, and provided differentiation for, an awareness and understanding of the character of the Jewish community.

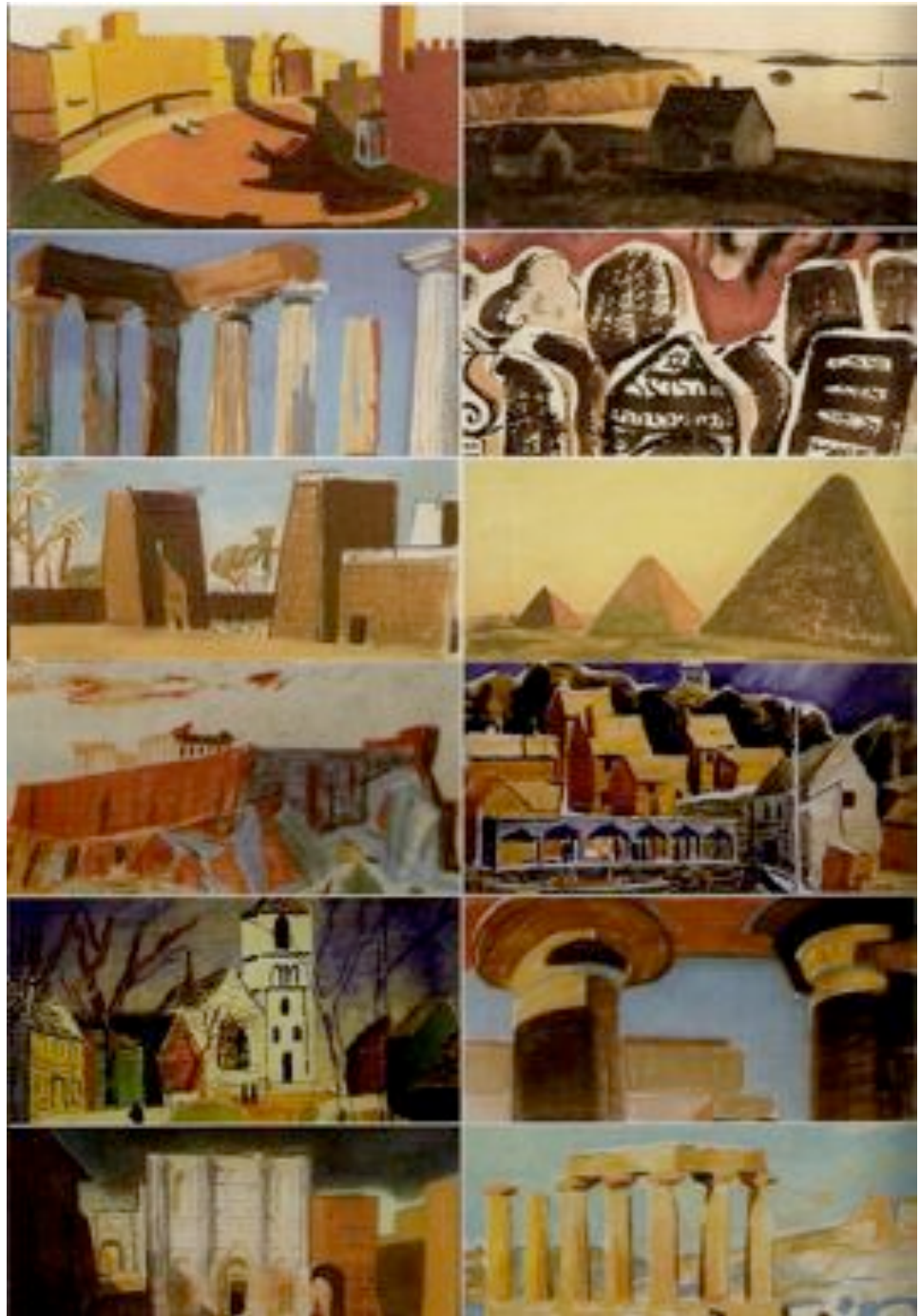
Communion of Self

When Louis Kahn talked about fundamentals, he sought to reach back to the beginning and to realize the quintessential nature of things, what he called the “institutions of man.”²⁰ This life-long search for the understanding of the nature of things was framed within the belief that nothing was random, that there was a structure to

everything – an inner connection – that brought order to our perception of the world. From order came design. Design itself was merely a manifestation of this underlying order; it was not an end in and of itself. Design was a single but not singular statement of a fundamental truth. This belief in the rationality of nature was as close as Kahn came to professing a religious identity. He marveled at the power of creativity. “Nature...has given us the instruments to play the song of the soul.”²¹ He concluded, however, that architecture could surpass the wonders of nature through the transcendental power of man’s enlightenment. He identified architecture as being “what nature cannot make.” “[N]ature will change because of the presence of man, because man is of dream, and what nature gives him as instrument is not enough. He wants much more...It’s really nothing short of remarkable that a time comes in the history of man when something is established which everybody supports as though it were eternally so.”²² Kahn saw creativity as inspired by a higher power. “What guides [man’s creations] to be made, the desire to make it, is not in universal nature. Dare I say that it is of Silence, of lightless, darkless desire to be, to express a prevalence of spirit enveloping the Universe.”²³

Through his artistic creations, Kahn perceived the limits of man’s capacity for expression. He concluded that whatever is realized by the power of man “is really quite minor...compared to what is really wanting to be expressed by the desire and the spirit of man. Man is always greater than his works. He could never, with his instrumentation, bring out that which is completely full.”²⁴ Louis Kahn used his architecture, painting (Figure 1), music and poetry as exercises to hone his skills in perceiving something of the nature of that god. “There is something about the emergence of architecture as an

Figure 1



"I firmly realize that the architecture of Italy will remain as the inspirational source of the works of the future. Those who don't see it that way ought to look again. Our stuff looks tinny compared to it and all the pure forms have been tried in all its variations. What is necessary is the interpretation of the architecture of Italy as it relates to our knowledge of building and needs. I care little for the restorations (that kind of interpretation) but I see great personal value in reading one's own approaches to the creation of space modified by the buildings around as the points of departure." – Louis Kahn

(Johnson, Eugene J. and Michael J. Lewis. *Drawn from the Source, The Travel Sketches of Louis Kahn*, Cambridge, The MIT Press, 1996).

expression of man which is tremendously important because we actually live to express. It is the reason for living.”²⁵

In his book *Louis I. Kahn Essential Essays*, Robert Twombly clarifies Kahn’s appraisal of architecture as being “a spiritual enterprise trying to explain humanity to itself.” Twombly notes that, in Kahn’s view, “No building *is* architecture; it is merely ‘an offering’ to it. Architecture ‘can never be satisfied’ because it is ‘completely insatiable,’ ...perfection will never be reached.”²⁶ That Kahn’s mature architecture reflects cultural influences from the Near East seems not coincidental to his evolving ideology. As his work grew in stature and scale, elements of mysticism became more manifest in his design concepts. This is an aspect of Kahn’s maturing character that Solomon identifies as creating “a continual tug between his private inclination to provide ideal, universal solutions and a realization that his work could have specific meaning.”²⁷

Kahn continually refined the expression of his thinking through his architecture, writings and lectures. Twombly notes that, for Kahn, design was a slow and painful process. “His primary motivation resided in a sensibility foreign to most architects then and now but fundamental to him.” Kahn sought “to gain access to the sanctuary where its deepest secrets are kept.” His words about architecture were “every bit as sincere an offering to it as his designs were, for the two were inseparable, a gift from the servant to the master/muse he served.”²⁸

Kahn was in reality an instinctive and intuitive sensor of things he could not completely fathom and thus not clearly convey to others...His

continual reformulation in word and design of what he had often said and drawn was nothing less than a search for the ultimate “more” and “better” -for those traces of eternal order...Nirvana was not to be had...Not reaching nirvana drove him onward, in fact, because he understood that the pleasure and meaning of life was in the search.²⁹

Louis Kahn became enamored of the poetry of the Iranian philosopher Jelaladdin Rumi, most likely during his visits to India in the early 1960s while he was working on projects for Ahmedabad and Dhaka. Kahn frequently paraphrased the poet's work during lectures he gave at this time describing the inspiring quality of space. Louis Kahn was possessed by a creative spirit that informed his career as an artist and architect. He described the consuming power of this drive to discover the beginnings of creativity in a lecture at Princeton University in 1961, “Law and Rule in Architecture.”

The first moment that painting was recognized as the undeniable need of man meant that painting will always exist. So it is with sculpture, and so it is with architecture, and so it is with writing and the play...[O]nly in the presence of those who cannot do anything but write plays...can the real sense of the theater's undeniable perpetuating existence be conveyed ...Only those who cannot do anything but direct, only those who must act and those who must write plays regardless...[O]nly through them can great theater be born...It will be born out of the institution of play, of theater, recaptured in the mind of that one who must get it raw, must get it like a beginning. It must be a primitive beginning that he must feel again, because in that primitive beginning when theater began is the real strength of theater.³⁰

Robert Twombly, in the introduction to his collection of essays *Louis Kahn: Essential Texts*, suggests that those who consider the work of Louis Kahn to belong to the modernists, as well as those who, instead, choose to see in his architecture a reaction to that movement, have missed the central issue. Twombly indicates that, in Louis Kahn's opinion, everyone has an insatiable desire to learn about the order of the universe. “Art is

the need all humans share to investigate that order. Architectural art involves manipulating ‘rules’ in order to implement the external ‘laws’ of form,” which collectively constitute universal ‘order.’ For Louis Kahn, it was the search that was of primary importance - the journey rather than the destination.

*What he was searching for is difficult to say – perfection, truth, essence, order, harmony, serenity, perhaps more or less than these. But ultimately his search was more metaphysical, more psychological or existential, than it was architecture. Architecture was his means of reaching for greater profundity. He never found what he was looking for – not the whole of it anyway – but he knew that that was as it should be.*³¹

Symbols, Words, Magic

Through his architecture, Louis Kahn encourages us to share in the exploration of his private visions, to journey to the unknown, to a world of magic, myth and, ultimately, self-discovery. Truth in architecture was found within the “institutions of man” - the essential nature of specific human activities, such as sleeping, working, managing, producing, exploring, learning. Kahn rejected program statements as profoundly misleading preconceptions of essential requirements for a specific institution to be housed within his architecture. He wrote:

*Now I think the first act of the architect...is to change the program for what is good for the institution...[H]e must change the client’s program – which reads in the form of areas – into spaces...Within the space itself is the structure of that space. That makes architecture different from building.*³²

Louis Kahn believed that satisfying the functional demands of a building’s program did not produce architecture. Architecture is created as a response to the nature of the institution that informs the purpose of the building. From an understanding of the nature

of space, building elements are given arrangement or order that directs the design of the architectural intention. Kahn presented the lecture “Law and Rule in Architecture” to the Royal Institute of British Architects in London in 1962. He described the distinction between design and form.

The sense of order or the sense of harmony of systems in physical nature comes to realization in a form, and form has no shape or dimension. It is a realization of the difference between one thing and another, the inseparable parts of something... Therefore, “what to do” is form, it lies in form; “how to do it” is design.³³ Often, we turn to design somewhat too quickly, because we have no information as to the form.³⁴

The beginning is a wonderful time because nothing could take hold unless that beginning, when it does take hold, is true, thoroughly and deeply, to the nature of man; and that, although it may have a very primitive beginning and a very modest one, is bound to continue if it is something that is close to the desire and subsequently to the needs of man.³⁵

Form, Order, Design

The visions of Louis Kahn’s world are expressed through an architecture of relationship; components (form) become classified (ordered) into elements (designs) situated either within or without the space of habitation. The *internal* is introspective and judgmental, a complex poetically and maternally safe place generating a rejuvenating force for the return to everyday life. The *external*, by contrast, can be defined as extroverted, open, expansive, unknown (but knowable), exploratory, aggressive, chaotic, stressful, consuming, rational, masculine, paternal. It is energized by the direct, simple power of pure wonder. For the design of the Bathhouse, Kahn presents the internalized rationality of a building that is frankly, boldly monumental - heavy, strongly-ordered, clearly formed, perhaps sublime. The building can be recognized as a family place

commanded and manipulated by adults. The Bathhouse recalls the ceremonial majesty of classical Rome and the power enshrined in its ancient monuments and temples.

For the design of the Day Camp Pavilions, Kahn selects another approach. The forces that are projected for the children's play area are brought into focus through the arrangement of structures of classical Greek proportions with an emphasis on lightness and transparency. A picturesque quality is displayed in the configuration of the four pavilions and between the four buildings and the play area defined by a circle inscribed by the edge of a clearing surrounded by forest. This is a child's world of tensions between curiosity of discovery and fear of the unknown. For the innocent, behind every tree hides the danger of knowledge.

With the interplay of opposing propositions with the Bathhouse and the Day Camp, Kahn suggests a higher order. He informs interaction with the juxtaposition of spaces in his final site plan of July 1957. Significant to a fundamental appreciation of the cohesiveness of his work is the landscaping component of this plan. The fact that this work was never implemented critically weakens the perception of the plan's order.³⁶

*Partnering Authorship*³⁷

Any act of preservation, even inaction, is fundamentally a matter of interpretation. How a landmark is interpreted potentially defines how history is perpetuated. The professional and private partnership of Louis Kahn and Anne Tyng is perhaps most

remarkable for the fact that, publicly at least, the true nature of this relationship remains, even today, mostly unacknowledged. Not, in fact, until the publication of *The Rome Letters* in 1997 (forty-three years after the letters were written and twenty-three years after Kahn's death)³⁸ and the 2003 release of Nathaniel Kahn's documentary, *My Architect: A Son's Journey*, (promoted as "The story of one man's search to know the hidden heart of his father, Louis I. Kahn - a man, his buildings, his secret lives")³⁹ has the significance of this union been brought to the attention of a general audience.

Anne Tyng began her professional career working in the office of Louis Kahn in Philadelphia in 1945 at the age of twenty-five. She had recently completed her master's degree in architecture at Harvard's Graduate School of Design. She was strongly influenced by the work of Buckminster Fuller, who was teaching at MIT and was exploring applications of his revolutionary designs for geodesic domes.⁴⁰



1, 2: Portraits, Kahn (c.1950) and Tang (1944);
3,4: Kahn Sketches 1946.

In Louis Kahn's office, Tyng quickly became valued, in Kahn's own words, as "a partner in conception" of "constructive geometry." She, in fact, became much more than that: the principal guide to the structure of Kahn's architecture. In this role she conceived the design of the Bathhouse for the Jewish Community Center. She describes her career with directness and an economy of words.

The first job I worked on when I returned [from a year's stay in Rome, November 1953 to January 1955] was the Trenton Bathhouse. Lou had started work with Tim Vreeland on a roofless rectangular scheme, but almost immediately I came up with the proposal of four symmetrically arranged squares with hipped roofs (later strengthened with tension rods) supported on 8-foot square occupiable hollow columns.

*The Trenton Bathhouse design I developed with Lou included many suggestions I had sent to him from Rome for the Adler and De Vore houses. [I] sent sketches of...the triangulated structure of a hipped roof, and the concept of hollow columns as an extension of the concept of "servant" space used in the Yale Art Gallery ceiling. Lou had proposed flat roofs for both the De Vore and Adler houses and in neither of those houses did Lou propose hollow columns.*⁴¹

Sarah Goldhagen, author of *Louis Kahn's Situated Modernism*, offers support for Tyng's claims.⁴² She writes that Tim Vreeland, a young architect who began working on the Bathhouse while Tyng was in Rome, revealed in an interview that it was Tyng, and not Kahn, who actually designed the building after Tyng had returned to Kahn's office in the spring of 1955.⁴³ The evolution of the design of the Bathhouse, traced through drawings covering the brief period from the end of January 1955 to the end of April, when contract documents were issued, is consistent with descriptions provided by Tyng and Vreeland.⁴⁴ Three primary components of the Jewish Community Center are particularly relevant to the question of authorship and the work of Anne Tyng: the configuration of the Bathhouse, the structure of its roof, and the planning grid used for the organization of the site.⁴⁵

Illustrations of selected drawings in the Kahn Archives at the University of Pennsylvania show the development of the design for the Bathhouse. At mid-stage in the



1: Tang; 2: Bathhouse model with metal roof, June 1955;
3: Tang and Kahn in drafting room, c.1947; 4: Kahn.

three-month process, the Square Plan explored by Kahn and Vreeland abruptly transforms into the final configuration for that building. The lack of any apparent transition suggests a radical reconsideration of the design concept. Although no one has discovered drawings

documenting this shift, it seems reasonable to support Tyng's contention that she offered this solution at an earlier time and that her ideas were, only belatedly, incorporated into the bidding documents issued April 28, 1955. A profile of the metal roof of the Square Plan is shown in drawings dated April 14 and is labeled "NIC" (not in contract) in the bidding documents. The pyramidal roof Tyng describes does not appear in records of the project except for later studies related to the design of the main Community Center building. The archives contain a framing plan (dated May 20, 1955, revised May 24, 1955 and notated "Void") for construction of the metal roof structure developed for the original design. A photograph from this period shows Committee members reviewing a model of the Bathhouse with the metal roof structure that was presented by Kahn in early June 1955, when construction was well underway (Figure 2). The design of the roof was finally resolved in October after the close of the summer season.

Authorship, as "the source of an idea, deed, etc, with reference to its originator,"⁴⁶ assumes various degrees of separation when describing the partnership of collaborative

Figure 2



1

1: Members of the Pool Committee pictured holding a model of the Bathhouse showing the original design for the metal roof with its ridges running diagonally across the four pavilions and with roof valley drainage points at wall mid sections (June 1955). The roof design would not be changed until after construction had begun again in October, following the close of the first season of pool operation. By the end of October, construction of the wooden, pyramidal roof, designed by Anne Tyng the proceeding spring, would be complete. (Source: Kahn Archives)



2

2: Walter Gropius's design for a prototypical elementary school published in *Progressive Architecture*, October 1954. The work was produced by his office (The Architects' Collaborative) established in 1945 in Cambridge while he was teaching at Harvard University and where Anne Tyng had studied architecture as his student.

In 1950 he designed the Harvard Graduate Center in Cambridge (Harkness Commons), a building showing the strong influence of Le Corbusier and the Villa Savoye (1929). (Source: *Progressive Architecture*, October 1954)



3

3: Satalite photograph of the Bathhouse 2007. The entrance is located at the far right of the photograph where the two pavilions intersect. The edge of the pool to the north can be seen at the top of the photograph

talents. Both Solomon and Goldhagen suggest that work published in *Progressive Architecture* (October 1954 and January 1955) may have influenced the design of the Bathhouse (Figure 2). Goldhagen notes that many architects at the time were exploring modular plans in their work and that recent projects by architects Walter Gropius and Alfred Clauss were likely to have been reviewed within Kahn's office. Goldhagen concludes that the Bathhouse is "proximate to the contemporaneous designs of these other architects" and that the configuration of the Bathhouse "may have been partly inspired by their work."⁴⁷ Both Gropius and Clauss had selected the Greek cross as an organizing element for their designs. Solomon describes the plan that Gropius proposed for an elementary school in considerable detail. Each square classroom pavilion was "topped by an individual pyramidal roof with an oculus...The central interior square [of the "cluster plan"] was designated for circulation and "common space" [Kahn's Bathhouse atrium]...On the interior, the four posts that supported the pyramidal roofs also defined the main teaching area within each pavilion."⁴⁸

For an evaluation of individual contributions within a partnership, three conditions need to be acknowledged. First, a range of external factors influence how a project is ultimately expressed. Second, recognition of meaning is transformed by interpretation; beauty is a product of expression. Third; architecture created in partnership alters fundamentally the context of perceptions and the expectations of its authors.

Elements of Partnering Authorship:

- *Influence*: the source of inspiration
- *Interpretation*: the tools of expression

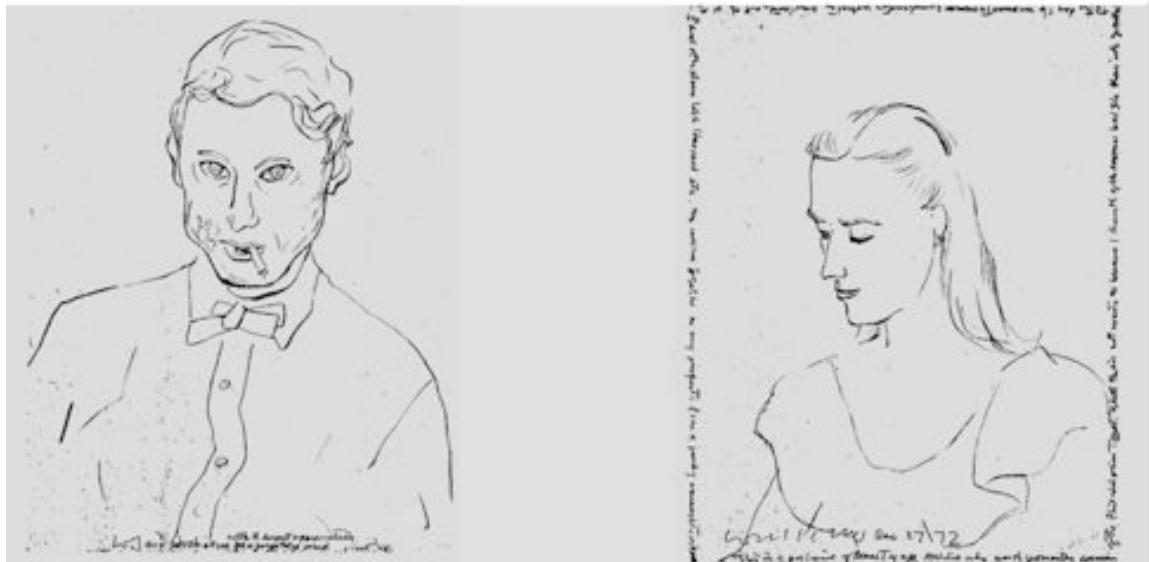
- *Response*: the integrity of intention

Defining boundaries of shared authorship is where the conundrum lies. Primary components of collaboration include influence, interpretation and response. A partnership must address all three elements. A reasonable answer to the question of the influence of Walter Gropius and his concept for the prototype elementary school on the design of the Bathhouse suggests that the work offered a significant progenitor for the configuration of the Bathhouse. An additional source of inspiration may be attributed to Louis Kahn's own wonder of the spatial power of the architecture of the Pantheon and the dramatic effect produced by its large, open, central oculus capturing the movement of light across the dark, windowless interior.

Landscape of the Mind

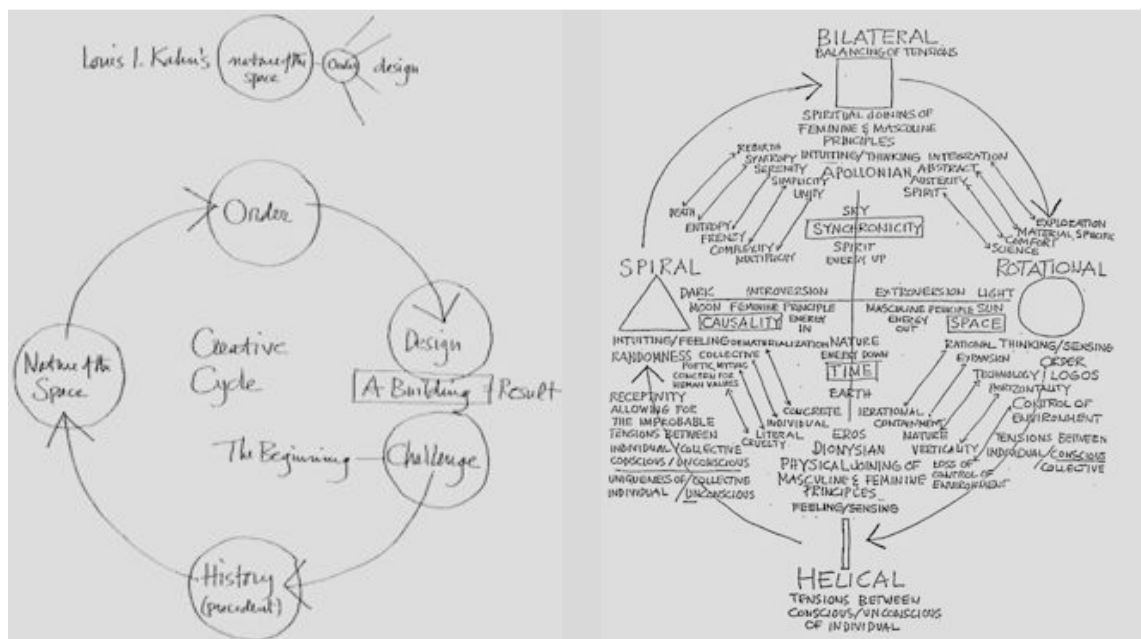
Anne Tyng compares Kahn's three-phase process of creativity with her own four-phase process (Figure 3). Noting that he was an introverted architect, she describes how his design approach begins with an exploration of the "nature of the space." She writes that this initial, introspective phase "requires a more profound probe beyond history and beyond memory of any specific form...The extroverted attitude of a superimposing *masculine* principle shifts to the introverted, receptive *feminine* principle – a genetic attitude that accepts all the complex multiple possibilities of time and space out of which the synthesis of a simple *order* may occur as the product of phase two."⁴⁹ This is an "autonomous life force, a synchronous, spontaneous giving–birth to a conceptual order."

Figure 3



Self-portrait and Portrait of Anne Tyng by Louis Kahn 1946 with Kahn's inscription 1972

This is a portrait of Anne Tyng Architect who was the geometry conceiver of the Philadelphia Tower. Well that is not exactly so because I thought of the essence but she knew its geometry. To this day she pursues the essence of constructive geometry, now teaches at the U. of P. and other places like Harvard etc. We worked together on my projects form a purely conception base. Dec 27, 1972.



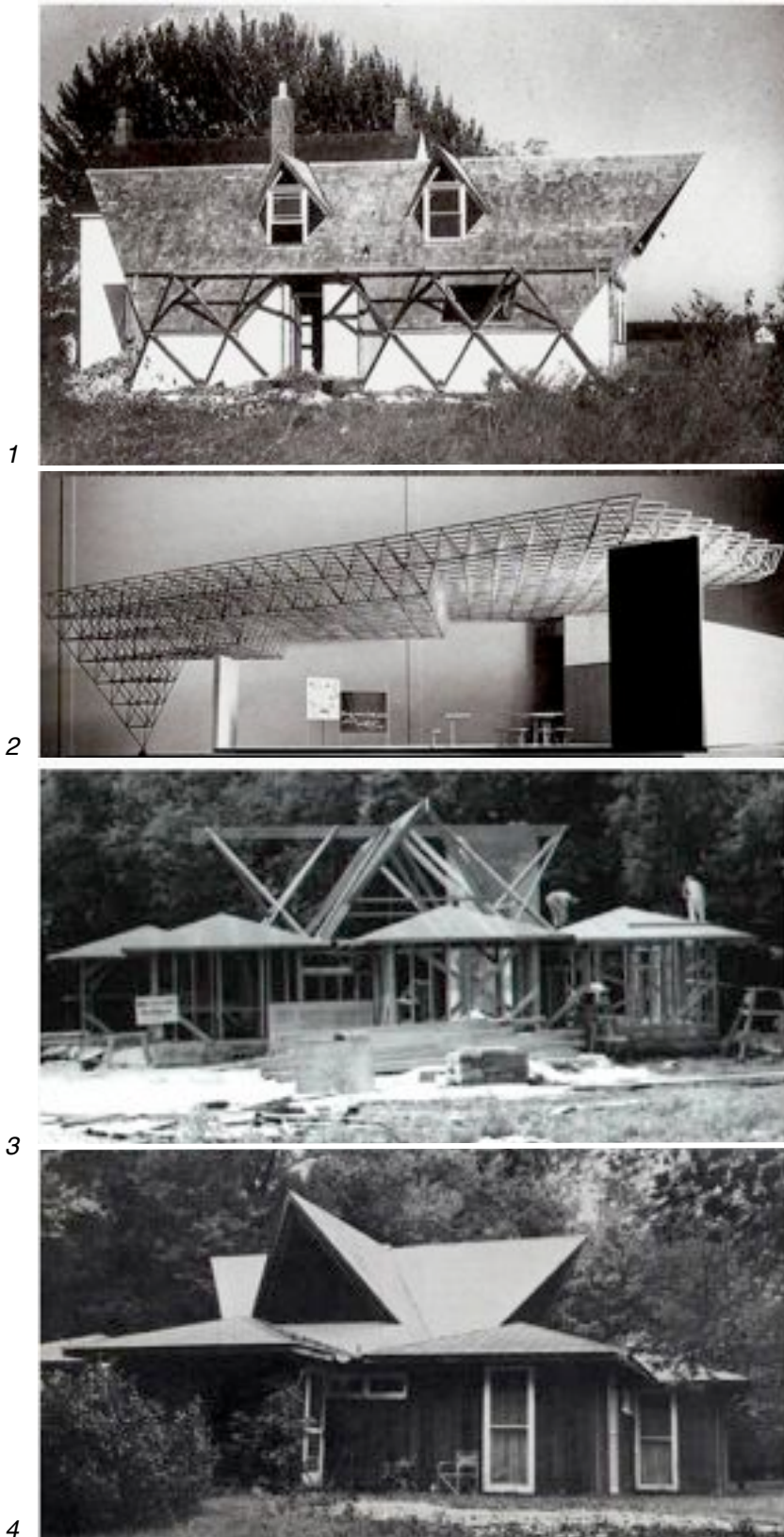
Three Phase Theory of the Creative Process
Louis Kahn

Four Phase Cycle of Creativity
Anne Tyng

The third phase, “design,” is an extroverted process dealing with tangible problems such as site, structure, services, etc. The four-phase cycle of Anne Tyng’s methodology demonstrates a tendency toward harmony and balance rather than independence. The sequential phases of Kahn’s model anticipate a clear beginning and end. The process yields a building as an inherently necessary result. In Tyng’s process, neither origin nor product is specifically prescribed.

Ultimately, the critical factor is the power that transfigures a work of architecture into art. Sufficient documentation exists authenticating the building’s design to Anne Tyng. The form of the Bathhouse is inspiring as an expression of the direct force of her reasoning. But the building’s resonance is generated through the expression of a larger vision. The finite adjustments Louis Kahn made within the intimate relationship between details of materials and construction create a dialogue between light and shadow, solid and void, interior and exterior that masterfully allows a comprehension of the building as a work of sublime originality. In their partnering authorship, Anne Tyng provided the inspiration and framed the discourse for the work’s conception; Louis Kahn, however, transformed her perceptions into the poetry that is the building's art (Figures 4-10).

Figure 4



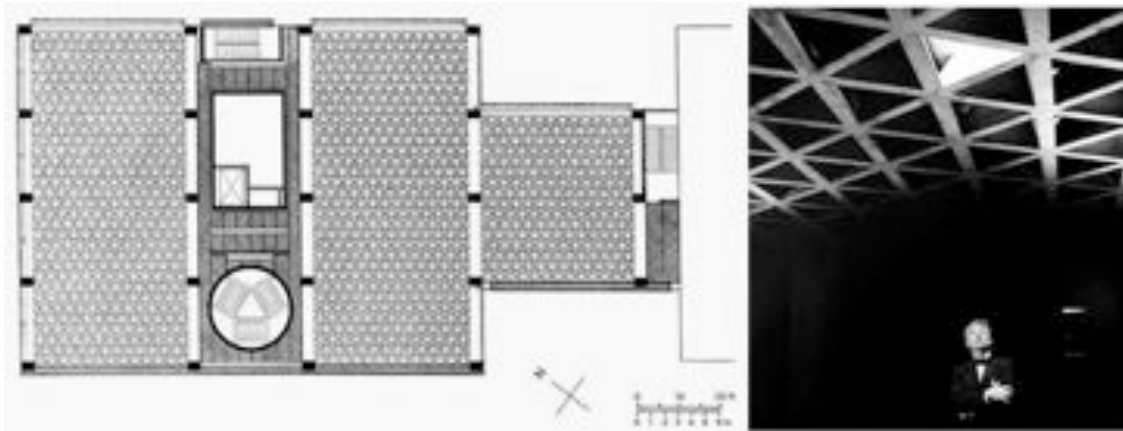
1: Weekend home designed by Anne Tyng for her parents, Ethel and Walworth Tyng at Brannock Bay on the Eastern Shore of Maryland, 1951-53. The design incorporates a wooden space frame.

2: Space frame roof and column system designed by Tyng for elementary school prototype in Bucks County, Pennsylvania, 1949-51.

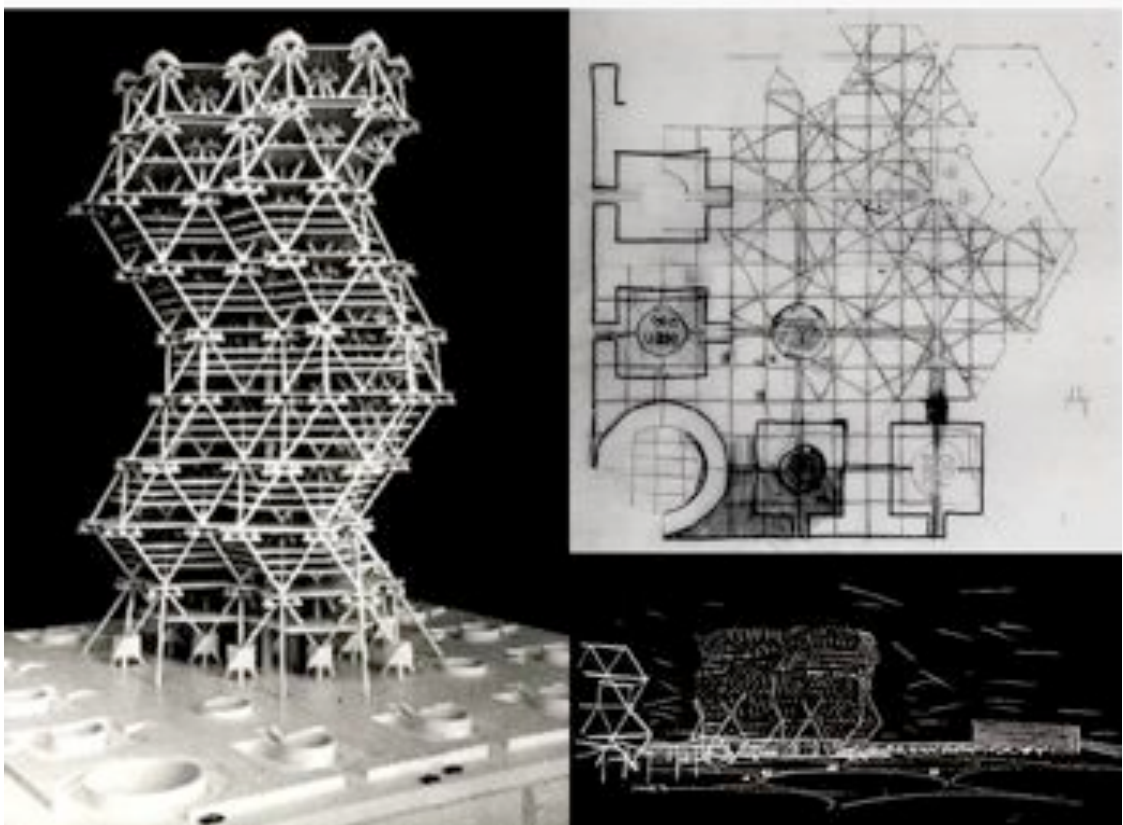
3,4: Construction photograph of residence of Fred E. and Elaine Cox Clever in Cherry Hill, New Jersey designed by Kahn and Tyng, 1957-62. This project was developed immediately after the planning of the Bathhouse and reveals an evolution of similar details and design concepts employed in the Community Center project.

The first photo (3) shows framing of the four gables over the central entry hall and the small pavilions of separate rooms clustering around the central space. The second photo (4) shows the completed building. The roof exhibits a clear reference to the original, concrete, folded-plate roof structure of the Square Plan first proposed for the design of the Bathhouse (February 1955).

Figure 5

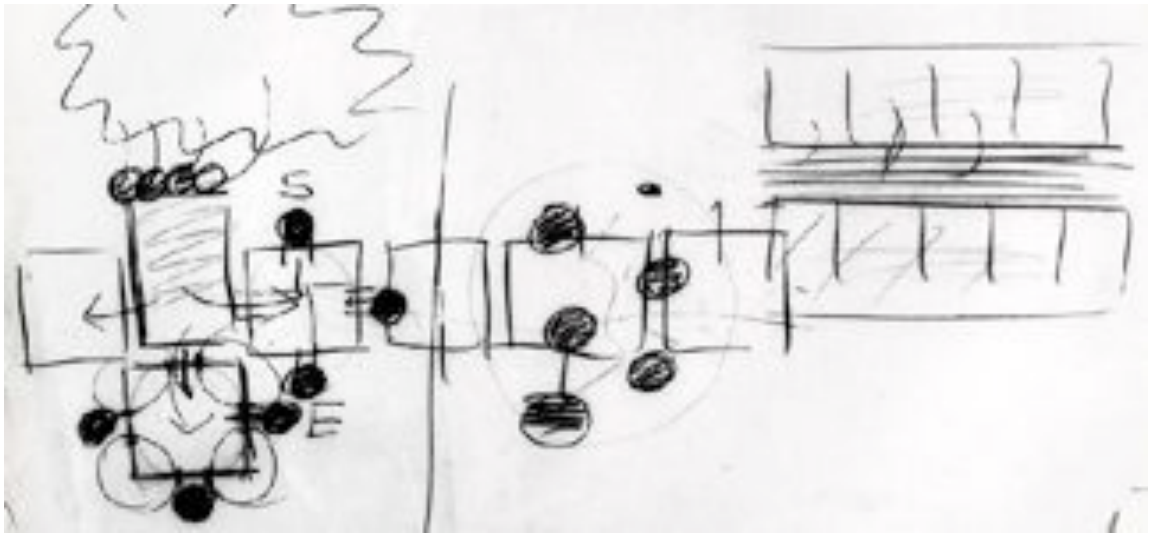


Reflected Ceiling Plan, Yale University Art Gallery (1951-53)
Tetrahedral grid designed by Anne Tyng.

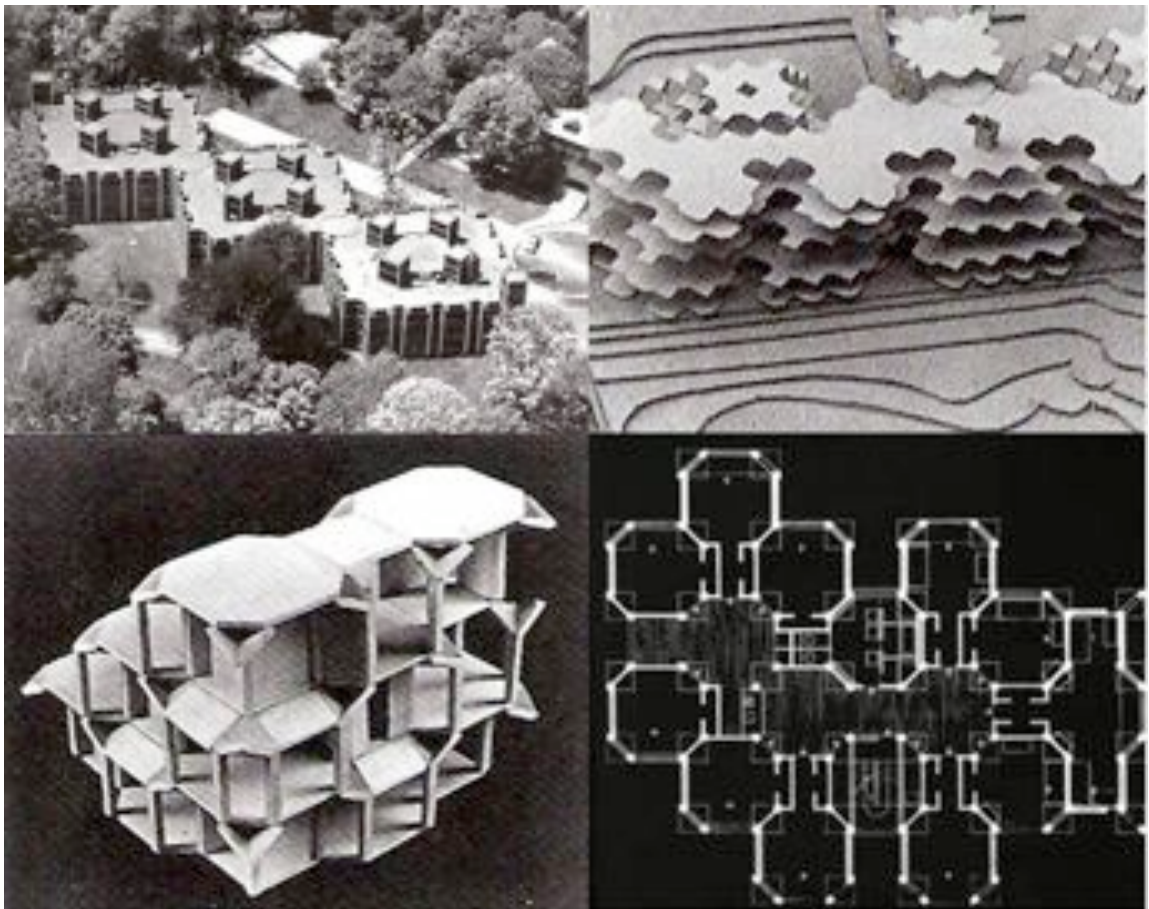


Philadelphia City Tower (1952-1957)
Louis I. Kahn, architect
Anne Griswold Tyng, associated architect
Robert Venturi, draftsman

Figure 6

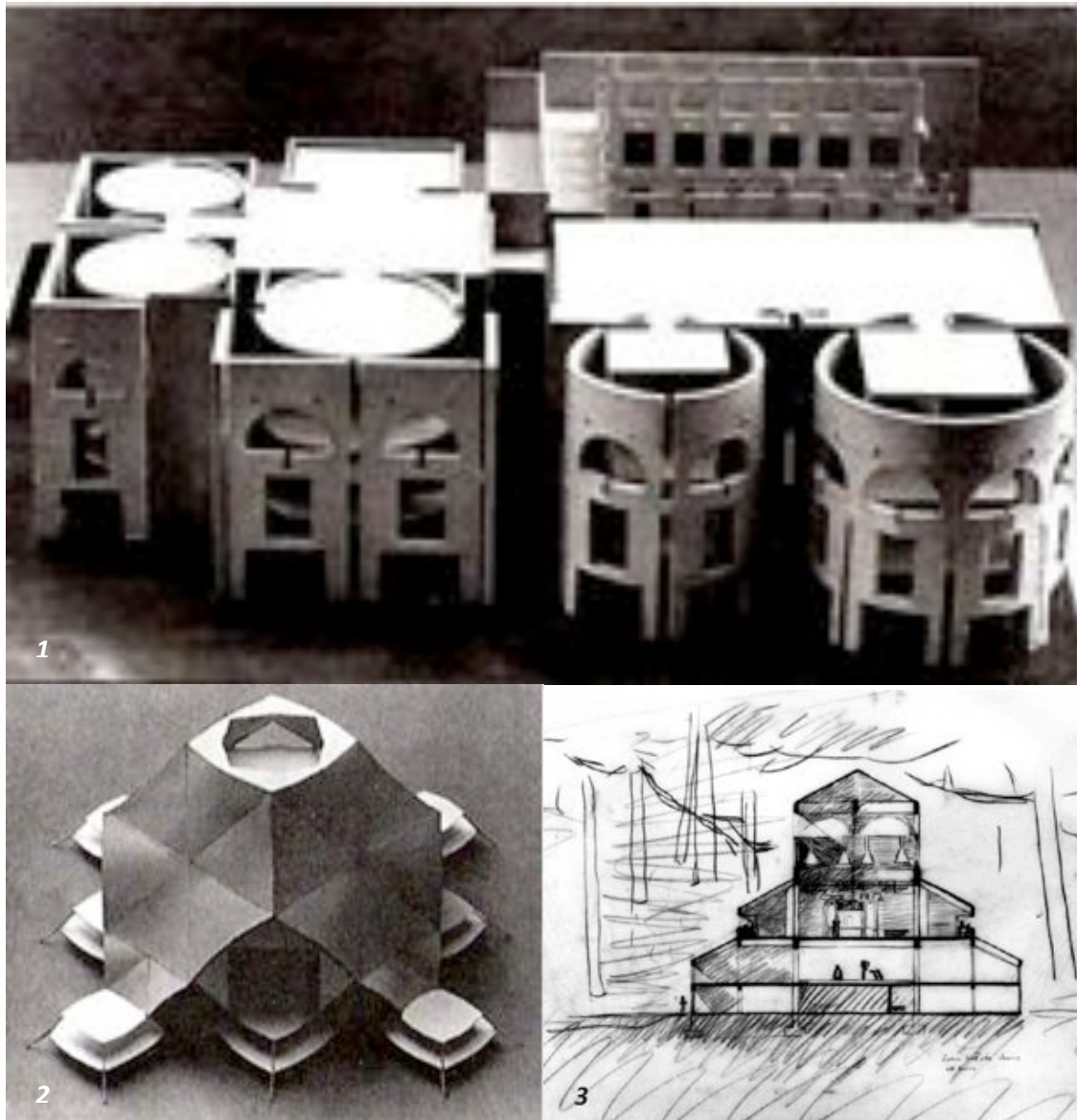


Early conceptual study (1957) for the design of the Richards Medical Research Laboratories, University of Pennsylvania, Philadelphia, PA (1957-65). The modularity of the Bathhouse and the structural organization of Kahn's residential designs, with service and served spaces differentiated, appear in the early sketch. (Source: Louis I. Kahn Archives, University of Pennsylvania)



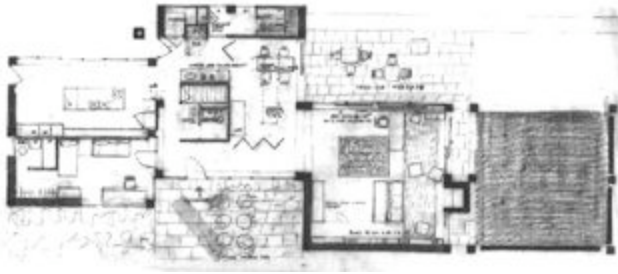
Eleanor Donnelley Erdman Hall, Bryn Mawr College, Bryn Mawr, Pennsylvania (1960-65). Aerial photograph showing dormitory as designed by Kahn. Additional photographs show studies by Anne Tyng of her "molecular scheme" developed as a competitive alternative to the concept being developed by Kahn and recent University of Pennsylvania architectural graduate, David Polk. (Source: Louis I. Kahn Archives, University of Pennsylvania).

Figure 7

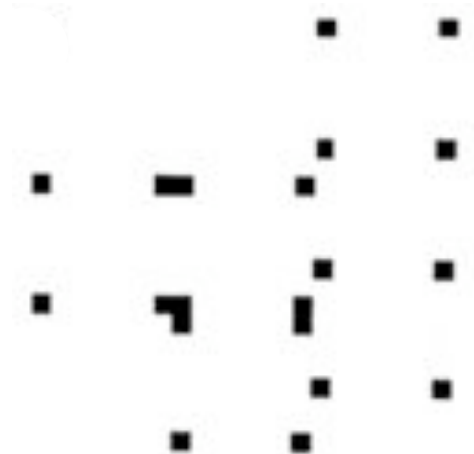
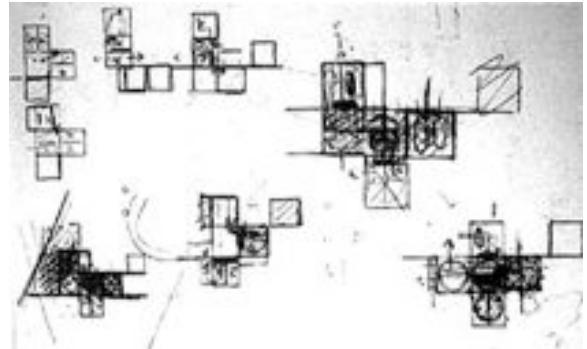
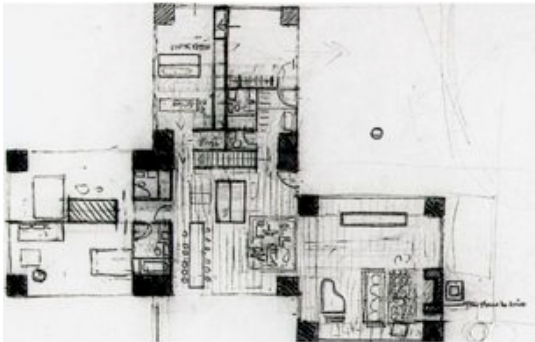


1: Model of Salk Institute Meeting house (1960-61); 2: First Unitarian Church and School, Rochester, New York (1959-62). The model presents Tyng's geometrical composition proposed for the building's design. This concept was not pursued in the plans for the project in Rochester. 3: A strong influence from Tyng's work for the church project can be seen in Kahn's later design for Temple Beth –El Synagogue constructed in Chappaqua, New York (1966-72). (Source: Louis I. Kahn Archives, University of Pennsylvania).

Figure 8

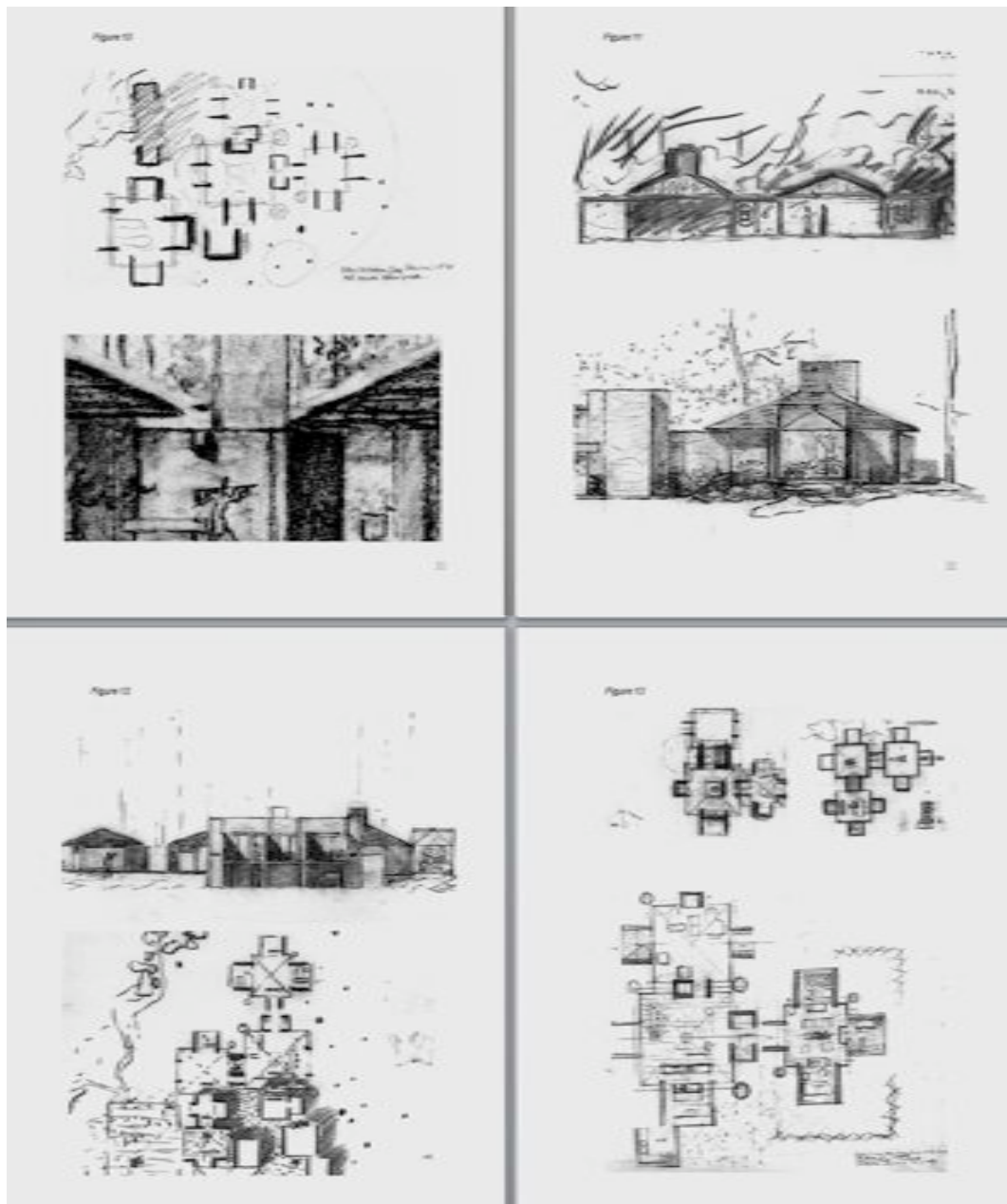


Weber DeVore House, Montgomery Avenue, Springfield Township, Montgomery County, Pennsylvania (1954-55) (Source: Louis I. Kahn Archives, University of Pennsylvania).



Adler House, Philadelphia, Pennsylvania (1954-55). The evolution of corner columns as defining elements is suggested in the sketches. Also developing is Kahn's interest in creating tension in his plans with a shift in grid registry. Not yet expressed is the separation of servant and served spaces which will be a central concept in the development of designs for the Bathhouse. (Source: Louis I. Kahn Archives, University of Pennsylvania).

Figure 9



Morris House, Mt. Kisco, New York (1955-58). The Morris House, although never built, suggests the maturing of Kahn's design principles as he explores the geometry of relationships in his architectural concepts. Elements of the Bathhouse and the Richards Medical Research Laboratories can be seen suggested in the early plans for the residence. Of particular interest are the circular drain pits shown at pavilion corners and the roof scuppers for projecting runoff beyond the edge of the flat roof between pavilions as shown in the sketch detail, second row left.

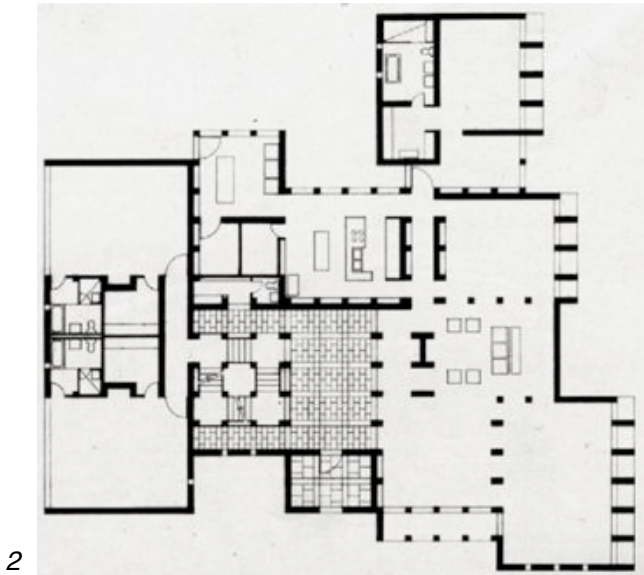
Remarkably, as Kahn shifts his solution of the roof design for the Bathhouse in October 1955 away from the flat, metal structure of the "Square Plan" outlined in the construction drawings in favor of Tyng's pyramidal forms, he discards the pitched roof of the Morris House in favor of a flat roof typical to most of his later work. Designs for the Morris House begin to assume the towered verticality that will be the signature element of the Richards Medical Research Laboratories.

(Source: Louis I. Kahn Archives, University of Pennsylvania).

Figure 10



1: The design for the Morris House was conceived as distinct pavilions connected by flat-roofed service areas. The plan evolved into a less differentiated arrangement of pavilions and connectors and became more a composite of structural columns placed in a uniform planning grid. (Source: Louis I. Kahn Archives, University of Pennsylvania).



2: The later plan (1957) shows the influence of Frank Lloyd Wright's early residential work and the architectural massing of the Unity Temple (1905-08) and the Larkin Building (1902-06). (Source: Louis I. Kahn Archives, University of Pennsylvania).

3: The Esherick House, Chestnut Hill, Pennsylvania (1959-61) indicates the further development of Kahn's thinking for the design of residential buildings following work on the Morris House and designs for the Richards Medical Research Laboratories. The house, with its stucco exterior and flat roof, pays tribute to the final plans for the Morris House and adds support to the suggestion of Kahn's intention to create a unified appearance for the Day Camp Pavilions with the application of a stucco finish to the buildings. (Source: greatbuildings.com/buildings/Esherick_House)



Chapter 3. Discovering Community



Suburban Growth 1950s
(toronto.ca/archives/current_suburbangrowth)



Levittown, Hempstead, NY c1950
(voicesacrosstime.org)



Ewing Center 2007
(Google Maps)

The Way We Wish To Be

The buildings of the Jewish Community Center present a more explicit picture of the tenor of the times than is generally acknowledged. The architecture demonstrates priorities that are now frozen in time. The preceding chapter detailed the predisposition of the creators of these landmarks. This chapter investigates how interpretation can enhance the discovery of community for a new generation inhabiting a different millennium. In the following chapters, a variety of topics are explored allowing the theme of community to take on different colorations as the boundaries of selected topics overlap and shift in contextual differences. Community - as assembly, collection, group - is defined by the structure of relationship of these various topics.

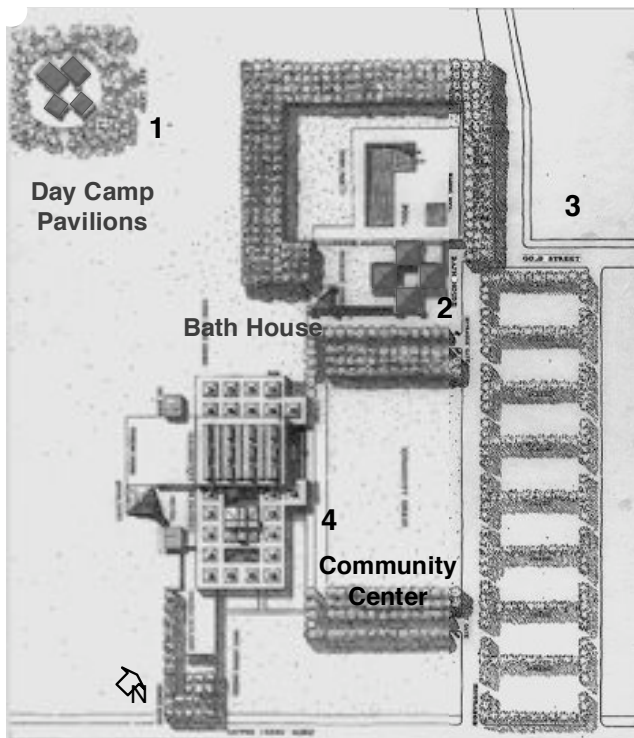
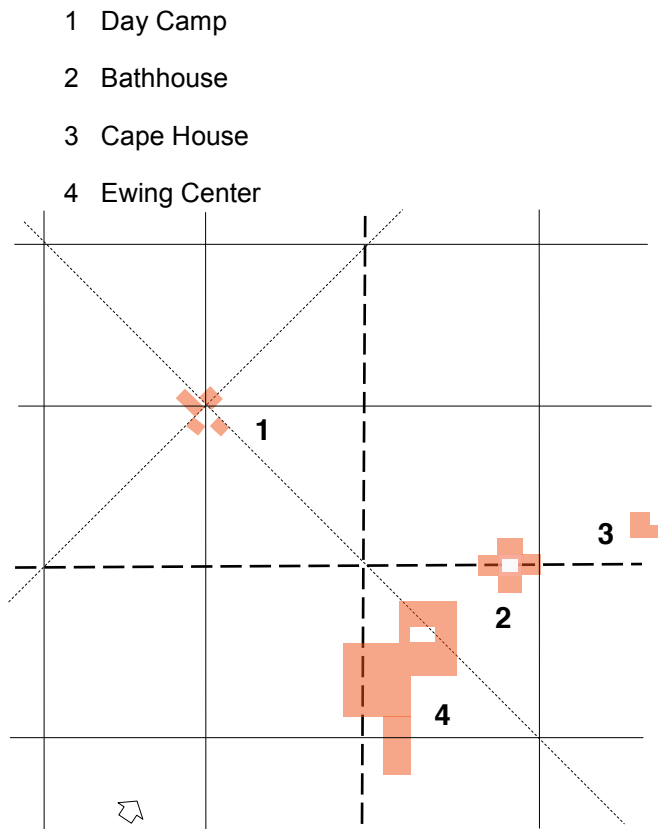
It is useful to recall Freeman Tilden's statement that the primary purpose of interpretation is to illuminate, not to instruct - to provoke rather than to inform. Information requires interpretation to be useful. Knowledge is the composite of facts held within a particular point of view, ordered by a recognizable and relevant theme. Tilden

advises that, for effective engagement, interpretation must *provoke* the interest of an audience. It must *relate* to a familiar experience. It must *reveal* a discovery that has value for the viewer. And, most importantly, it must *unite* separate, personal experiences into a larger comprehension of the central theme presented.

In the present work, an understanding of the architecture of interpretation is advanced through an investigation of four distinct but related topics, each directed toward a specific building of the Community Center. For this analysis, Louis Kahn's master plan provides a point of reference and informs relationships between various topics of the study.

1. To support Tilden's priority to engage interest, the progression of visitors through the site is carefully orchestrated and the location of key components is highlighted. Interest is generated with the interplay of four selected topics, *Youth, Maturity, Family Structure and Tribal Alliance*.
2. Buildings are characterized using these topics as the focus of interpretation. This enforces Tilden's second requirement to relate to experiences common to the viewer.
3. Tilden's third principle - to provide useful discovery - is achieved in the acknowledgement of community as a collection of diverse interests reconstituted into a common agency serving a unified purpose.
4. Finally, to broaden appreciation of a larger purpose, Tilden's fourth principle – to unify the whole – is invoked through values reflected in response to the question, initially posed by the preservation efforts of Susan Solomon, “What would you do if you owned the Trenton Bathhouse?”

Figure 11



Site Plan July 1, 1957



Existing Conditions 2007



Day Camp Pavilions



Bathhouse



Orientation Museum



Ewing Center

Meanings and Values

The cohesiveness of Louis Kahn's concept for the design of the Community Center is evident in the site plan he presented early in the summer of 1957. At this phase in the development of the Community Center, two buildings had been constructed, the Bathhouse and the Day Camp Pavilions. Although the design process had been largely frustrating and extremely stressful for everyone involved, the client's support of the project is suggested in an article published in the organization's newsletter in May 1957. *Harper's Magazine* had identified Louis Kahn as Philadelphia's "leading modern architect and the nearest thing to a genius that Philadelphia can endure."⁵⁰

Kahn took special care in the delineation of the July site plan (Figure 11). The landscaping was the creation of Philadelphia landscape architect Edward Maurer who Kahn hired as a consultant. Kahn may have sensed a need to consolidate his thinking at this time and to engender support for a comprehensive focus for the project. He created a rendering of the Community Center to support his case (See Figure 22, p.100). The project was published in *Architectural Forum* in October, which also probably prompted Kahn to bring his work to a point of relative completeness. Although he continued studying plans for the Community Center for more than two years, construction of Kahn's designs never progressed beyond what was completed in the summer of 1957. The July 1 site plan represents the most cohesive view of his work in New Jersey.

Chapter 4. Rhyme and Reason

*All human will is directed toward a satisfactory shaping of man's relationship to the world, within and beyond the individual... Art expresses the way man wants to see things shaped or colored... Man is not only a passive, sensory recipient, but also a desiring, active being who wishes to interpret the world in such a way... that it most clearly and obliging meets his desires.*⁵¹ - Alois Riegl, 1901⁵²

Issue of Time

Ideally, programs for a building's interpretation should help inform how a landmark is preserved while the intervention strategy itself should help enhance the stories intended to be told. Art historian Alois Riegl suggests that the interpretive value conveyed by landmarks is formed within the context of time opposing proximity. Although his argument primarily addresses monuments that are created for "deliberate commemorative value" (inherent historic purpose), Riegl expands his view to include "unintentional monuments" to which contemporary commemorative values of significance can be applied. He writes that "any monument of art is, without exception, a historical monument as well."⁵³ This reflects the deliberate commemorative value that is the artist's intention.

Riegl describes two alternatives for interpretation of time in a historic monument. He terms these alternatives *age value* and *historic value*. Riegl's age value celebrates the interface of age and artifact giving evidence of a distance between the present moment and the time of the monument's creation. Historic value, on the other hand, attempts to establish propinquity to a monument's origin, to deny the distancing condition of time

and to offer immediacy to the event commemorated. Describing historic value he writes, “We modern viewers, rather than the works themselves...assign meaning and significance to a monument...We are interested...in the original, uncorrupted form of the work as it left the hand of its maker, and this is the state in which we prefer to see it, or to which we prefer to restore it in thoughts, words, or images.”⁵⁴ Riegl supports the understanding that works of art inform various values. He describes the perceived nature of these values as a reflection of an individual's aesthetic appreciation. This appreciation is formed through accumulated knowledge and understanding of artistic significance. His classifications for artistic value include:

Age Value: Age value recognizes time's irresistible force on any structure. It allows evidence of creation and deterioration as important markings in a natural cycle of evolution. Age value supports the clear differentiation of periods of history that gain power of perception juxtaposed within a contemporary context.

Historic Value: Historic value focuses on the documentary importance of a work of art. It rejects the intrusion of time as a distancing factor. It requires preservation of the work's original condition and the conservation of all its original material. Additions must be removed to protect a work's integrity. Historic value seeks to present, unaltered by time, information of a past culture, its style and its development.

Use Value: Use value applies preservation strategies to oppose time's intrusion. This requires establishing aggressive policies of maintenance and conservation and the undertaking of restoration as a last resort.

Contemporary Value: Contemporary value accepts only the new and complete as having worth. It promotes the avant-garde and rejects customs, standards and historical context.

Newness Value: Newness value favors, through restoration, the perpetuation of the "original condition." This is the strategy employed in by 17th century French architect Eugene-Emmanuel Viollet-le-Duc.

For the buildings that Louis Kahn designed for the Community Center in New Jersey, the primary concern is a determination of what values should be expressed and of how they can most effectively be presented to visitors to the historic site. The Community Center buildings provide the opportunity for exploring a range of issues in a program of interpretation. Kahn used relatively small-scale, deceptively simple, Platonic forms for the architecture of the project. Preservation strategies currently being considered include everything from restoring buildings "exactly as new" (historic value) to allowing the aging process of more than 50 years to continue, with only slight moderation, into the future (age value). In the middle stand advocates for a balance between the two extremes of time's acknowledgment and its prohibition.

Louis Kahn created the foundation for the achievements of his later career with the evolution of his designs for the Jewish Community Center. The three main buildings - the Community Center, the Bathhouse and the Day Camp Pavilions - can be interpreted using different values of Riegl's theories. For the Bathhouse, acknowledgement of historic significance sets an appropriate framework for interpretation. This is the building about which Louis Kahn, near the end of his career, famously remarked in an interview with *The New York Times*, "If the world discovered me after I designed the Richards Medical Building, I discovered myself after designing that little concrete block Bathhouse

in Trenton.”⁵⁵ Riegl writes, almost four generations earlier, in 1903, “The historical value of a monument is based on the very specific yet individual stage the monument represents in the development of human creation in a particular field...It is the task of the historian to use all means available to correct the damage wrought by nature’s power throughout the course of time.” This view anticipates Kahn’s philosophy regarding monumentality in contemporary architecture.

*Monumentality in architecture may be defined as a quality, a spiritual quality inherent in a structure which conveys the telling of its eternity, that it cannot be added to or changed...Monumentality is enigmatic. It cannot be intentionally created.*⁵⁶

Architect and author Robert McCarter expands this view by concluding that Kahn’s work was unequalled in the power of its simplicity and the economy of its expression.

*Kahn's approach was unique, for he argued that monumentality in architecture was not the product of size or material expense, but rather had to do with a spiritual quality that conveyed eternity, as well as the quality of craft employed in the making of a building. Kahn called for monumentality for contemporary social institutions, and the engagement of new modes and materials of construction to achieve similar spaces as those found in great historical monuments, but without any direct copying of historical forms.*⁵⁷

Concerning the perception of monumentality, architect and philosopher Etienne-Louise Boullée (1728-1799) cautions that size and conspicuous elements do not, of themselves, produce a sense of greatness. As he describes, "The art of giving an impression of grandeur in architecture lies in the disposition of the volumes that form the

whole in such a way that there is a great deal of play among them, that their masses have a noble, majestic movement and that they have the fullest possible development." ⁵⁸ He sees architecture as compositions of shadows and light with the darkness receding into apparent absolute darkness. This awareness of the mysteries inherent in the character of shadows and darkness is a primary element of Kahn's art as well.

In the design of the Bathhouse, Kahn strives to achieve a new definition of monumentality where simple expression can convey powerful emotions. He utilizes the formality and balance of Beaux-Arts compositional principles and the rhythms of classical design proportions to achieve solidity uncommon in the work of most of his contemporaries. Unlike the monumentality he seeks in his designs for the Bathhouse, for the Day Camp Pavilions Kahn explores an interpretation supporting an awareness of age. Alois Riegl describes such age value as giving "equal standing with the creative rule of man...The modern viewer of old monuments receives aesthetic satisfaction not from the stasis of preservation but from the continuous and unceasing cycle of change in nature. [What is unacceptable is the] arbitrary human interference [with] nature's lawful activity of disintegration." ⁵⁹ This view positions the interpretation of the reality of a ruin as the expression of a fundamental truth in the interaction between man and nature through the presence of time. Age value is easily recognizable and has emotional qualities as a testament to time's passing. It embodies the natural cycle of growth and decay. Age value is derived from historic value. This is the truth Kahn acknowledges in his poetic response to the transitory nature of ruins. He suggests that monumental ruins exist in a purer, more aesthetic state than at the time of the monuments' creation. Liberated from utilitarian

demands, ruins acquire greater status as pure, artistic achievements. Kahn scholar and author Robert Twombly describes this transformation as "reminders of the origins of those Platonic-like forms - traces of *basic principles* - that had characterized architecture from its inception."⁶⁰

[W]hen the building is a ruin and free of servitude, the spirit emerges telling of the marvel that a building was made.⁶¹ ... When use is spent and it becomes a ruin, the wonder of its beginning appears again. It feels well to have itself entwined in foliage, once more high in spirit and free of servitude.⁶² – Louis Kahn, 1968.

The facts remain. Once completed, very little scholarly attention has been given to the architecture of the Day Camp Pavilions. Justification for this neglect, if acknowledged at all, includes irrelevant disqualifications of the work - designed and built in four months – with the fact that Kahn typically struggled with details long after construction was complete, misunderstandings of the placement of the Day Camp at the edge of the property, beyond the project's central focus, limited expectations suggesting that the buildings were conceived as temporary structures and erroneous conclusions that Kahn failed to promote these buildings because he did not have a strong commitment to their design. Because of these misconceptions, the power of Kahn's artistic vision that was derived from these buildings has been critically underestimated.

Sense of Order

The architecture that Louis Kahn created for the Community Center over the course of six years (1954-1959) is a synthesis of classical Beaux-Arts planning and

expressionistic geometric composition. It is an amalgamation of the rational and the poetic, the sublime and the picturesque. To a surprising degree, the sketches he made while traveling in Europe between 1928 and 1930 as a graduate of the University of Pennsylvania and later as a resident architect at the American Academy Rome (1950-1951) anticipate this work.⁶³

Kahn considered Rome's Pantheon an unequalled architectural achievement. He observed that the monument's introspective powers transformed a cosmic view into a single point of light. This inward focus was translated to the center of the Greek cross formed by the juncture of the four pavilions of the Bathhouse. Kahn made his intentions clear by marking the intersection of surrounding geometries with a circle inscribed in the concrete floor at this point of convergence. From this vantage point there is no reference offered except the dome of the sky and the vastness beyond. Resolution comes only from the north end of the building with a view of sunlight that leads up from the darkened, central space to a grassy knoll extending beyond the confines of the shelter. The skillful manipulation of space speaks to principles of the rational and the sublime in architecture.

Such values are timeless. Alois Riegl writes that the "purpose of deliberate commemorative value is to keep a moment from becoming history, to keep it perpetually alive and present in the consciousness of future generations...Deliberate commemorative value simply makes a claim for immortality, an eternal present, an unceasing state of becoming."⁶⁴ The buildings of the Community Center reinforce the dynamic tension between the juxtaposition of elements within the strict regularity of the grid that directs

development of the site. That Kahn's plans for the main Community Center building and for the landscaping of the site were never realized has obscured an awareness of the commanding power of his artistic vision.

Architect Etienne-Louis Boullée evaluates the consequence of factors such as light, spatial progression, visual perception and simplicity of ornamentation on architecture's influence of personal emotions. He describes the ability of art to produce sensations of a higher order. Boullée's designs can be seen exerting a strong influence on the development of Kahn's vision. Boullée maintains that buildings should arouse emotions in the viewer by the "poetry of architecture." He argues that the sublime is realized through a "divine flame," a passion, a love of study. This is the process of creation that gives life and power to a work of art. Boullée concludes that all art imitates nature. This existential view, shared by Louis Kahn, suggests that nature (the natural) resides within the true purpose of an object - what the brick wants to be. Kahn envisions the brick's striving to be an arch because this is the perfect composite of its natural expression. Boullée demonstrates that the creative act is inspired by conditions *in* nature that inform order and provide clarity of intent. Simplicity is the cornerstone of real beauty in art. Both architects embrace a directness of expression that can be sensed most powerfully when essential quality is not obscured by embellishment. The work of Boullée and Kahn ultimately allows the realization that an acknowledgement of the essence of things generates recognition of the sublime.

Matter of Style

Should the unity of style simply be restored without taking into account the later modifications? Or should the edifice be restored exactly as it was, that is, with an original style and later modifications? It is in cases like this that opting absolutely for one or the other of these restoration solutions could be perilous. It is in fact imperative not to adopt either of these two courses of action in any absolute fashion; the action taken should depend instead upon the particular circumstances. – Viollet-le-Duc, 1854.⁶⁵

It is instructive to consider the radical shift that Kahn made in developing the concept for the Day Camp. As the focus alternated between the three main buildings of the project - the Community Center, the Bathhouse and the Day Camp Pavilions - implication of refinements and modifications in one building required a new evaluation of the other buildings as well. This was Kahn's attempt to maintain balance and cohesiveness within his overall design. Often dismissed in discussions of Kahn's work for the Jewish Community Center is the significance of the Day Camp Pavilions. Closer scrutiny reveals that these buildings display parallel rather than independent concerns in Kahn's evolving principles of design. The architecture of the pavilions gives evidence of the poetic and picturesque qualities that Kahn chose to introduce in an environment created specifically for children. This extroverted expression serves as a counterpoint to the introverted quality of the Bathhouse. Each building is enriched by its comparison to the other; both would be devalued if either one had been realized in isolation.

Concluding her investigation of the design of the Day Camp Pavilions, Solomon comments that the arrangement of buildings retains “nonaxial placement, recalling the siting and form of Greek temples; but this grouping also seems to indicate the freedom of children's play...[T]his arrangement conveys a sense of energy radiating from the open

space at the center of the composition." ⁶⁶ To create an appropriate context for this play area, Kahn planned to surround the pavilions with a densely planted, forest like border of trees. Solomon writes, "Circumscribed by a circle and set within a rectangular grove of trees, the Day Camp remained the one element of the TJCC [Trenton Jewish Community Center] plan where Kahn was able to retain Platonic order within paradise and truly connect the duality he called Form and Design." ⁶⁷

To modern thinking, the Parthenon – the great temple of the Acropolis – should be placed opposite the main entrance, but the Greeks reasoned quite differently...The ancients generally preferred oblique views: they are more picturesque, whereas a frontal view of the façade is more majestic. Each of them is allotted a specific role. An oblique view is the general rule, while a view en face is a calculated exception. – Auguste Choisy, Histoire de l'Architecture ⁶⁸

The picturesque quality of the Day Camp Pavilions is not immediately apparent. The lightness of form and the openness of structure suggest expansiveness ideally suited to the interpretation of a children's play area. Even the surrounding woods admit a degree of adventure that has been intentionally eliminated from the environment of the Bathhouse. The presence of age value for the Day Camp Pavilions, seen against the backdrop of a naturalistic landscape, helps enhance an appreciation of the persistence of time and the transitory nature of existence. Here maturity, decay and ruin are confronted as an inevitable consequence of the process of living. For the landscaping of the Bathhouse, the introduction of a regimented grove of trees surrounding and partially obscuring the entrance to the building allows a controlled progression through a clearly ordered sequence of spaces. The impermanence in reality implied in the design of the Day Camp Pavilions sets a counterpoint to the illusionary timelessness of the grandeur that is the proposition of the Bathhouse with its strong sense of the monumental.

Chapter 5. Structure of Relationship



Existing Conditions 2007 (Source: Google Maps)

The Nature of Things

Interpretation can be used to help emphasize the relationship between two distinct moments in time. For historic landmarks, interpretation allows a judgment of what is and what is not essential to understanding a building's connection to past and present values. In the proceeding chapter, various organizing factors - time, order, style - were examined, suggesting a framework for informing such a judgment. The next three chapters investigate topics selected to encourage a broader view of how communities exist as a hierarchy of specially defined interactions. The various selected topics allow a unique perspective for interpreting Louis Kahn's architecture and for appreciating his designs for the Community Center.

First considered is the *exploratory nature of youth* as it is enhanced by the design of the Day Camp Pavilions. Here interactions become manifest through trial and error, discovery and learning. In this intellectually poetic realm, the possible may be conceived and knowledge reconsidered. The second topic examined is the *rational disposition of maturity* with its internalized state of reason. The power and repose captured in Kahn's architecture for the Bathhouse provide a counterpoint to the dynamic and playful energy generated in the design of the children's Day Camp. Although similar material, scale and abstraction of form are used in each building, Kahn emphatically differentiates the character of the Bathhouse from that of the Day Camp Pavilions through the architectural expression of his art.

Two buildings that color the interpretation of the site – the Community Center (Kelly & Gruzen Architects, 1961) and an adopted 1950s “classical cape” style house - although not designed by Louis Kahn, are included to amplify an awareness of the diversity of community interactions. These buildings are used to illustrate relationships implicit in the two topics *family structure* and *tribal alliance*. Here, the family is characterized as a traditional, deterministic, elemental interdependency that is fundamentally a product of natural evolution. This unit is complemented with the implied, more broadly based association of a tribal union. Of the two affiliations, family is identified as the smaller, more intimate group occupying the generic post-war suburban house that stands opposite the Bathhouse along the eastern edge of the site. The Community Center building, as the larger unit, accommodates a diversity of shared programs and democratically initiated activities.

Counterpoint

Elements of the Bathhouse and the Day Camp appear designed to provoke an awareness of contradictions and similarities in the architecture of the Community Center. It seems more intentional rather than coincidental that Louis Kahn planned both buildings as four distinct but interrelated pavilions and that the groupings are approximately the same size and scale. As indicated in the final plan for development of the site (July 1957), the approach to the Day Camp and the Bathhouse is carefully controlled with visibility of the buildings filtered through a screening of trees. The landscaping for each area creates a different perception of the architecture of Kahn's design. A cursory list of subjective attributes of the two groupings of buildings is provided in Figure 12.

The existing record for the design of the Bathhouse is more complete than that for the Day Camp. Louis Kahn actively identified with the Bathhouse and remained all but silent regarding the Day Camp. His apparent lack of interest may be the result of what he viewed as a failed realization of his design intentions. The design for the Day Camp, completed nine months after the Bathhouse, represents a different approach. Here the reference is to Greek architecture, with its lightness, transparency and transforming boundaries between public and private space. Kahn conceives a picturesque quality for his design in the spatial dialogue between buildings of the Day Camp and the play area that surrounds it. Kahn imagines a child's world possessed with tensions of curiosity and promises of discovery - the temptation of fire and the enchantment of magic in the moonlight.

Figure 12

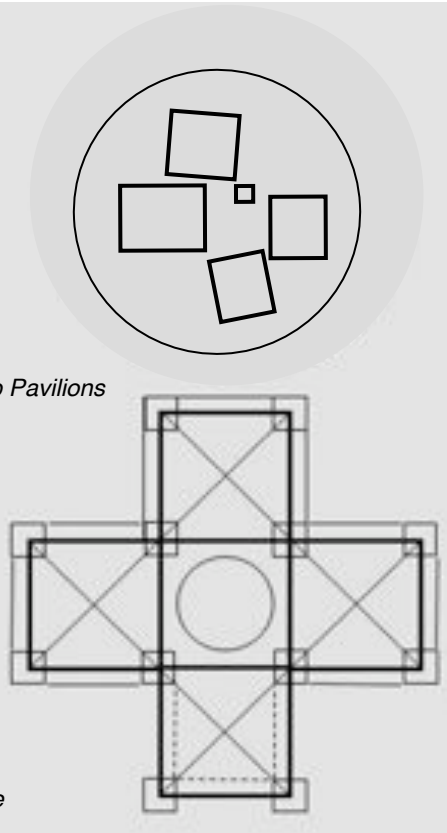
Bathhouse	Day Camp
Roman	Greek
Introverted	Extroverted
Male	Female
Sublime	Picturesque
Heavy	Light
Order	Randomness
Reflection	Discovery
Age	Youth
Individual	Community
Isolation	Interaction
Contractive	Expansive
Timeless	Timely
Obscure	Accessible
Dark	Light
Wall	Opening
Monumental	Modest
Contained	Boundless
Monolith	Composite
Unknown	Known
Silence	Sound
Substantial	Superficial
Separation	Fellowship
Earth, Water	Wind, Fire
Below Grade	Above Grade
Static	Active
Symmetrical	Asymmetrical
Monologue	Dialogue
Self	Others
Heroic	Common





Day Camp Pavilions

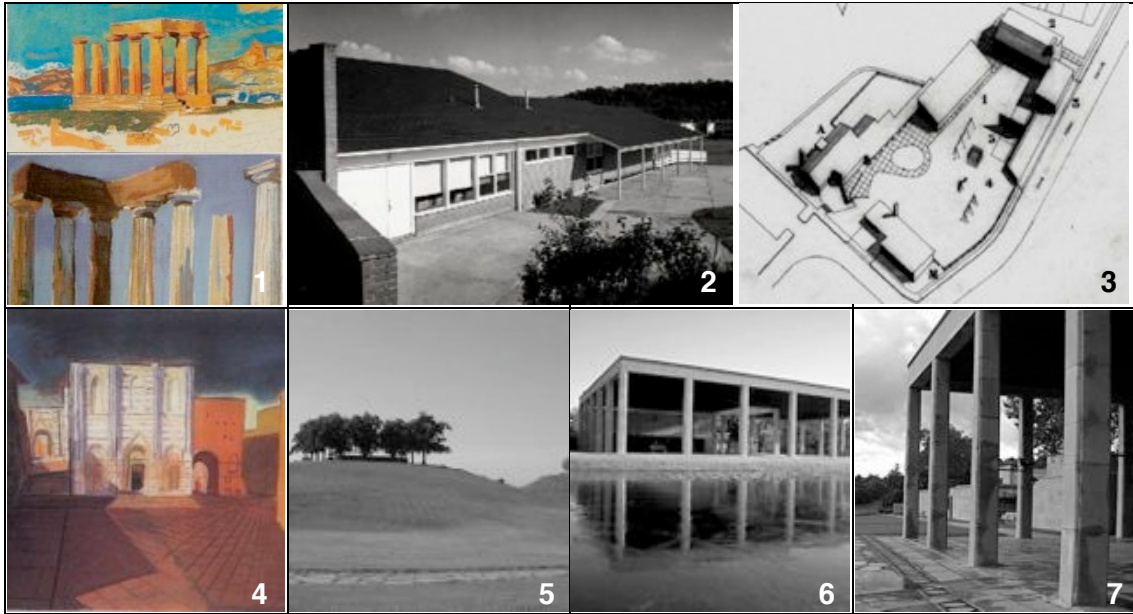
Bathhouse



(Source: Photograph of Day Camp Pavilions, Brownlee and DeLong, Louis I. Kahn: In The Realm of Architecture; Bathhouse and diagrams by Author).

The Day Camp Pavilions introduce complementary elements to the design of the Bathhouse. Their transparency is counterbalanced against the solidity of the earlier building. The internalized arrangement of the Bathhouse is “exploded” in the layout of the Day Camp Pavilions. The central gathering space is broken free of the defining order of the Greek Cross of the Bathhouse and is given an opening behind the iconic fireplace that is directed toward the beckoning forest. The configuration encourages exploration beyond the circumscribed limits of the Day Camp community.

Chapter 6. Exploratory Nature of Youth (Day Camp Pavilions)



1,4: Louis Kahn Travel Sketches, Greece 1928, France 1951; 2,3: Community Building, Pine Ford Acres, Pennsylvania, Howe & Kahn 1943; 5,6,7: Woodland Cemetery, Stockholm, Sweden, Asplund & Lewerentz 1917-20.

Inspiration

In a speech given to the New England Conservatory of Music in Boston in 1967, Louis Kahn describes inspiration as “the feeling of beginning at the threshold where Silence and Light meet: Silence, with its desire to be, and Light, the giver of all presences...The inspiration to learn comes from the story etched in us of how we were made; and urges us to discover its wonder.”⁶⁹ From this beginning he considers the power of place. “The court is already a place of invitation. I would like to call it the outside-inside space. It is a place which one feels that if he comes to, he can make a choice as to where he goes from there.”⁷⁰ Referring to his design for the Levy Memorial Playground (1961-1966) in New York City, Louis Kahn describes how children play. “If, for instance, you sense the nature of children who look at everything as if they were going to destroy it - those forces in them - that intimateness- the spontaneity of

participation, where it exists, if you sense this, you also sense that a thing is made to be incomplete for play. This sense of incompleteness has to be affirmed.”⁷¹ Kahn proposes the need for shelter as a genesis of architecture affirmation. “Maybe the first act on the piece of land is to build a kind of shelter, not unlike that of a stoa, which is partitioned, and [it is secure] because the trees won’t shelter you during the rain; so this is built as a kind of first thing. You wait, you go under this thing when it’s raining, you wait for the rain to be over, and you go back to play again.”⁷²

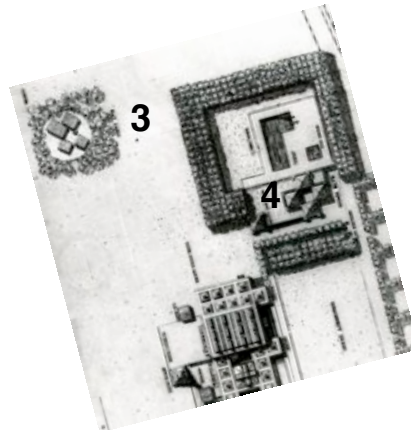
It is likely that, from observations such as these, Louis Kahn brings into focus his concept for the design of the children’s Day Camp, the second project to be built for the Jewish Community Center. The recognition of wonder is an essential expression of Kahn’s architecture and his quest for enlightenment is energetically pursued throughout his career. He urges listening to the inspiration of internal stories that are fundamental to human nature. He identifies the courtyard as a suitable location for allowing these discoveries, a place of invitation. Here, the provision of shelter is a shared obligation of social interaction. In Kahn’s precepts, children’s play is shared, spontaneous, intimate, affirming and invigorated by an environment that is, of necessity, evolutionary and therefore incomplete.

Beyond any such personal, philosophical considerations, Louis Kahn imparts, with the design for the Day Camp, a strong reference to architectural principles seen in earlier works. Perhaps most easily identifiable is an expression of the dramatic spatial relationships and interactions he captures in his own artwork. The economy and power of

these two-dimensional interpretations cannot easily be overlooked. His classical Beaux-Arts training and his life-long romance with Greek, Roman and Egyptian architecture and the intimately poetic response he felt in the presence of these cultural ruins are explored in plans for the Community Center. Louis Kahn's architectural work with his partner George Howe in Philadelphia for the construction of government housing projects immediately before and after World War II shows recognition of concepts that would evolve to become design principles in the masterworks of his later career. Architect and historian Kenneth Frampton identifies the stylistic attributes of the work of Swedish architect Erik Gunnar Asplund in the design for the Woodland Cemetery (1915-1940) in Stockholm as a probable influence on Kahn's concepts for the Community Center.⁷³ Asplund's revolutionary concept was internationally acclaimed in the early 1920s and would, most probably, have captured Kahn's attention during his visit to Stockholm in 1928 (Figure 13).



Woodland Cemetery (Google Maps)



Jewish Community Center (Kahn Archives)

- 1** The Hill 1917-20
- 2** Holy Cross Chapel & Crematorium 1935-40
- 3** Day Camp 1957
- 4** Bathhouse 1955

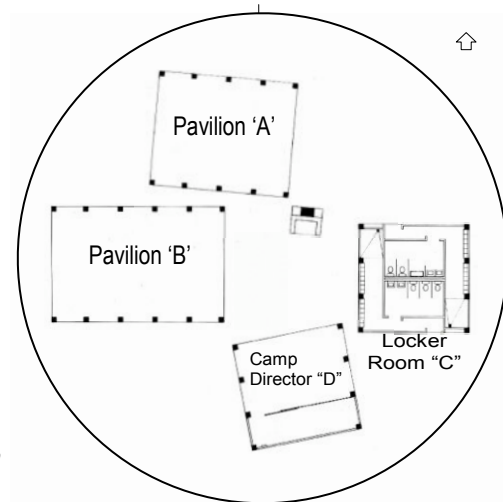
Figure 13



Holy Cross Chapel, Woodland Cemetery, 1935-40 (Source: Stone Roberts: flickr.com/photo)



Day Camp: Existing Conditions, 2007



Site Plan

Intervention

The Day Camp of the Jewish Community Center may reasonably be considered one of Louis Kahn's most neglected creations. The State of New Jersey obtained ownership of the landmark buildings in the spring of 2007; Mercer County's Department of Planning, together with Ewing Township, is currently developing a preservation plan for the historic site. Over the years, the condition of the pavilions has been allowed to become severely deteriorated. Buildings A and B are classified as unsafe and are barricaded from use with wire fencing and plywood baffles. Pavilions C (Lockers, Toilets and Showers) and D are accessible but unused. All four structures exhibit water and frost damage and material decomposition to varying degrees. (A historic structures report was produced by the Princeton-based architectural firm Ford, Farewell, Mills & Gatsch in 2003 and updated in 2007.)⁷⁴

Several important elements of the design for the Day Camp have never been completed. Shown as the central element of the plan and carefully detailed in the original

construction drawings, the brick barbeque that is the focus of the courtyard was never built. The circular, gravel-paved area surrounding the pavilions and the trees hiding the buildings from general view also were not realized in the development of the site.

Construction specifications (April 16, 1957) indicate that walls, “inside and out,” are to be finished with stucco using “an approved white portland cement.”⁷⁵ Omission of these details significantly alters the perceived character of the buildings. Considerations that impact the interpretation of the Day Camp Pavilions include the following:

- a. Building Design
- b. Materials and Finishes
- c. Roof Structure
- d. Safety and Code Compliance
- e. Access and Control
- f. Landscaping and Parking
- g. Expansion and Development

These concerns should be resolved in a way that helps emphasize the intended interpretation for the Day Camp and accommodates a comprehensive interpretation program for the site. The following preservation actions are proposed.

1. Remove deteriorated roof structures of Pavilions A and B and replace with new roof-framing system.
2. Apply stucco to walls and columns. Express column tile joints and interface between walls and columns.
3. Complete landscaping as shown in development drawings.
4. Introduce art program for embellishment of pavilions.

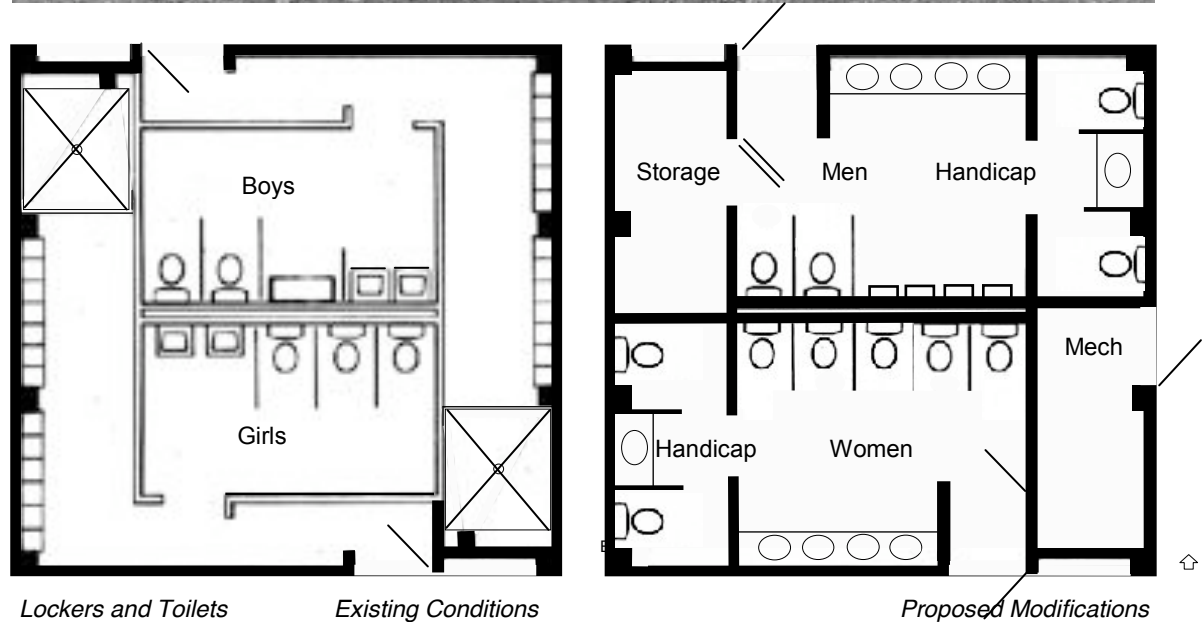
5. Move playhouses closer to Day Camp buildings. Introduce maintenance program for annual reconstruction of playhouse structures as required.
6. Provide night lighting for evening programs.
7. Renovate locker room (Pavilion D) as suggested in Figure 14.
8. Establish connection between Day Camp and proposed expansion of recreational facilities in north section of site. Construct north-south interior service road on western side of property using area of abandoned, power-line easement. Link new entrance, main community building, Day Camp and northern playing fields to proposed extension of Silvia Street leading to Parkway Avenue along northern boundary of the property.



Entering the Day Camp: Existing Conditions, 2007 (Source: Author)

The theme *Discovering Community* can be enhanced with the introduction of an interpretive program for the Day Camp, appropriately addressing the structure of youth. Play is an abstraction of a larger reality; it offers a model for exploring three fundamental human dispositions - wonder, discovery and joy. These attributes are common to children's stories and fairytales. Mystery and magic are employed to move innocence from dread through knowledge to joy. The Day Camp will maintain its historic role as a facility for summer recreation for children in the neighborhood. The element of discovery is a recurring theme in the buildings Louis Kahn created for the Community Center. Progression through the site is subtly controlled by the interaction between architecture

Figure 14



The sequence of spaces in the planned progression through the Day Camp offers children a discovery of spatial connections and relationships. The interplay of solids and voids was intended to be more readily perceived with the pavilions unified with a light-colored, stucco finish. The entrance to the inner courtyard is tightly controlled and is monitored by the office for the camp director located at the point of access. From this position the buildings front on the central gathering space of the Day Camp. Surrounding everything are the woods at the edge of the circular enclosure.

The illustrations above show the entrance to the Day Camp with the director's office on the left and the locker rooms on the right. The two plans indicate the existing conditions as Kahn designed the building and proposed modifications introduced to meet current program needs as well as requirements of accessibility and building codes. It is suggested that frameless, butt glazing be used to fill in window openings and to allow installation of standard heating and air conditioning for the support facilities.

(Source: Photographs and plans by Author)

and landscape. A forest of densely placed trees screens the four Day Camp Pavilions from other buildings on the site. A narrow, partially concealed opening in the dark, overgrown woods gives access to a sheltered clearing ringed with trees. In the sunlight, the first view is of temple like monoliths with stucco walls uniformly white.

The two flanking buildings of simple geometry yield only the suggestion of a passageway at their juncture. An interior court and two additional structures can be glimpsed slightly further on. The buildings grow in size and change, as if by magic, into open arcades. The view extends into a central area surrounded by temples clustered in a seemingly random architectural composition. The remains of some ceremonial fire can be seen on an altar at the center of the space. Through the pavilions, changing views of the darkened forest merge beyond the edge of the clearing that surrounds everything.

Spirits of Illusion

Louis Kahn loved telling stories to illuminate truths he discovered in his architecture. His lectures include anatomical characterizations for inanimate elements of traditional structures and materials. He believed that a brick's nature is the will to become an arch and a column's desire is to break free of the wall that constrains it. The four pavilions of the Day Camp provide explicit examples of the possibility of the existence of such illusionary transformations. The enchantment comes from believing in the magic he portrays as real. The initial perception of the Day Camp buildings changes with movement toward the center of the site. The pavilions shift in constant realignment to each other and form and re-form between states of solid and void. To compound this fluid

impression, Kahn introduces Pavilions A and B, whose similar, though not matching, forms can be comprehended as structures free of enclosing walls. From different vantage points, the rhythm of columns achieves varying degrees of openness and containment that recalls the dynamic nature of classical architecture observed by Austrian architect Camillo Sitte (1843-1903), in perspective studies of the Parthenon in Athens, Greece.⁷⁶

For Pavilion D, Kahn adds full-height brick walls on three sides of a rear bay of the building. This partial enclosure advances the expression of architectural containment. The walls do not intrude into the interior space of the pavilion. Kahn allows in his drawings only the placement of wire screening to create a secure storage area at the back of the building. To accommodate toilets, showers and locker rooms of the fourth building, Pavilion C, walls surround all sides but are held free of the ceiling by unglazed clerestory openings located above the 8' high perimeter walls.



Gymnasium at Delphi, Sketch by Louis Kahn, 1951.
(Source: Louis I. Kahn Archives, University of Pennsylvania)



Gymnasium at Delphi, Greece.
(Source: aeria.phil.uni-erlangen.de/photo)

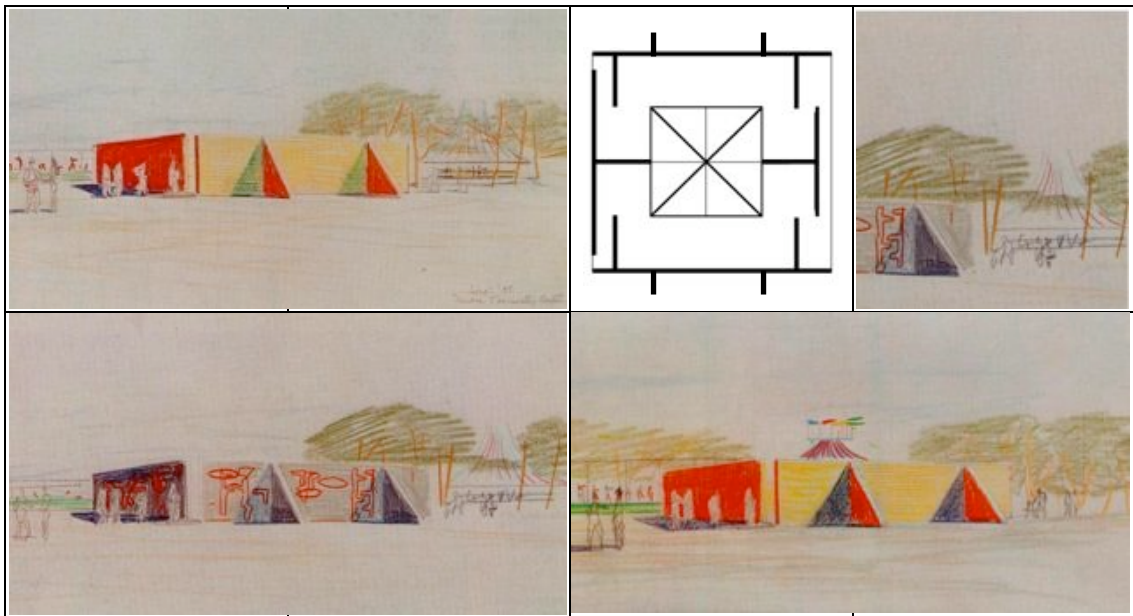
The wonder that Louis Kahn conceives as a precondition to knowledge resides in all living things. It is a seed that thrives in an enhanced spatial environment and is the “source of all that we’ll ever learn or feel.”⁷⁷ He describes the natural urge of children to

discover and to seek understanding of the wonders of their world. Something of the contours of that world can perhaps be discerned in a sketch he made during a year's travel as a fellow of the American Academy in Rome (1950-51). The sketch predates, by only a few years, ideas Louis Kahn later developed in his designs for the Jewish Community Center. There is a striking similarity between the character his sketch imparts to the surroundings of the central pool of the gymnasium at Delphi in Greece and the circumscribed play area he interprets for the Community Center Day Camp.

In the design of the Day Camp, Kahn carefully orchestrates the progression of spatial relations between buildings and the landscape. He converts the static structure of architecture into a dynamic dialogue of spatial relationships that suggests the possibility of the fantastic in children's play. Of the three attributes - wonder, discovery, joy - joy has been left conspicuously absent in the architecture of the Day Camp. This omission encourages imagination's expression of creativity. It allows affirmation of the incompleteness Kahn held essential for an environment of play. He specifies that the Day Camp Pavilions are to be finished in white stucco. The absence of color resonates with an irresistible urge to claim the buildings with some referential embellishment. Resolution is conceded to the children themselves. A force for completion is compellingly felt in the central court, where the blank wall of the locker rooms (Pavilion C) is given prominence. The wall commands attention as a billboard or backdrop for messages exchanged within the camp community.

Lessons to Learn

Over the years, markings of self-expression and group possession can be seen with the amateurishly constructed playhouses scattered haphazardly throughout the camp. These unsophisticated, fancifully imagined structures are humbly conceived and simply constructed. Their power permeates a joyously playful riot of color into a setting that is otherwise incongruously somber. A similar playfulness can be seen in the first sketches Louis Kahn completed for the design of the Community Center. These drawings, made more than a year before the Day Camp became a program requirement, are remarkably evocative of the spirit, energy, freedom and joy that characterize the playhouses.



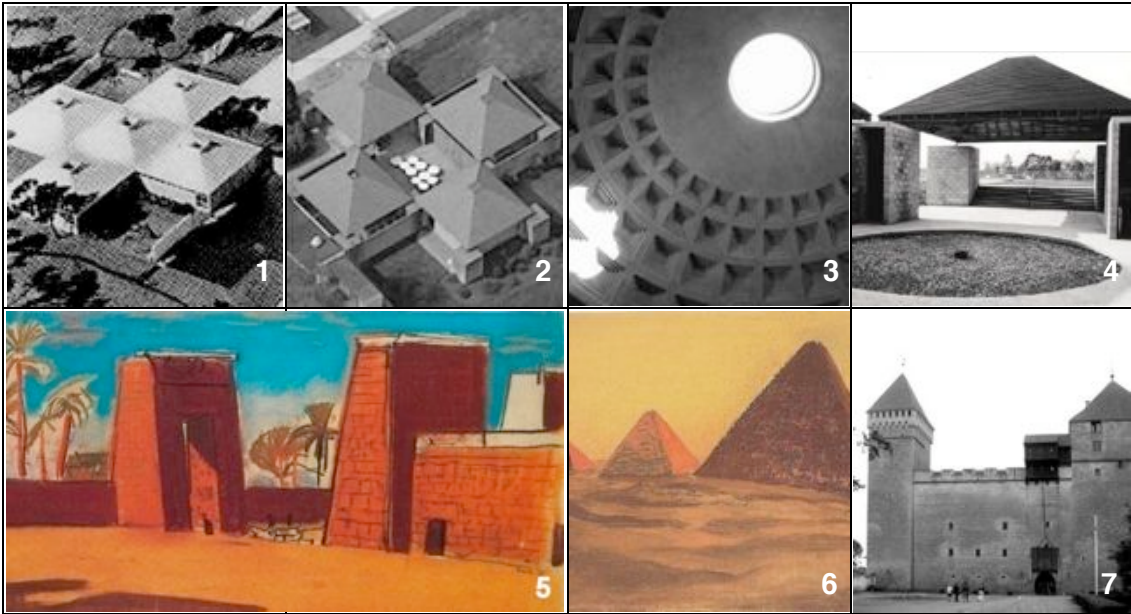
Kahn's first sketches of the Bathhouse, February 1955. Seen to the right or behind the Bathhouse is a tent-like pavilion for all-weather children's recreation. The fenced enclosed pool area is to the left. Buttress walls support the long sides of the building and only the center is covered by a gabled roof.

In an interpretation of the Day Camp Pavilions, the unselfconscious spirit of these additions should be preserved and enhanced. Kahn advocates two primary responsibilities for interacting with the young: respecting and nourishing the “intimateness” and “spontaneity” that are natural forces of a child’s character. The attributes of wonder, discovery and joy are acknowledged with the following proposed actions:

1. *Provoke Interest*: Encourage engagement in discovery and adventure within the provocative environment informed by the buildings of the Day Camp.
2. *Relate to Audience*: Explore the nature of make-believe in storytelling and celebrate the innate wonder present in a child's belief in the possibilities of magic and legend.
3. *Reveal Meaning*: Promote an understanding of the relationship between play and dreams and the value of the possible in the larger world of adult reality.
4. *Unify Theme*: Enhance an awareness of the connection of youth to maturity and of the creative power present in the diversity of community interactions.



Chapter 7. Rational Disposition of Maturity (Bathhouse)



1: Elementary School Prototype, Walter Gropius, *Progressive Architecture*, 1954; 2,4: Bathhouse, Ewing, New Jersey, Louis Kahn, 1955; 3: Pantheon, Rome (rome-hotels.redflag.info/pantheo); 5,6: Louis Kahn Travel Sketches, Egypt, 1950; 7: Bishop's Castle, Kuressaare, Estonia. (raetravel.ee/index).

“A Force Within” - Mowlana Jalaluddin Rumi (1207-1273)

*There is a force within
which gives you life -*

Seek that.

*In your body
lies a precious jewel -*

Seek that.

*Oh, wandering Sufi,
if you are in search of the greatest treasure,
don't look outside.
Look within, and seek That.⁷⁸*

New Traditions

Louis Kahn lived not just independent of formalized religion, but also free of most other structured associations. His predisposition was spiritual more than religious, insightful more than educated, poetic more than analytical. He would, most likely, find

such judgmental comparisons too limiting and invalid. His focus is the discovery of elemental beginnings, essential connections, fundamental truths that reside in the order of things. He conceives that nothing is random and that everything is related to everything else. This abstraction infuses his work and makes his architecture intimately compelling. Kahn scholar and author Susan Solomon begins her definitive examination of the design of the Trenton Jewish Community Center: “Louis I. Kahn (1901-1974) did not become a mystical Jewish architect until he had been dead for almost a decade.”⁷⁹ She argues against the frequent attempts by critics and historians to link Kahn’s thinking to Jewish mysticism and she concludes that he lived most of his life independent of any religion. He resisted what he perceived to be a ubiquitous force attempting to classify all relationships within predetermined domains. His legendary abhorrence of labels and stultifying programs exposed him to charges of stubbornness and impracticality.

Louis Kahn’s independence from his Jewish heritage allows him to see historical imperatives from an objective point of view. In the process of designing the Bathhouse, he seeks inspiration from many sources. In a lecture presented at Yale University in 1963, Kahn advises his students that “Every architect’s first act is that of either revitalizing a prevailing belief or finding a new belief.” He encourages such iconoclastic beginnings as requisite to the realization of eternal truths, “a kind of completely new essence that non-conscious nature does not understand or know about.”⁸⁰

He differentiates the artist’s creative need for self-expression from the scientist’s quest for confirmation in the measurable, the possible distinguished from the

quantifiable. He observed that the artist “senses the meaning of a new point of view...the scientist...is concerned with measures and with the nature of nature.”⁸¹ Kahn cautions that seeking understanding of the nature of nature does not promote discovery, in and of itself, but only confirms that which already exists. “Scientists, who are interested in the law and finding the relationship of one law to another, find that the nature of man is already in a different kind of working than science.”⁸²

The Path of Transformation

Chapter 6 constructs an interpretation of the design of the Day Camp buildings with an acknowledgment of the work of Erik Gunner Asplund in the 1920s and 1930s. Reference is made to classical Greek architecture as well as to shelters celebrating the traditional Jewish festival of the harvest, Sukkot (the Feast of Ingathering). In a similar fashion, this chapter highlights an extended lineage in the design of the Bathhouse that undoubtedly offers some influence upon the work. An early source may be attributed to the late 14th century castle in the small medieval town of Kuressaare on the island of Saaremaa in the former Russian Republic of Estonia, where Louis Kahn was born. Claims may also broadly be made to the architecture of Egyptian royal tombs, the pyramids of Gaza, the Pantheon in Rome, the Plutonic forms of Palladio, the Beaux-Arts and the architecture of Frank Lloyd Wright. Most compelling, perhaps, is a connection to the work of Walter Gropius and his design for an elementary school published in *Progressive Architecture* in the fall of 1954. This reference and additional ones are convincingly developed in the writings of Goldhagen, Solomon and other historians. A further consideration for a spiritual influence may be given to the nature of the

ceremonial bath central to observance of the Jewish faith and to the traditional architecture of the biblical “mivkah”

Water and the ceremonial bath are connections brought into focus with the topic maturity applied to the Bathhouse. To begin, it is important to discern values of art from values of interpretation. For architecture, the source of inspiration is irrelevant to the value of a work of art. Significance resides in the expression of originality that is the creative act. For interpretation, however, comparison is the crucial structure that provides meaning. There must be a dialogue, an interchange, between a statistical past and an evolving present. History, as a point of reference, is not static; it is constantly changing; the gap widens; the context shifts; the story continues.

In the proceeding chapter, issues of youth were presented as the focus of a program of interpretation for the Day Camp Pavilions of the Community Center. The innocence of childhood and the joys of exploration are freed from an enjoined regimentation of a deterministic community set outside youthful meaning. Buildings yield opportunities to *imagine* the possible and to participate in commonly shared visions. Kahn ascribes these interactions as the “affirmation of the incomplete.” In the case of the Bathhouse, maturity is conceived as the *evaluation* of similar histories of exploration and discovery. The growth from youth to maturity that fosters this introspection is, by its nature, a spiritual journey.

Louis Kahn loved to tell stories. He used them effectively, like all great storytellers, to illustrate a larger vision. One particular favorite, quoted below, is his interpretation of a poem by the great Persian philosopher Mowlana Jalaluddin Rumi (1207-1273).

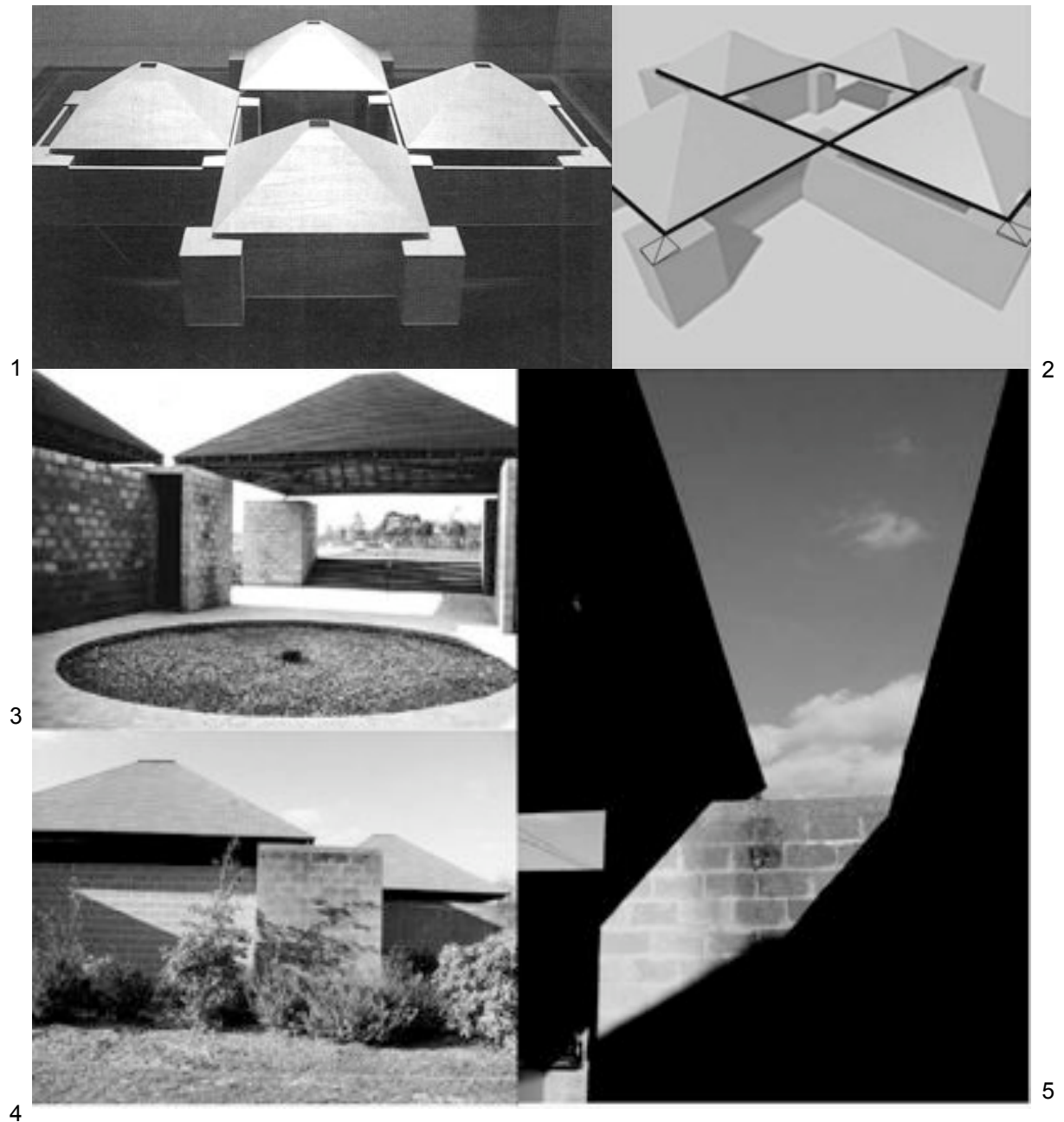
Architecture creates a feeling of a world within a world, which it gives to the room...I'm reminded of a beautiful poem by Rumi, the great Persian who lived in the early 13th century. He tells of a priestess walking through her garden. It is spring. She stops at the threshold of her house and stands transfixed at the entrance chamber. Her maid-in-waiting comes to her excitedly, saying, "Look without, look without, Priestess, and see the wonders God has made." The priestess answered "Look within and see God." ⁸³

This story offers insight into the architectural significance of the relationship of the Day Camp and the Bathhouse and places the discussion on a higher plane. The spiritual reference in Rumi's poem is unmistakable. For the English translation, the message of the refrain, "seek that" is stylistically reinforced with the typography of the third and final iteration set as "seek That," transposed by Kahn to the commandment, "see God."

A House Divided

In the proceeding chapter, interpretation of the Day Camp was approached from an expansive view where the topic of youth was considered within a variety of architectural and landscaping concerns. In this chapter, the Bathhouse is inspected at a closer range. Of particular interest are the configuration of the building's roof and the impact its form has in creating problems of water penetration (Figure 15). Significant in the development of

Figure 15



The roof design of the Bathhouse showing the alignment of the corners of the four pavilions and the resulting central atrium. The computer rendering at the right highlights the intersection of the roof ridges and the support columns. The middle photograph is taken from within the central courtyard facing north toward the raised pool area. The roof appears floating over the lounge area showing the connection typical at the columns. The drain shown in the center of the circular gravel paving of the atrium was designed to collect water runoff from the roof. On the left hand side of the photograph can be seen an entryway to the women's locker room. The bottom two photographs document deteriorated conditions on the outside and on the inside of corner columns where roof runoff has persistently eroded the concrete block of the supporting walls.

(Source: 1,3-5: Louis I Kahn Archives, University of Pennsylvania; 2: greatbuildings.com/models/Trenton_Bath_House)

strategies for preservation and interpretation of the building is the fact that water management was not a problem in Louis Kahn's original design. Only after construction was substantially complete and the Bathhouse was in use did a delayed design decision change everything.

In Louis Kahn's office, construction details were continually refined and improved as his architectural practice grew with an expanding list of projects. Just prior to the start of designs for the Community Center, at least four residential jobs were in various stages of development. The Adler, Morris and the DeVore houses, although never built, represent important stages in the evolution of design concepts that were pursued in plans for the Community Center buildings (Figure 16).⁸⁴



Morris Residence, Mt. Kisco, New York (1955-58) (Source: Louis I Kahn Archives, University of Pennsylvania)

Figure 16



Mr. and Mrs. Lawrence Adler Residence: Springfield, Pennsylvania (1954-1955).
(Source: Louis I Kahn Archives, University of Pennsylvania)

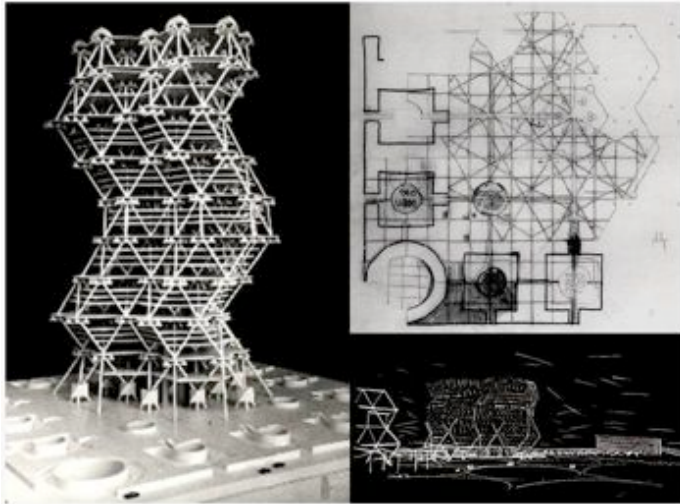
The plan of the Adler House is revealing as a clear antecedent to designs for the Bathhouse. Kahn and Tyng had been exchanging ideas for the arrangement of the grid for both the Adler and the DeVore residences in letters written while Tyng was away in Rome (1953-54). Kahn's rendering of the plan helps emphasize the primary importance of the programmed spaces (white) and exterior or connecting spaces (textured). The square cells of the structural grid are allowed to shift up and down within vertical columns providing variety and introducing tension to the plan.

The layouts for the Adler and DeVore Houses suggest that the Greek Cross plan of the Bathhouse is a conclusion of extended studies Kahn made of grid configurations and is not a preconception of the building's design.

To better understand how these residential projects anticipate the architectural development of the Bathhouse, it is helpful to first look at the progression of Louis Kahn's designs immediately following completion of his work in New Jersey. Three projects, City Tower (1952-1957), the Clever Residence (1957-1962) and the Richards Medical Research Laboratories (1957-1965), illustrate the diversity of ideas harvested from seeds planted in the New Jersey soil (Figure 17). With these three buildings, a connection can be made between earlier residential projects, the Bathhouse and more maturely developed architectural concepts. This linkage gives recognition to Kahn's developing skills in resolving construction details.

Geometry unites the design of all three buildings. Individual contributions in the partnership of Louis Kahn and Anne Tyng can be recognized in the various projects that they completed together. The design for the City Tower reflects the "genius for geometric form and topology" that Kahn frequently attributed to Tyng's work.⁸⁵ The poetic, non-rational elements Kahn applied to Tyng's plan are powerful in the expressiveness they give to the building's regulated geometry. It is Anne Tyng's rational shaping of the building's form, however, that clearly defines the tower's architecture. In the design for the Clever House, the partnership yields a composition that is disturbingly unresolved. This disjunctive relationship between the central, predominant space and the surrounding smaller pavilions is only somewhat mitigated by Tyng's latter addition. Of the three projects, it is the Richards Medical Research Laboratories that demonstrate an early mastering of Louis Kahn's art as distinctly his own.

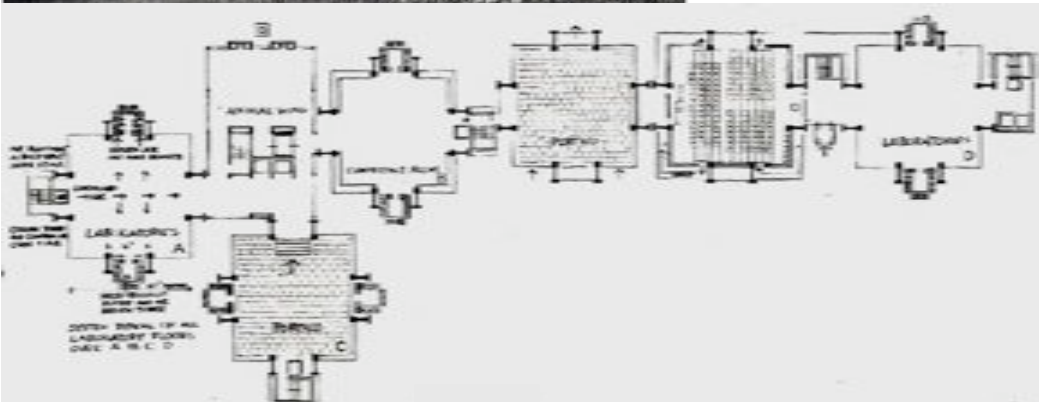
Figure 17



City Tower 1952-57



Clever Residence 1957-62



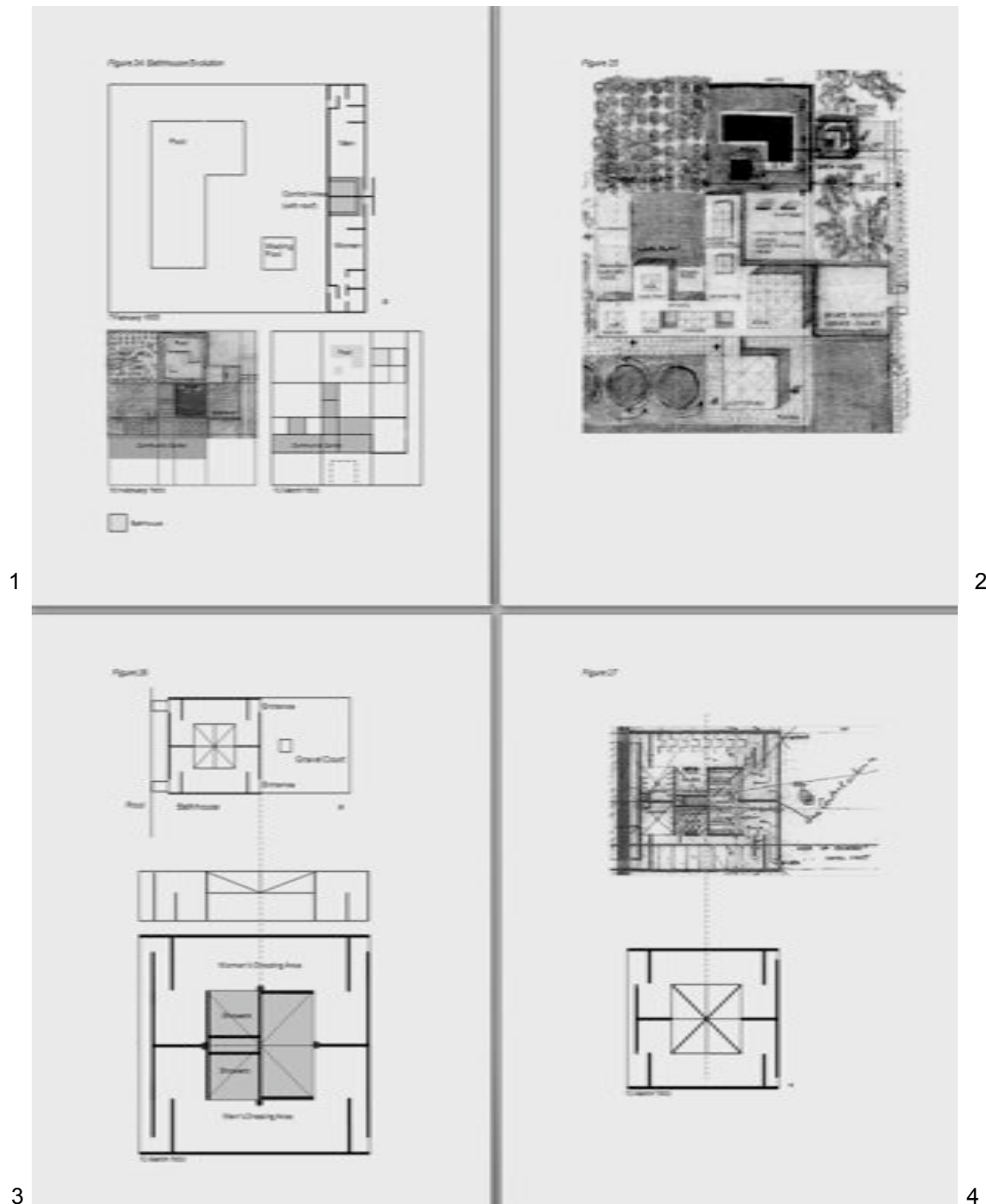
Richards Medical Research Laboratories 1957-65
(Source: All Illustrations, Louis I Kahn Archives, University of Pennsylvania)

Laws of Nature

In designs for the Bathhouse, water management is never treated as a trivial concern. Far from its being an afterthought, water is a central, generating force in Louis Kahn's design concept. Preventing water penetration into a building has always been a major architectural challenge. Two simple axioms apply: a flat roof collects and a pitched roof repels. Providing proper drainage from a flat roof is a relatively straightforward matter of connecting low points that keep water moving, by force of gravity, away from the building. Management of water from a pitched roof is usually somewhat more complicated. To the flow of naturally descending water from a flat roof is added the force of a lateral thrust that a pitched roof imparts. If this increased acceleration in the momentum of water flowing off the roof is then directed through a system of gutters, the runoff can quickly reach volumes of exponential proportions. Multiplying or mixing the two basic roof systems can elevate the challenge to higher levels of technological sophistication. Runoff becomes art.

Kahn's architecture rarely ventures far from the simplicity of a flat roof. The complexity and richness of his plans and the poetry and power of his boldly geometric facades terminate without any distinctive resolution or emphatic architectural culmination. Anne Tyng indicates that "Lou had proposed flat roofs for both the DeVore and Adler houses and in neither of those houses did Lou propose hollow columns." She states that in David De Long's reference to Kahn's exploring hipped roofs "may refer to the sketches I sent Lou [from Rome, 1954]." ⁸⁶

Figure 18



1: First plan of the Bathhouse and preliminary planning grid for site layout (February 1955). A grove of trees was intended to provide a transitional feature between the main parking area to the east and the entrance to the "house" beside the pool. Landscaping notes specify that trees should be planted 15' on centers creating a square area equal to the raised podium surrounding the pool. The February drawings were made for pricing of alternate Bathhouse layouts. 2-4: The more economical "Square Plan" shown in a site drawing and plan detail dated 13 March 1955. The diagrams (By Author) illustrate the concrete, folded-plate roof structure presented to the Community Center review committee at the March 13 meeting. Members' comments were written on the presentation drawings. (Source: Louis I Kahn Archives, University of Pennsylvania)

The roof for the Bathhouse began as a flat, concrete structural slab covering only the central control area at the entrance to separate rooms for men's and women's lockers and showers (Figure 18). For economy, most areas of the Bathhouse were planned without a roof. Construction costs for a long and narrow rectilinear structure were compared with a simple square building. The estimates showed that a savings of more than 10% could be achieved using the square plan.⁸⁷ The design of the roof was reconceived applying the newly developed technology of folded-plate concrete construction. A gable end was placed at each corner. This allowed valleys between roof ridges to channel runoff to a central point on each side of the building. This concept, despite subsequent reconfigurations in plan and materials, never changed until after the building had officially opened. Three months later, in October, the design of the roof was changed to what can be seen today. A review of decisions made in the fall of 1955 and the effect they had in producing the deteriorated condition of the Bathhouse are the major issues explored in this chapter.

Sunday, March 13, 1955: New plans for the Bathhouse include revisions that incorporate the Building Committee's preference for the "Square Plan" (Drawing No. 2: "Outdoor Pool & Plot Plans" dated February 15, 1955). Presentation sketches show three preliminary color studies for the building's exterior, a festive, playful spirit enhanced by Kahn's inclusion of a circus tent, complete with rainbow colored banners (See illustrations p. 108). Comments made by committee members were recorded on the drawings. "What are your suggestions on fencing [for the pool area]? Aid Station and Equipment Storage to open directly to pool. Can the basket room be enlarged? There

must be space for wringing out wet suits.” Two additional concerns posed more significant construction problems and suggest that the cost-saving attitude shared in the preceding meeting did not extend to compromises in the functionality of the building. “What alternative provision for roof over the entire locker room?” and “Design building so that later entire building can be roofed.”

Sketches added to borders of drawings show what are most likely Kahn’s consideration of questions raised during the meeting. These notes recall structures that he was developing for residential projects at the time and indicate that he might be making a shift in his concept for the building. Kahn pursued the square plan and completed a drawing showing a folded plate concrete roof in a drawing titled “Dressing and Filter Building for Swimming Pool: Trenton Jewish Community Center” (April 4, 1955). This drawing did not include the title of the Associated Supervising Architects for the project, John M. Hirsch and Stanley R. Dube, and the drawing can be identified as independent work of Kahn’s office. It is reasonable to conclude that Anne Tyng chose this time to press for further consideration of her ideas for the design of the Bathhouse. Tim Vreeland, a graduate of Yale University School of Architecture and one of Kahn’s students, began working in the Philadelphia office at the beginning of 1955 helping with the design of the Bathhouse. Tyng had just returned from her year’s stay in Rome. Vreeland recalls:

Anne, Lou, and I were working late in the office one night, and it was around midnight. Lou was over with me, working on my [square] scheme for the Bathhouse, which he just hated. Suddenly, Anne said, Lou, come here. We went over to her drawing board, and there on it was the plan for

*the Trenton Bathhouse, the scheme that subsequently dictated the ideas for the Community Center as a whole.*⁸⁸

Kahn completely changed the layout of the Bathhouse for the next review meeting held in mid-April. Revised drawings (dated 14 April 1955) depict the building as it exists today, except that the metal-pipe roof developed for the previous plan was maintained in the design.⁸⁹ Final design drawings (dated 28 April 1955) were approved by the client and issued for pricing the following Thursday, May 5. Included on the pricing drawings was the note that the roof structure was “N.I.C.” (Not-In-Contract). After a delay of more than eight months, Louis Kahn finally received a signed contract for professional services with the Jewish Community Center. Drawings for the design of the metal roof were completed on May 20 and were issued for a separate price on May 24. Revised pricing drawings showing a reduction in the scope of work for the project were also issued on May 24th. In the pricing set, “Drawing No.5: Sections” is noted: “Revision Note 1: Roof above col. cap not in contract.” The drawing gives further clarification for construction of the roof. “Threaded ends of wall-reinforcing bars to project 10” above masonry of all columns, to receive future caps to roof.” Construction quickly began and the building was completed - without a roof – in time for the official opening of the pool and Bathhouse, July 31, 1955.

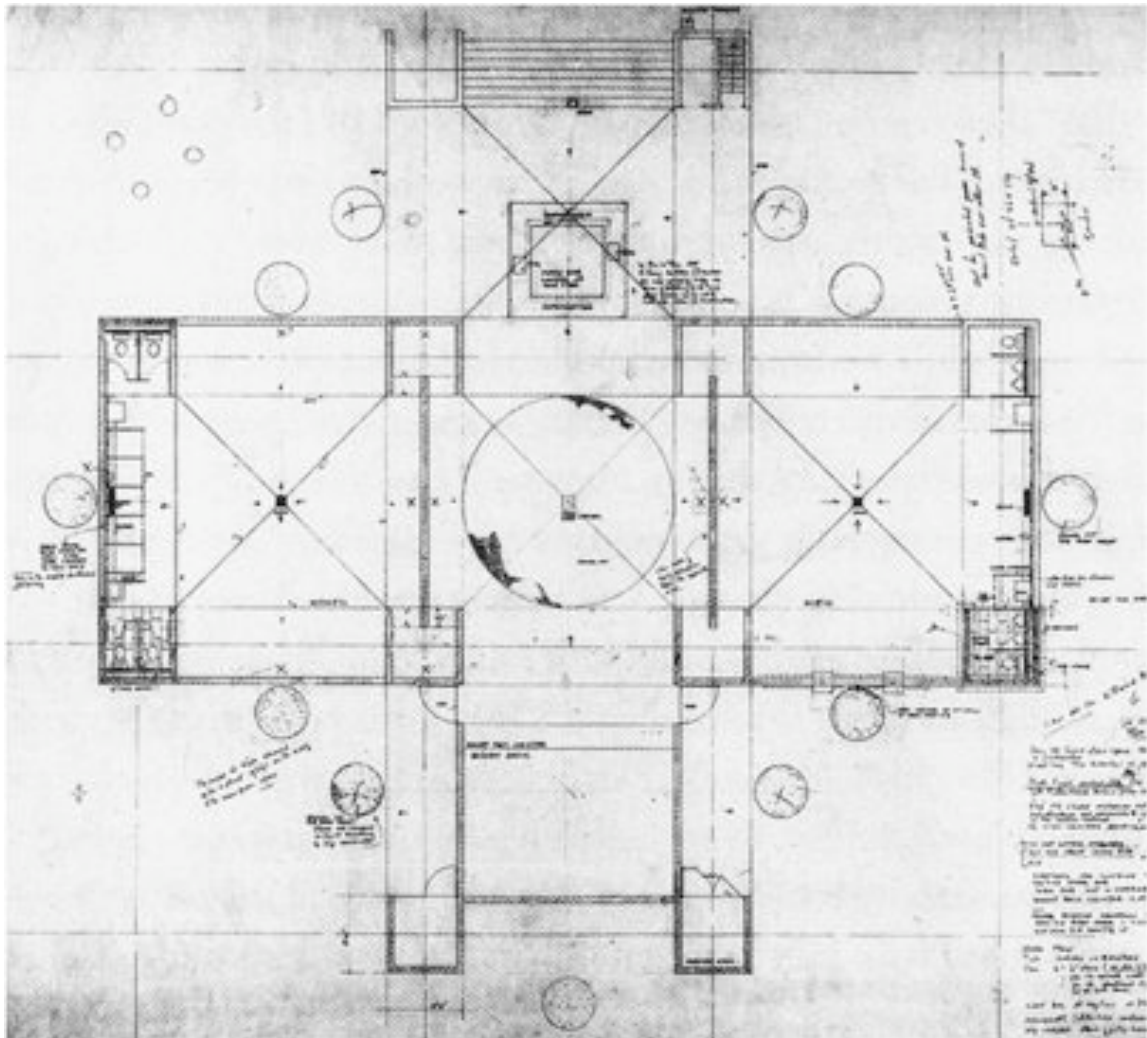
The Subject was Gutters

At the beginning of October a new roof design was issued for pricing; by the end of the month, construction was complete. The roof structure was what Tyng had proposed in

early April. Whatever the reasons that determined this as the final solution, the choice has been a primary cause of the seriously deteriorating conditions of the Bathhouse. The evolution of the roof design and the interpretive topic *maturity* permit a convenient framework for developing an interpretation of the Bathhouse and for determining strategies for required preservation interventions. Figure 19 shows the drain pits that were included in the pricing drawings issued on April 28, 1955. Solomon indicates that these drains were later eliminated from the scope of work and were listed with other contract deletions and amendments.⁹⁰ Similar drain pits are shown in designs for the Morris House, which was being developed along with the Bathhouse. Here Louis Kahn indicates the use of scuppers as part of the drainage system for flat roof areas that project spilling water into circular gravel pits located below. Scuppers were used again as part of the drainage system planned for the Clever Residence, 1957-1962.

Runoff is addressed by giving architectural support to the free-flowing movement of water traveling by gravity down from the roof to the ground and away from the building. This movement is typically enhanced by Kahn's architecture; water's natural flow may be channeled or subtly guided but it is never forcefully redirected. This is control by skillful management rather than aggressive manipulation. From the hipped roof of Kahn's residential designs, water typically falls onto flat surfaces where the downward flow is redirected by gravity to a horizontal movement. In some conditions this force is used to accelerate runoff beyond the building's edge with projecting roof scuppers and to the water is allowed to fall into gravel pits as was originally intended for the Bathhouse. The unavoidable challenge for preservation of the Bathhouse is resolving roof drainage.

Figure 19



Final drawing of the Bathhouse issued for pricing 28 April 1955. The roof is similar to the metal pipe roof developed for the earlier "Square Plan." The 11 circles outside the building indicate gravel pits for collecting runoff from the valleys of the metal roof. The large circle in the central atrium is a 22" diameter gravel pit for collecting runoff with a drain at the center. Single lines in the plan indicate expansion joints in the concrete floor and arrows point toward floor drains. Drawings issued for construction were revised 24 May 1955 and contain the following added notes:

Drawing #1 Revision Note:

Pool deck reduced (160'x160'). Deck paving reduced. Location of Bath House changed.

Drawing #2 Revision #1:Plbg. Cont'r. to rough in for sinks in bar. [The plumbing contractor was to provide feed pipes and drains to Bathhouse for possible future construction of snack bar in archway to pool area.]

Drawing #5 Revision Note 1:

Roof above col. cap not in contract. Threaded ends of wall-reinforcing bars to project 10" above masonry of all columns, to receive future caps to roof.

Issued with the 24 May 1955 construction drawings was a detailed drawing for pricing of the metal pipe roof. The roof drawing was dated 20 May 1955 with a revised date of 24 May 1955. Notes on the roof drawing indicate that the roof is to be constructed using corrugated galvanized steel siding with steel pipe 2" diameter at framing members and 3" diameter at edges.

Water Under the Bridge

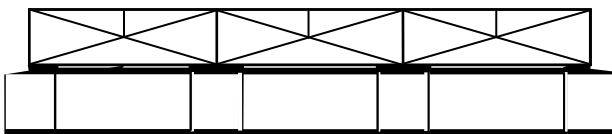
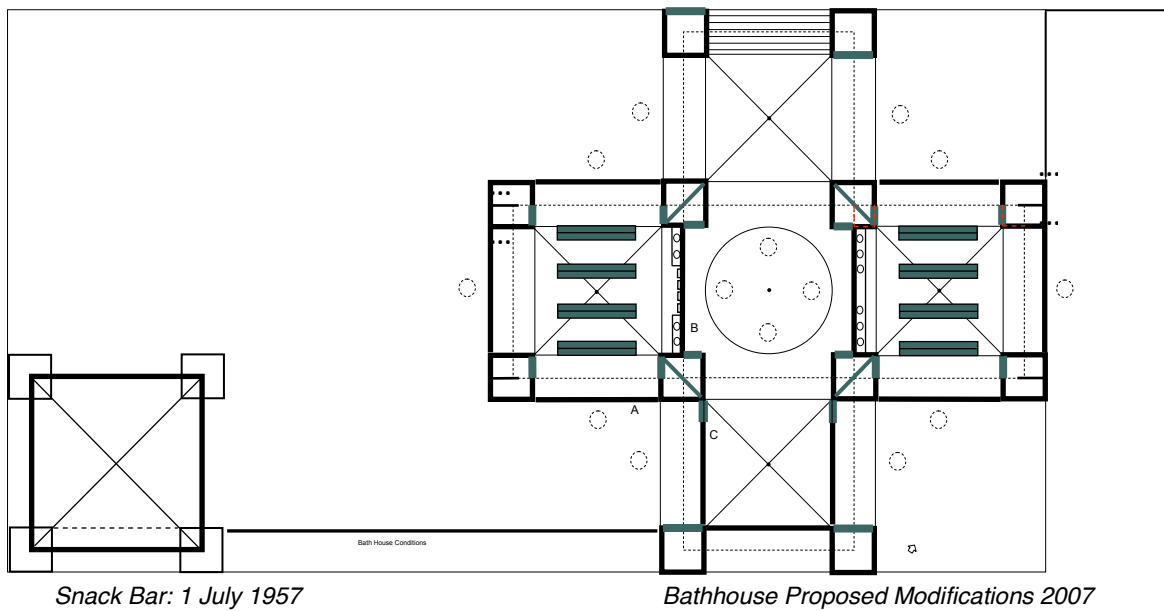
There is no record indicating why the roof of the Bathhouse was changed from what was indicated in the construction drawings (although these drawings note that the roof is not part of the general construction contract) and the roof that was completed in October 1955.⁹¹ In construction terms, the metal roof was a more complicated structure and would likely have been more expensive than the wooden roof that was ultimately built. Kahn's earlier design for the roof of the Square Plan directly addressed rain runoff; he made water management a fundamental element in that building's design. It is probable that he recognized that Tyng's pyramidal roof configuration presented problems for rain runoff, even if gutters were added to the building. This argument is supported by construction drawings showing the Bathhouse as an incorporation of Anne Tyng's plan with a modification of the metal roof developed by Tim Vreeland for the Square Plan (Figure 20). Had the concrete blocks that were used for building the walls of the Bathhouse been of better quality, the deterioration that quickly resulted from rain water might not have been such a serious problem to the continued maintenance of the building.

By the end of July and the official opening of the pool and Bathhouse, construction was complete - except for the roof. It is reasonable to assume that pool activities prevented construction of the roof until after the end of the summer season in September. By the beginning of October, a new roof (Anne Tyng's configuration from the spring) was introduced and new plans were issued for pricing. The wooden, pyramidal forms of Tyng's structure were constructed as the final modification to the Bathhouse design.

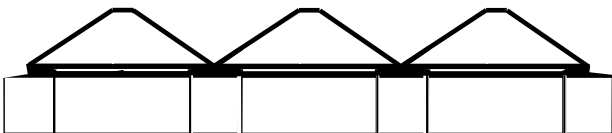
Figure 20



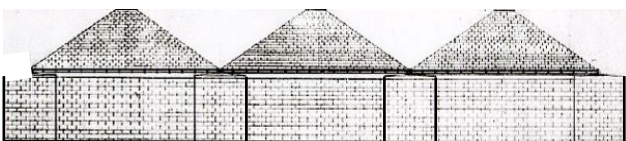
Bathhouse 2007



Metal Pipe Roof Structure: 14 April 1955



Wood Roof Structure: October 1955



Bathhouse as built: October 1955

The lack of adequate drainage and the rapid deterioration of the building appear less an oversight and more the consequence of the decision to proceed without an acceptable alternate solution for drainage of the building. Louis Kahn maintained a reputation for the extensive, often exhaustive, architectural evaluations he would give to even the smallest construction details for his buildings. Such an appreciation of specific requirements of building construction is evident in residential projects having strikingly similar roof configurations as the Bathhouse – buildings designed both before and after construction of the Community Center. Even preliminary designs for the main Community Center building show various solutions for the handling of roof runoff.

Resolution

The architectural problem inherent in managing water runoff is, of course, not a new one. French architect and theorist Viollet-Le-Duc was no stranger to philosophical issues related to man, nature and the managing of building drainage problems.

Let us take a building constructed...without gutters for its roof drains, which had to be restored...and at the time was equipped with gutters producing combined drainage. The crowning is now in bad condition and has to be completely rebuilt. Should the ...gutters be abandoned in order to restore the cornice (of which the elements are still all present)? Certainly not...In our...example [it is a matter] of maintaining or preserving a rebuilt feature that was a necessary improvement on the earlier restoration or that rebuilding was carried out in accordance with the practice of that time; all rebuilding was done in accordance with the style and practice then current.

Should the unity of style simply be restored without taking into account the later modifications? Or should the edifice be restored exactly as it was, that is, with an original style and later modifications? It is in cases like this that opting absolutely for one or the other of these restoration solutions could be perilous. It is in fact imperative not to adopt either of these two courses of action in any

absolute fashion; the action taken should depend instead upon the particular circumstances. - Viollet-Le-Duc, 1854.⁹²

The debate introduced here concerns the question of what to preserve: the “unity of style” of the original architecture or improvements made to that earlier design. Viollet-Le-Duc’s conclusion? He argues that it depends. “[T]he action taken should depend... upon the particular circumstances,” upon relationships and connections between now and then, upon interpretation. This is where an allowance for *maturity*, introduced as the topic of interpretation for the Bathhouse, can be extremely useful. Unlike the process of discovery and learning explored in the proceeding chapter within the topic of youth as an interpretative strategy for the children’s Day Camp, maturity’s evaluative potential can be demonstrated with the judgment of alternate proposals for the preservation of a landmark structure. Chapter 4 presented various themes for interpretation: *time* (age and historic value), *order* (monumental rationalism) and *style* (poetry and the picturesque).

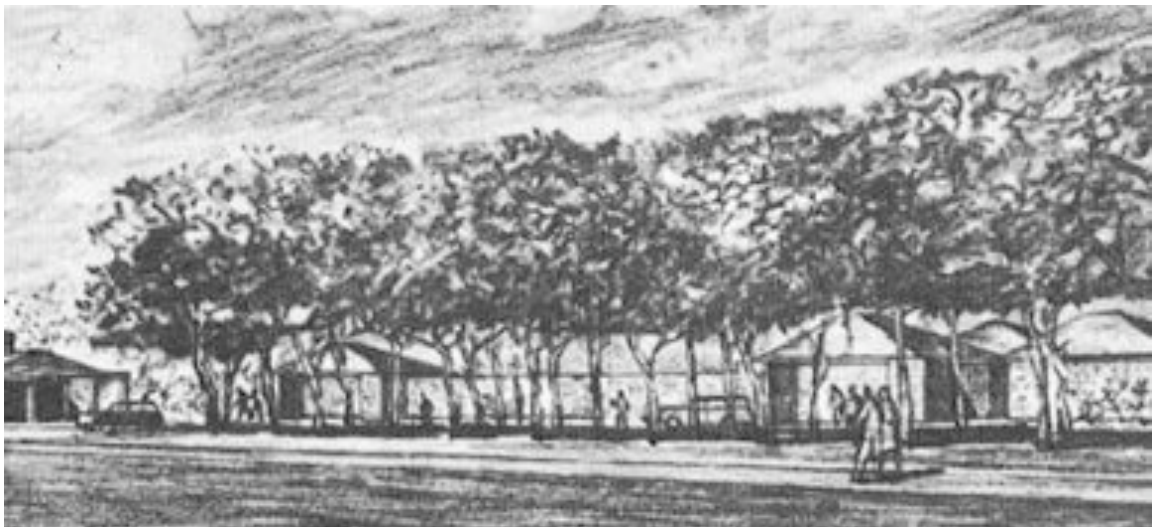
Recognizing that two solutions for the roof design of the Bathhouse were considered and that Louis Kahn began construction anticipating a different roof than what was ultimately built, interpretation of the topic *maturity* for the Bathhouse is advanced through the following two proposed projects.

Interpretive Project 1: Existing Roof

The structure of the roof is to be maintained with the addition of a drainage system consisting of black, metal gutters and downspouts directing runoff to the corners of

each of the four pavilions. The existing metal roof connectors at supporting columns are to be modified to direct discharged water away from gutters to the outside corners of the concrete block supporting columns. Water channels added at the base of the columns distribute the runoff to underground storm drainage pipes.

The paved floor of the central atrium is to be replaced with textured concrete replicating the extent of the original paving. The interior of the circle is to be filled with separately poured concrete that is then bush-hammered to delineate the line of the inscribed circle shown in the construction drawings filled with gravel and to allow runoff to flow into existing floor drains at the center of the space.



Detail Kahn Sketch Community Center: Snack Bar and Bathhouse
(Source: Architectural Forum, October 1957)

Let Them Eat Cake

The inclusion of a snack bar for the convenience of pool users was a continuing request made by the Construction Committee. Kahn struggled to find a solution for this

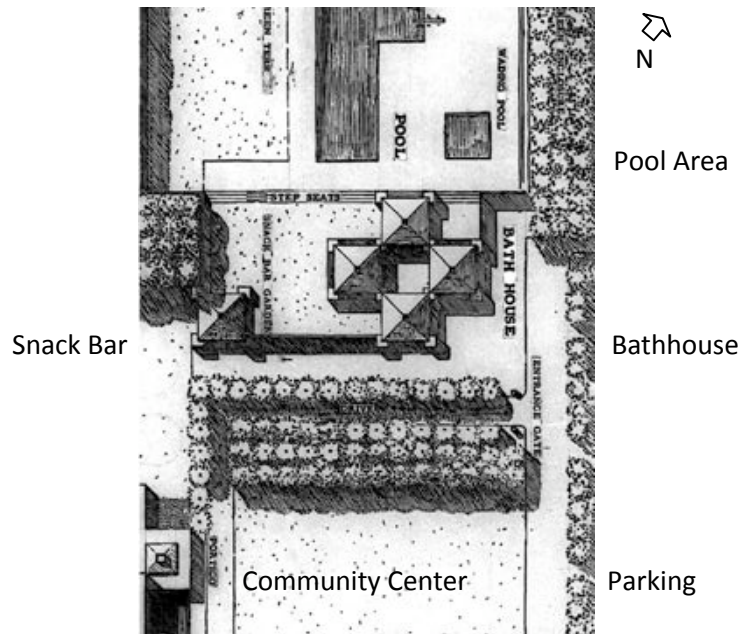
design problem that would be consistent with his nascent architectural theories of servant and served spaces and that could also be accommodated within the symmetry of his concept for the building. In construction drawings issued for revised bidding on April 28, 1955, the square serving counter located under the archway leading to the pool area is eliminated. Revisions on “Drawing No. 2: Plumbing and Electrical Plans (Issued for pricing April 28, 1955, revised May 24, 1955) note: “Plbg cont’r [plumbing contractor] to rough in for sinks in bar.” This revision allowed construction of the Snack Bar to be delayed or possibly eliminated from the project.

In a design sketch (dated July 10, 1955) issued for pricing, the Snack Bar is shown as an outside extension on the western side of the building. In Kahn’s final sketch of the Bathhouse (See sketch proceeding page.) the Snack Bar is moved further away and stands as a separate pavilion connected to the Bathhouse by a tall wall.⁹³

Interpretive Project 2: Snack Bar

The final site plan shows the Snack Bar located to the west of the Bathhouse in line with the building’s entrance. Drawings indicate the Snack Bar to be a copy of one of the four Bathhouse pavilions with a high, connecting block wall along the south facade with a similar wall added to the northeastern corner of the Bathhouse. In the interpretation plan, the Snack Bar may be developed as a copy of the Bathhouse pavilions. A more interesting interpretation, however, is to plan the structure as a contemporary expression of Kahn’s architecture using his final plan for the site as a

guide. This approach supports Viollet-Le-Duc's preference for incorporating a "feature that was a necessary improvement on the earlier [construction] carried out in accordance with the practice of that [in this case, present] time; all rebuilding [should be] done in accordance with the style and practice then current." ⁹⁴



Detail: Site Plan showing Snack Bar and Bathhouse (July 1, 1957)
(Source: Louis I Kahn Archives, University of Pennsylvania)

Construction would be guided by available documents from the original building but would incorporate current materials, methods and procedures. This approach allows a maturing of construction practice and building technology since the Bathhouse was constructed. The roof design would incorporate the metal pipe structure and the original concept for water management. Alternative, contemporary products, ranging from metals to plastics to other synthetics or composite materials would be substituted where appropriate. Wall and floor finishes and design details would be modified to take advantage of advances in engineering technology and material development.

Chapter 8. Social Studies



1,2,4: c1950s Cape-Style House, Ewing, New Jersey; 3,5: Lustron Pre-fabricated Home c1950s.

Family Structure (Cape House)

“Cape House” does not exist. It is a possibility to be realized through an applied program of interpretation. What does exist, immediately adjacent to the Bathhouse, is a typical single-story, two bedroom, one bath, post-war cape-style house built c1947 in the rapidly expanding suburban Township of Ewing, New Jersey. This small house, in almost perfect original condition, has stood solitary watch over the Community Center for more than half a century from its corner location on the “paper road” of Adrian Avenue and the dead-end intersection with Gold Street. Remarkably, incongruously and perhaps fortuitously, the house turns it back to its neighbors and squarely faces the Bathhouse directly across the street – apparently waiting for new families and other homes to join the development yet to come on Adrian Avenue. That development, however, will never arrive; the Township is removing Adrian Avenue from the map.

The case study of this neatly tended house offers a noteworthy example of how a program of interpretation can enhance the understanding of larger issues. The Day Camp and the Bathhouse have been considered as an interactive



Cape House across from the Bathhouse along Adrian Avenue.

dialogue between two distinct points of view. From this probing, the process of growing up and achieving adulthood may be perceived as predominately an internal journey of the mind. The two buildings described in this chapter establish a range of interaction from the basic unit of *family structure* to the broader association of *tribal alliance*.



Original 1947 Model Home: Levittown, New York
(Source: ti.org/antiplanner)



(Source: 2.scc.rutgers.edu/njh/MassConsumerism/Suburb/Levittown)

Cape House illustrates fundamentals of family structure in the early 1950s, expanding the present back to the time the Bathhouse was created. The interpretive plan positions Cape House as the point of orientation and the primary entry for an exploration of the Community Center site. From this location, an overview of the Community Center and its

history, purpose, evolution and prospects would be provided engaging the visitor in a variety of relationships within various community structures. Cape House serves as a source of information, entertainment, education, recognition and enlightenment – Tilden’s principle criteria for determining an effective program of interpretation. The property would be developed to include a cultural research library, preservation staff offices, historic museum, video conference center and the financially indispensable gift shop providing membership opportunities to help sustain and finance the landmark site and to promote broader preservation activities. Support functions for the Interpretive Center would be housed in a state-of-the-art office structure constructed below grade, giving architectural reference to underground missile silos and top-secret research laboratories of popular pulp fiction of the 1950s. Public and handicap access to the Center would be provided at the rear of the historic Cape House.

The proposed addition of a *Lustron* prefabricated home, to be moved to the site and located immediately north of Cape House, offers a wider view of housing concepts promoted as subdivision housing in post-war America. In terms of style, Cape House looks backward to America’s New England architectural heritage and represents a universally accepted solution for urgently needed, economically constructed, rapidly produced post-war housing. The *Lustron* house, on the other hand, is a visionary solution to 20th century demands for mass-produced housing. The culture of the 1950s, with its optimism in the ever-expanding economy and its underlying fear of nuclear annihilation in the new atomic age, gave birth to such fantastic creations as TV, Disneyland, bomb

shelters, plastics, hula hoops, the backyard barbecue, Rock 'n' Roll, the Ford Fairlane, and Marilyn Monroe.



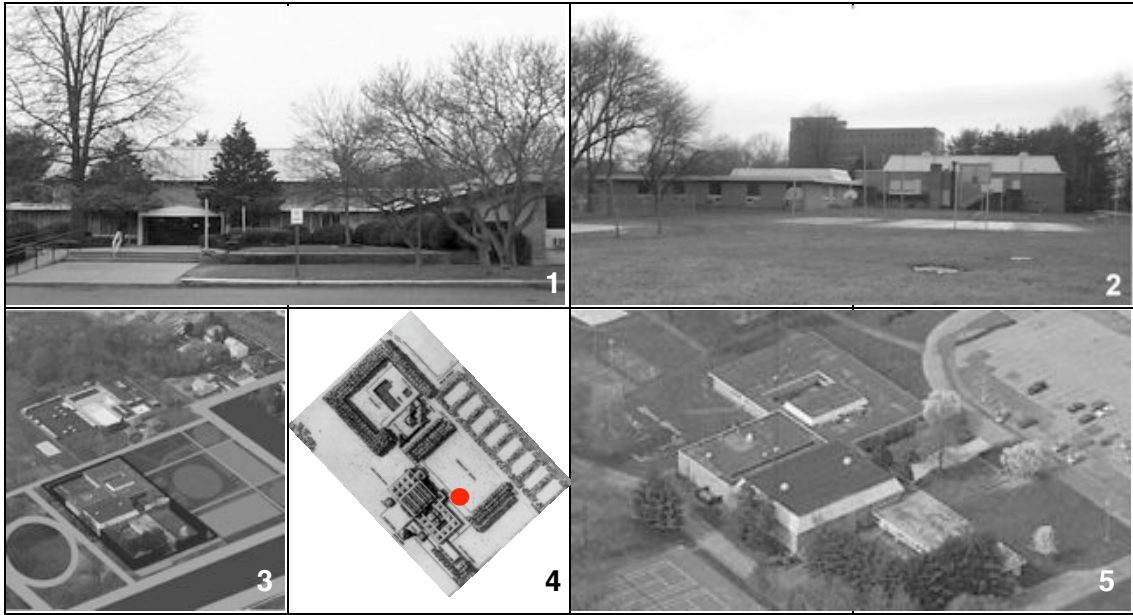
Residential interiors c1950s. (Source: memorystore.org.uk)

Matrix

An interpretation of the main Community Center building employing the topic *tribal alliance* provides a forward glance at community relationships in the 21st century. Perhaps most tellingly, of the four topics selected to illustrate the theme *Discovering Community*, this last is the most difficult to present in simple, precise terms. Union, association, group, club, organization, affiliation – none fully captures the essential nature of this broader interaction. These terms appear deficient, each in some elemental way: too abstract or overly formalized, too limited or not specific enough. Community, in the larger sense, may be conceived of as a bonding experience generally lacking the intimacy implicit in family interactions. *Tribal alliance* suggests a better balance, although the expression is somewhat archaic.

The previously discussed topics of *youth* and *maturity* recognize a developmental progression well suited to an interpretive narrative for children's play on the one hand and, on the other, to an acknowledgment of the contemplative quality present in the architecture of the Bathhouse. For comprehension of scale, *family structure* sets a baseline for the recognition of degrees of social integration. Framing the discussion in the 1950s allows parallel studies of the components of family within the context of the post-war period and as contrasted with the contemporary interpretation to be given to the Community Center building, here to be identified as Ewing Center.

Similar to the way that Cape House reflects the standards of residential design in the 1950s, when Louis Kahn introduced his experimental architectural concepts, the main building of the Community Center, designed by Kelly & Gruzen, Architects, represents a style common to public buildings of nontraditional design during this period. Kahn's proposals for the Jewish Community Center demonstrate his comprehensive vision for the project and help illustrate the order he imposed on the development of the site. Instead of commanding the primary position in the hierarchal order of Kahn's architecture, the design by Kelly & Gruzen is a repudiation of all that Kahn's work implies. The building stands as a formal and undeniable acknowledgment of the prior failure in communication between client and architect - between expectation and invention - that is more subtly, and at the same time more aggressively, expressed in the obvious lack of necessary care given to Kahn's buildings.

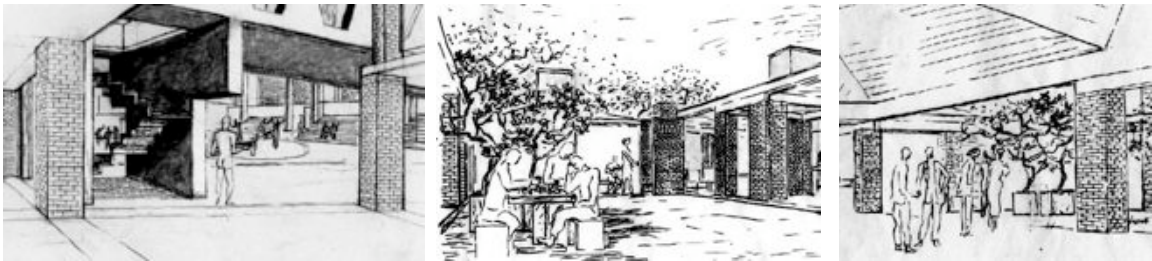


1,2: Community Center Building, Kelly & Gruzen, Architects, Ewing, New Jersey, 1961; 3: Site Study, Community Center (Author); 4: Site Plan, Louis Kahn 1957; 5: Community Center Building 2007.

Tribal Alliance (Ewing Center)

The topic *tribal alliance* demonstrates how interpretation may be used to refocus attention from divergent components of a landmark site back to a central, unifying theme. The Kelly & Gruzen scheme for Ewing Center has distinct historic validity and is worthy of recognition as an example of vernacular architecture of a particular time and place: the 1950s in a typical American suburban community. The dated vocabulary of its architectural intentions is informative of the context of its creation. The predictability of its style contrasts starkly with the singular, timeless creation that is Louis Kahn's architecture. Proximity makes this comparison impossible to ignore. For this reason, the Kelly & Gruzen design should not be ostensibly altered. What is proposed in the building's interpretation is to accent the components of the program introduced by Ewing Township for its new community center.

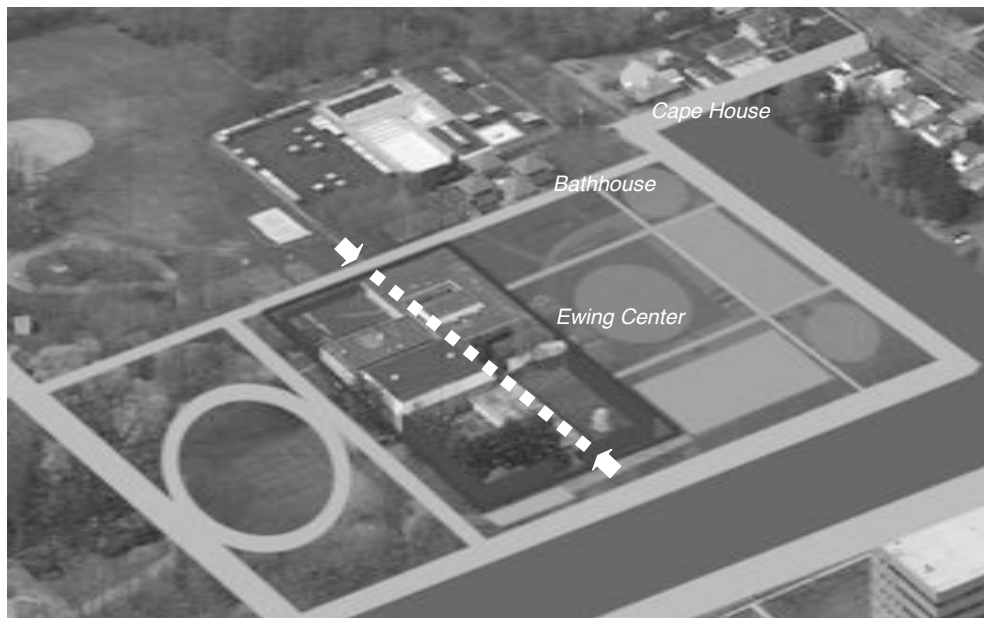
In a parallel structure to the interpretation of the site that has already been described, the function of Ewing Center will be to accommodate three groups: Children's Day Care (Youth), Adult Recreation (Maturity) and Senior Center (Community). The diverse interests and needs of these core groups are to be gathered under one roof, testifying to the cohesiveness of civic dependencies and the implied benefits of mutual support. Ewing Center is to be interpreted as a model of community organization supporting the hierarchy of the existing social order. From this origin, the specialized functions of individual buildings of the complex, Day Camp, Bathhouse, Cape House Museum, are distinguished.



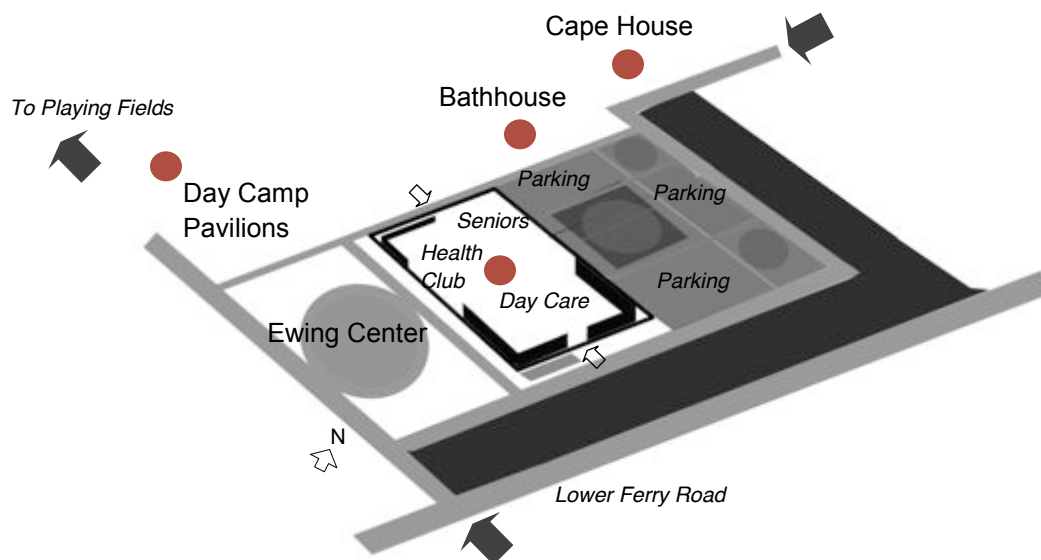
Kahn Sketches: Jewish Community Center Building 1957.
(Source: Louis I Kahn Archives, University of Pennsylvania)

From the entranceway, a wide corridor connects three main spaces: children's daycare, adults' health club and seniors' craft areas and classrooms. The central corridor of the building is to be transformed into an interior street with the introduction of skylights extending the length of the building from north to south. This gallery is lined with glass partitions giving transparency to community activities within the building. Immediately adjacent to the entrance lobby are the offices for program planning and administration. The progression of activities within the building is similar to the differentiation of activities in Louis Kahn's plan for the site. To help highlight the

structure of this arrangement landscaping is introduced to reinforce the comprehensive order of the original plan. To provide transitional elements similar to those planned for the original building, courtyards have been added to support the three primary activities: daycare, health club and classrooms. An entry plaza marks access to the building as indicated in Kahn's preliminary studies for the site.



Ewing Center: Proposed Site Circulation and Parking Plan 2007



Chapter 9. Interpreting Wonder

In Praise of Monumentality

Ken Smith's landscapes are usually challenging, always unexpected, often beguiling. Of all the submissions received in 2005 for an interpretation of the Bathhouse, his is perhaps the most visually compelling.⁹⁵ He celebrates the formal monumentality of Louis Kahn's architecture with a powerfully conceived geometric landscape of waterworks, tree groves and linear walkways. The building is given a central focus evident in a site plan completed in 1956 when Kahn was exploring concepts for the main Community Center building (Figure 21). Kahn's landscaping of circular grass mounds is reinterpreted by Smith using large pools to accentuate a grand forecourt placed on axis leading to the two existing, symmetrically placed corner entrances to the Bathhouse. The building appears to float on a man-made island that is bridged at the rear to the raised podium of the swimming area conceived in Kahn's plan. The incised circle in the building's concrete paving that was intended to collect roof runoff in the atrium is transformed into a small reflecting pool at the center of the architectural composition. Smith's landscape elicits strong associations with Kahn's design and landscaping for the National Assembly in Dhaka, Bangladesh completed in 1983.



aidanfinley.blogspot.com

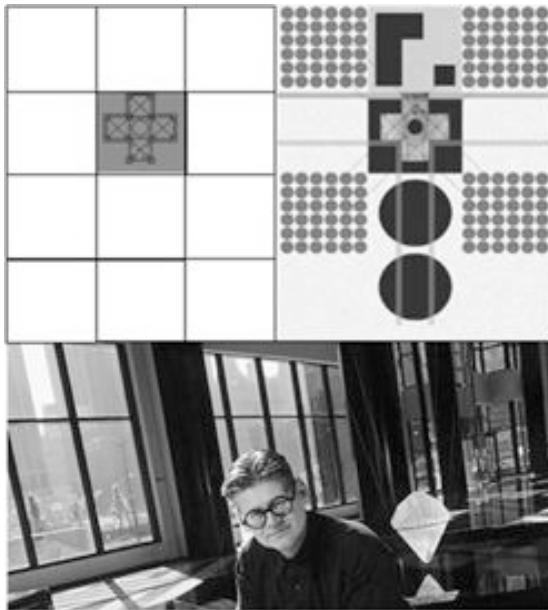


bangla2000.com/Bangladesh/national_icons

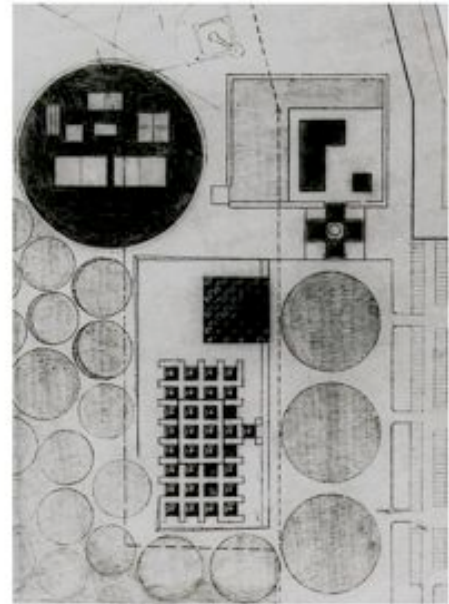


architypes.net/image/bangladesh-national-assembly

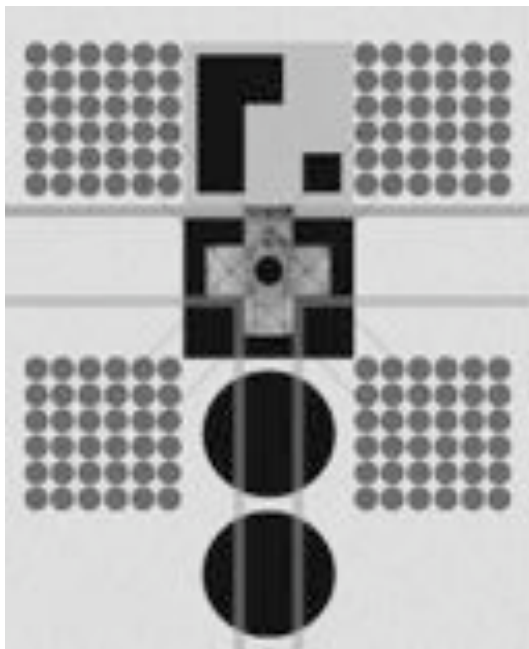
Figure 21



2005 Bathhouse plan submitted by Ken Smith, Landscape Architect



Kahn Site Plan 1956



"If I Owned the Trenton Bath House..."
Art's Garage, 326 4th Street, Ewing, NJ

(Source: aiany.org/eOCULUS/2005/2005-08-23)

Landscape architect Ken Smith submitted the design shown at the left as his suggestion for what to do with the Bathhouse. Taking his cue from Kahn's site plan (July 1956) completed after construction of the Bathhouse, Smith introduces waterworks as a defining element in the setting for display of the building.

The proposal creates an external grandeur that requires Kahn's building to assume a monumentality that may be beyond the appropriate scale of his architecture. The power of the Bathhouse rests with an awareness of the element of discovery. A significant component of Kahn's design is the tree grove he introduced to screen the simplicity of the building's forms and to provide a transition from the parking area to the Bathhouse through a more natural, but manmade, landscaped setting. The tree grove subtly suggests a higher order directing movement along the pathway leading to the Bathhouse.

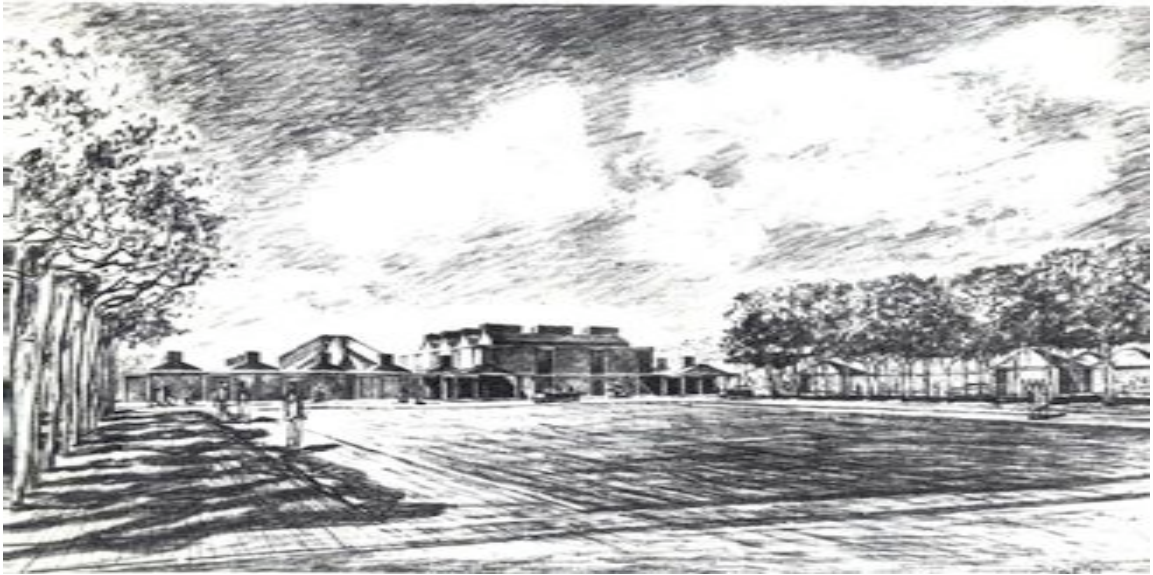
Kahn intentionally presents a conflict of choice as to how to enter the building. The initial perception is of a necessary interaction requiring faith or trust in one's instinct or inner judgement. Significantly, discovery of the building's core is inevitable. The choice is revealed as inconsequential with either of the two entrances yielding identical results.

In Smith's interpretation, the appreciation of choice is eliminated and the perception of the building as a complete artifact competes with the ultimate supremacy of the interior space.

It is interesting to note that each of the submissions for the 2005 exhibit imply some aspect of the interpretative principles described in Chapter 4: Rhyme and Reason. The work offered by Smith resonates strongly with concepts of monumentality identified by Alois Riegl in his discussion of “deliberate commemorative value.” What can be criticized in the seductively poetic quality of Smith’s landscape is the alteration imposed on the order of Kahn’s composition. Taken even at face value, a disturbing adjustment has been made to the character of Kahn’s design. Ironically, Smith acknowledges the undesirable consequences of such transpositions in his evaluation of proposed alterations to the landscape design by Dan Kiley for the Vivian Beaumont Theater’s North Court at Lincoln Center in New York City. Smith states that preservation of Kiley’s plan is essential because it “creates spatial containment and a balanced relationship between the series of open plazas, courts and shaded bosque areas.”⁹⁷ There seems to be no compelling justification for altering this historic and significant landscape design...The destruction of a seminal work of landscape architecture by the Presidential Medal of Arts recipient, Dan Kiley, is a serious issue within the landscape architecture and historic preservation communities.”⁹⁸

The juxtaposition of Louis Kahn’s architecture with Smith’s contemporary interpretation forces a repositioning of the Bathhouse away from its evolutionary standing toward a state portending the maturity of Kahn’s later masterworks. By diminishing the distinction of the building’s position in time and place, Smith distracts from an understanding of where the building fits within the progression of Kahn’s art. The design of the Bathhouse exists as a suggestion of becoming rather than as a statement

Figure 22



*Kahn Sketch of Jewish Community Center published in Architectural Forum, October 1957.
(Source: Louis I Kahn Archives, University of Pennsylvania)*



Kimbell Art Museum, Fort Worth, Texas: 1966-72 (Source: Louis I Kahn Archives, University of Pennsylvania)



dallasartsrevue.com/art-crit/Kimball-Meadows



kimbellart.org/building/building



bluffton.edu

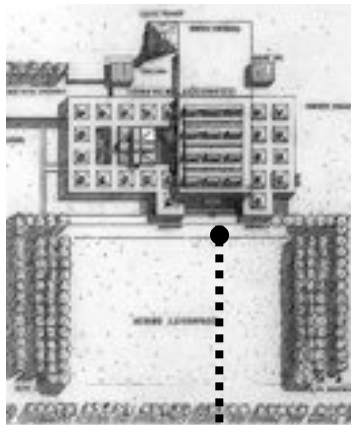
The landscape planned for the Jewish Community Center and for the Kimbell Art Museum exhibit similar concepts for exposing the main building of the architectural composition at the point of orientation and then for introducing screening devices to enhance the discovery and appreciation of design details at a more intimate and personal scale. The tree grove created at the Kimbell Art Museum resembles the grove shown surrounding the Bathhouse.

of achievement; it is a conceptual sketch later to be transformed into art as seen in such acclaimed works as the Kimbell Art Museum in Texas and the National Assembly in Bangladesh – the model assuming reality (Figure 22). It is through his design of the landscape for the Jewish Community Center that Louis Kahn creates an environment of discovery for the visitor and for Kahn himself, a laboratory of exploration. Here architecture is impressionistic rather than finite. Kahn conjures a realm for self-discovery, the principle objective of interpretation.

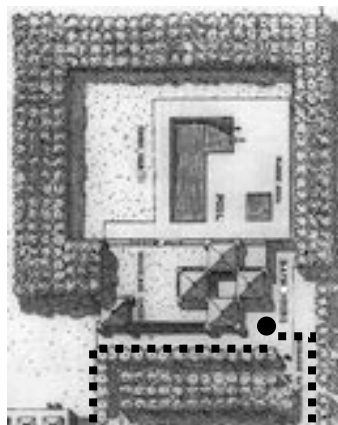
Neither Five Nor Three

Concerning the mechanism of interpretation, author, educator and communications expert Sam Ham offers the succinct challenge, “So what?” “So what” exists as a question at the beginning and at the end of the discovery of meaning, what Louis Kahn identified as “the wonder in us.” While the purpose of interpretation is to establish connections, to define relationships, to provide a bridge between previously disjointed points of view, the process is open-ended and, therefore, inherently non-conclusive. To see similarities, implicit dissimilarities must be acknowledged. In this regard it is helpful to identify several prominent features of Kahn’s plan for the site (July 1, 1957). Of primary importance is the distinction that the main building of the Community Center is completely exposed in the initial view of the site. Significantly, the Bathhouse is not. It is seen through a screen of trees similar to the setting created for the Kimbell Art Museum

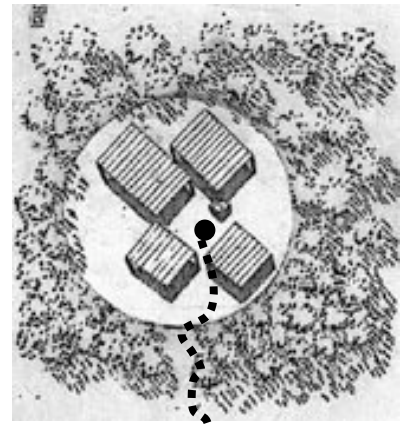
in Fort Worth, Texas (1966-1972). The approach to the main building is direct, singular and clear. In contrast, the entrance to the Bathhouse is concealed, posing a challenge for discovery that is only somewhat ameliorated with the belated application of a wall painting to suggest the location of the primary access to the building. Choice is necessary to determine how to enter the Bathhouse. For the Day Camp, exploration is a requirement of discovery.



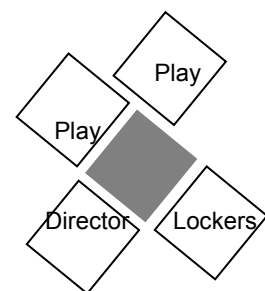
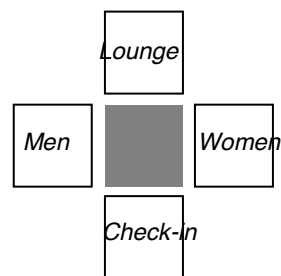
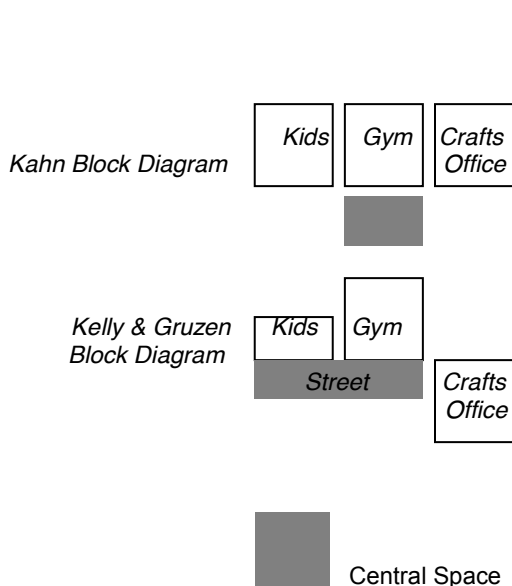
Ewing Center



Bathhouse



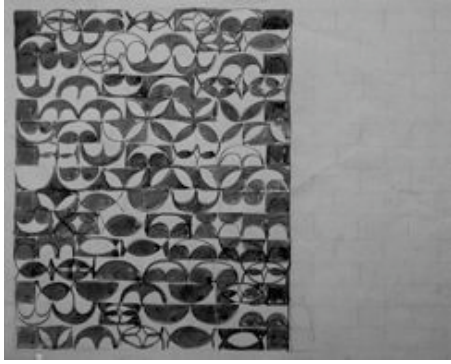
Day Camp



Kahn explored the nature of a primary gathering space in three different arrangements for the buildings designed for the Community Center. For the main building, the street is used as the concept to provide structure for his plan. For the Bathhouse, it is the balance of stability inherent in the building's geometric symmetry. In the layout of the Day Camp, the order of the Bathhouse is exploded to introduce tension and to encourage exploration and resolution.



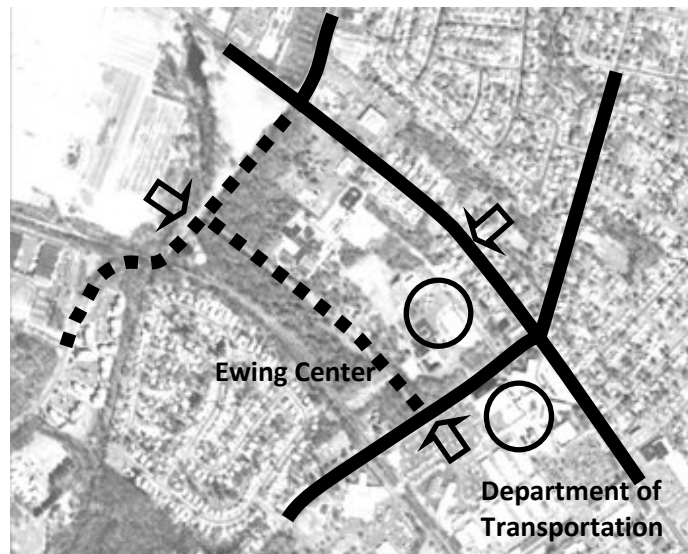
Mural at Entrance to Bathhouse



(Source: Max Protetch Gallery: hyaku.pair.com/~maxpro/MEDIA/0071)

Whereas the entranceway to Ewing Center is easily discernable and access to the Bathhouse is somewhat circumspect, the path leading to the Day Camp is more circuitous, the objective initially obscured from view.

In the proposed plan for interpretation of the Community Center buildings, the circulation of the site has been modified to reflect the anticipated expansion of use of the existing buildings following the conversion of the property to public ownership by



Mercer County and Ewing Township. It is suggested that the interpretive program include a museum and research library to help promote greater interest in the project and to generate additional income. Expansion of existing facilities would be accommodated with the purchase of a c1950 cape-style house located adjacent to the Bathhouse. Primary access to the site would be relocated to a point opposite the entrance to the Department of Transportation building on Lower Ferry Road. A second entrance is proposed at the end of Gold Street with Cape House serving as the main gateway for visiting tourists.

[T]he appreciation of Beauty...is vital to our moral growth. [W]e have always known, in our innermost recesses, our dependence upon Beauty for the courage to face the problems of life. We have let ourselves forget. It is the duty of the interpreter to jog our memories. – Freeman Tilden, *Interpreting Our Heritage*.⁹⁹

Limits of Possibility

Perceiving possibilities is essentially what interpretation is all about. The interpretive theories of Freeman Tilden and the principles he prescribes in *Interpreting Our Heritage* offer useful guidance. He suggests that interpretation is “revelation based upon information” but claims that interpretation, unlike information, allows perception of something more than just the quantifiable. It exposes the art of art. He states, “Interpretation is the revelation of a larger truth that lies behind any statement of fact.”¹⁰⁰ He cautions that interpretive requirements for children are unique and not just a “dilution of the presentation to adults.” Tilden advises that presentation for a young audience should follow “a fundamentally different approach. To be at its best it will require a separate program.”¹⁰¹ This distinction is especially relevant when a program of interpretation is applied to the Day Camp and to the Bathhouse. The Bathhouse requires an attending to issues of concern with a different priority than those for the Day Camp. The validity of various programs - their appropriateness in terms of preservation interventions and their effectiveness as concepts for interpretation – necessitates different standards for evaluation.

Challenges for the architect managing the preservation of the Community Center are daunting. It has been argued here that the Bathhouse, the self-proclaimed “seminal” work

of world-renowned architect Louis Kahn, is fundamentally flawed in its design for managing roof drainage and therefore, most likely, will require an approach to preservation that is in conflict with maintaining accepted standards of integrity for landmark structures. How the prosaic topic of water runoff is approached will undoubtedly receive protracted, international scrutiny. Such aggressive oversight assures that an acceptable and well-reasoned solution will ultimately evolve. (The success of how well this resolution is implemented is another matter.)

For the landmark structures of the Day Camp, the story is critically different. It seems inevitable that the lack of general recognition of the architectural importance of these historic structures will be rectified through preservation activities undertaken at the site of the Community Center. There is justification, therefore, in the concern that the pavilions may suffer the adverse consequences of too many good intentions. Whereas the Bathhouse is guaranteed to receive the sophisticated and appropriate attention its iconic standing requires, the Day Camp may fall prey to an overly self-conscious analysis that strays toward the ponderous rather than the playful. The restraint required is to avoid a too-precious interpretation that is destructive or counterproductive to engendering the innocence, joy, spontaneity and *incompleteness* that Louis Kahn identified as essential elements of play.

A further complication is the need to address Kahn's architecture as designs in progress. Corrections and modifications introduced to compensate for miscalculations or technological failures sacrifice integrity and may misrepresent the definition of a

masterwork. For the preservation professional confronting Riegl's choice of age or historic value, selecting the road to ruin seems conceptually hard to legitimize.

Interpretation of the Day Camp should be considered first and quite literally from the point of view of those for whom the buildings were intended. "Chapter 6" set the stage for a plan of interpretation where wonder is the evaluative criteria for moderating action for the preservation of the Day Camp structures. It is anticipated that an adult response of horror or resistance to the suggestion of perusing an open-ended strategy may signal that this approach to interpretation comes perceptively close to what, in fact, validates appropriateness within a child's world. It is conceivable that the white stucco pavilions described in Louis Kahn's specifications speak to children in a way that encourages them to imagine how the buildings of the Day Camp may be finished similar to the colorfully painted buildings of Kahn's first sketches. The free expression he gave to these earliest drawings becomes constrained as he moves into his third year of maturing work on the project following construction of the Day Camp Pavilions. Unquestionably, it is more difficult for the average viewer (and more improbable for the professional consultant) to express a preference for the childishly constructed cabins located below the site of the Day Camp than to acknowledge the failure of the abandoned ruins that are the remains of Kahn's work. It is worth considering, however, that the most appropriate choice may be the path not typically taken. This may lead to the wonder that Kahn intended for children of every age to discover all along.



Zoe, Age 5
(The Creativity Institute, Inc., 2005 creativityinstitute.com/index)



Eric, Age 4



Kotryna Starkus
citrina.lt/vaikai/eng

The End of Childhood (The Day Camp Pavilions)

A program of interpretation for the Day Camp should be structured to support Kahn's proposition that the environment for children's play needs to be incomplete, providing the opportunity to engage with their surroundings in creative ways. Solomon suggests that Kahn was likely aware of the concept of "adventure playgrounds" being advanced in the 1940s in Scandinavia by landscape architect Carl Theodor Sorensen.¹⁰² She writes that Sorensen advocated play areas where children could

*engage in free exploration...[and] would be free to construct buildings for their own play, usually huts or caves. Each adventure playground would have one permanent structure for bad weather but the rest was conceived and executed by the kids. Kahn's pavilions could accept children as builders. He certainly would have endorsed a facility that could bring forth a variety of activities and creative endeavors.*¹⁰³

The restored white stucco walls of the Day Camp Pavilions facilitate the initiation of such "creative endeavors." The inclusion of playhouses expands opportunities for children's reconstructing these structures as part of a program of creative engagement. The camp is home base for excursions into a larger world. It encourages experimentation

within a controlled environment and promotes exploration of previously unimagined opportunities.



Kahn Sketches for First Design of Bathhouse, February 1955.
(Source: Louis I Kahn Archives, University of Pennsylvania)

Freedom from Constraint (The Bathhouse)

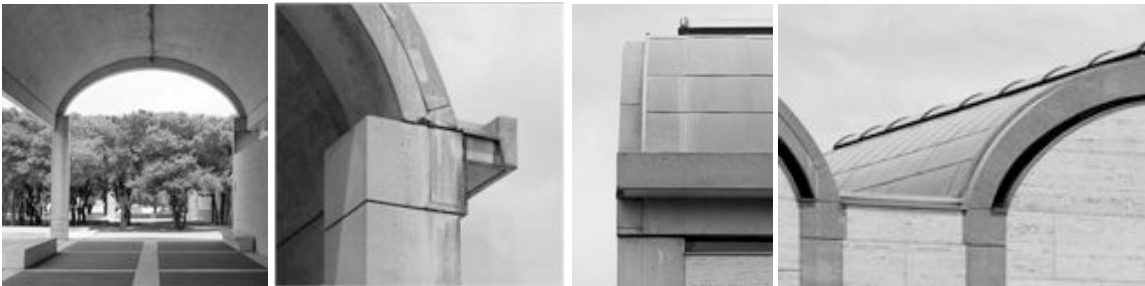
Whereas the emphasis of interpretation for the Day Camp is liberation from preconceived boundaries, the focus of the Bathhouse is the balance of a natural order, the harmony in choice rather than coercion, the recognition of the supremacy of guidance over control. The deteriorated condition of the Bathhouse exhibits a failure of water management. (Chapter 7 provides an extended description of these conditions.) Of interest here is a comparison of the design for the Day Camp and for the Bathhouse. The simple geometry of the Bathhouse expresses a monumentality that is absent in the architecture of the Day Camp Pavilions. Modifications to the Bathhouse must recognize this maturing sophistication. What is needed is not just a simple solution, but one, like the scientific equation, that can be described as “elegant.” Louis Kahn provides numerous examples of how water can be expressively channeled through his buildings. Water’s source is clearly identified and natural flow is given architectural modified at significant points of transition. Below are illustrations of waterworks designed for the Kimbell Art Museum in Fort Worth, Texas and the Salk Institute in La Jolla, California. Water

channels, flashing conditions and points of collection can easily be identified in the roof architecture of the Kimbell Art Museum.



Fountains: Kimbell Art Museum
(Lawrence Harris narrowlarry.com)

Salk Research Laboratories
(Ken Mccown flickr.com/photos/tags/salk+institute) (mello yello flickr.com)



Gutters: Kimbell Art Museum (Liao Yusheng; figure-ground.com/travel/image)

The end collector detail shown above for the Kimbell Art Museum is proposed for reinterpretation in black metal for the gutters to be added to the Bathhouse. Folded metal splash blocks are to be added at points of collection as shown in the detail on the following page.



Bathhouse Support Column
(ewingobserver.com)

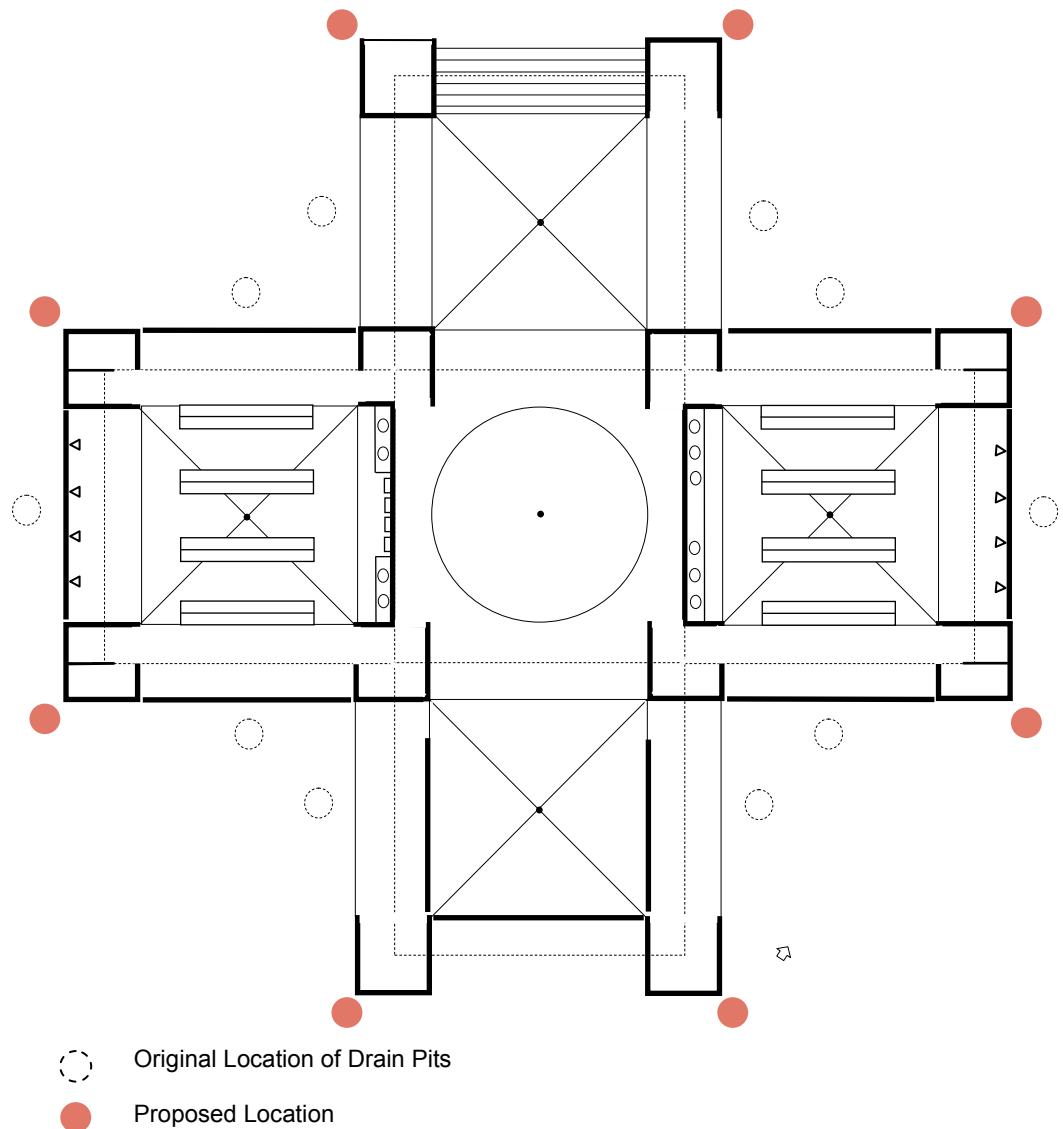
Block Wall Condition
(home.mindspring.com)

Added Roof Drainage
(greatbuildings.com/models/TrentonBathHouse)



Folded plate splash block. Outer edges to extend beyond face of column.

It is proposed that all block walls be sealed to reduce soiling and structural deterioration. Circular, gravel-filled drainage pits are to be located at splash points beyond the support columns. The pits are to be detailed as shown in the original construction documents. Modifications to the layout of the Bathhouse, as shown below, are proposed to provide handicapped access to the locker rooms.



Chapter 10. Connections



Indian Fields, "Prairie Village's most desirable neighborhood," Johnson County, Kansas
(Source: 1,2,4 Google Maps; 3 Geographic Monument, Lebanon Kansas: kansasphototour.com/center)

Innovation

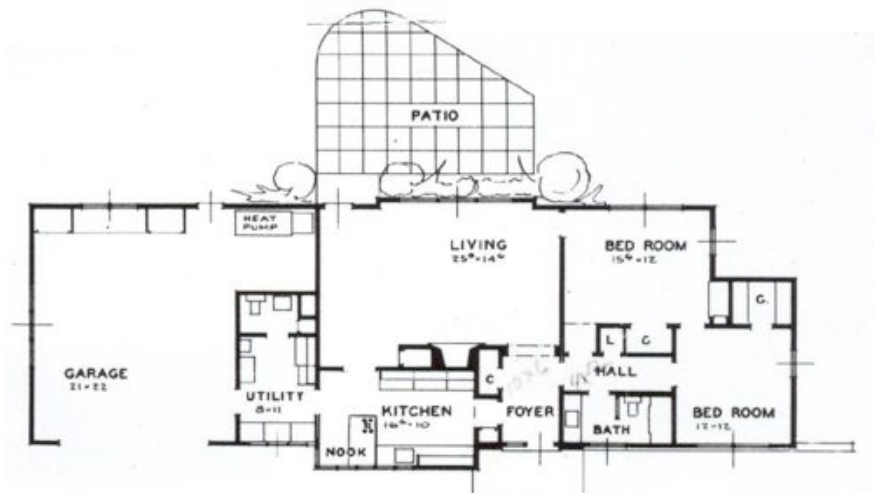
Housing created in the Post War era demanded new solutions for providing an unprecedented number of homes in the suburbs of America's older cities. The ubiquitous track house that was produced for the inevitably indistinguishable suburban development is the common legacy that remains of the challenge for design and construction innovation in the 1950s and 60s. The diversity of the historic urban center became homogenized in a new ex-urban social structure that suggested universal assimilation but

which actually promoted economic, social and ethnic segregation more restrictive than anything the city had yet conceived.

Geographically speaking, Indian Fields is about as middle America as you can get. Located ten miles south of Kansas City and some 250 miles east of Lebanon, Kansas - the geographic center of the “Lower 48” – this typical subdivision of the 1950s was the site chosen for the construction of Kansas City Power and Light's All-Electric House in 1954. This promotional effort was undertaken by the power company to introduce the use of heat pumps for air conditioning of homes in residential developments rapidly appearing in the suburbs around Kansas City.¹⁰⁴



*The 1950s All-Electric House: Johnson County Museums, Johnson County, Kansas
(Source: ocohistory.net/teachers/tours/50shouse)*



In 1994 the house was purchased by the Johnson County Museum of History, moved to the organization's site in nearby Shawnee, Kansas and opened as a museum of Post-War suburban America housing. The exhibit is part of the interpretive theme "Seeking the Good Life" and presents the period 1945-present with the topic "Edge City Ideal."¹⁰⁵

In a similar effort to bring an awareness of 1950s housing innovations to the attention of the general public, Jim Morrow, a retired building-supply retailer and real estate broker, opened his home as a period museum in 1991.¹⁰⁶ The Lustron House that he purchased that year at 411 Bowser Avenue in the eastern Chicago suburb of Chesterton from the original owners for \$52,000 was built in 1950. In 1992 he had the house listed on the National Register of Historic Places as the Norris and Harriet Coombs Lustron House. Beverly Overmeyer, author of the listing, described the historic property as follows:

*The Norris and Harriet Coombs "Lustron House" built in Chesterton, Indiana, in 1950 is of exceptional architectural importance at the local level as a rare and intact example of a significant manufactured housing type employing an unusual building material. The Lustron House was constructed with a steel framing system to which porcelain enameled steel panels were attached. The house fits into the prefabricated housing tradition well established by firms such as Alladin and Sears in the early 1900s.*¹⁰⁷

Douglas Knerr, associate professor of social sciences at Chicago's Roosevelt University, cites the Coombs house in his book *Suburban Steel: the Magnificent Failure of the Lustron Corporation, 1945-1951*, adding that preservationist Mary Kircher of the Brookfield (Illinois) Historic Commission describes Lustron houses as "unique to the

Figure 23



(Bottom) 1949 Lustron Model Home, New York City (Source: piranhagraphix.com/Lustron/FactsandLinks)

Lustron Homes were manufactured in Columbus, Ohio beginning in 1948. Carl G. Strandlund convinced the Federal government to invest \$40 Million in his Lustron Corporation to promote the purchase of prefabricated, mass-produced, affordable single-family homes to help reduce the extreme housing shortage immediately following the conclusion of WWII. By 1950 the company had declared bankruptcy due to production delays and political complications. Only 2498 homes were manufactured from an initial production goal of 150 homes per day. The houses were marketed to sell for between \$8500 and \$9500, about 25% less than comparable conventional housing.

American landscape and a legacy to the American people.”¹⁰⁸ (Figure 23). He evaluates the continued fascination with the design distinctiveness of prefabricated homes:

*There is still nothing quite like it, and anyone who has ever set foot in one is likely to remember the experience. From the beginning, the Lustron house received glowing reviews, and owners often became evangelists for the company... Clearly the design and quality of Lustron's product demonstrated that many Americans would accept a factory-made house, a significant accomplishment given previous perceptions of prefabricated houses as cheap, impermanent "crisis" housing.*¹⁰⁹

Lustron homes were manufactured in the Curtis-Wright plant in Columbus, Ohio with the first house completed in March 1948. A model home was constructed in Chicago and opened for public viewing on August 11; over 50,000 people ultimately toured the house. Historian Rosemary Thornton, the country's leading authority on Sears homes and contributing editor of *The Old House Web* explains:

*The watchwords of this postwar time were science, technology and know-how. It was inevitable that the hunger for new technologies and scientific ways would hit the architectural scene and create a radically new house.*¹¹⁰

Author and faculty member at Iowa State University, Kimberly Elman Zarecor, provides an especially revealing description of the accommodations required within the Jewish community that had relocated to the American suburbs in the 1950s.

The country experienced unprecedented economic prosperity as a result of the wartime economy, and the dispersed Jewish community thrived together with the rest of America. Many families moved out of the old urban centers and into new suburban developments that were isolated from their traditional urban neighborhood with its local synagogue; this new landscape was quite different for the small, segregated enclaves

where most Jewish immigrants had first settled. Many families in the suburbs lived in neighborhoods where there was a mix of religious affiliations, with the Jewish families being in the minority. In order to retain their congregations many synagogues were compelled to relocate to the suburbs, where land was cheaper and they could provide large complexes that served not only as houses of worship, but also offered classrooms, social halls, and recreational facilities.¹¹¹

Her observations, although primarily focused on the changing role of the traditional urban synagogue in its new suburban setting, are equally appropriate to the increased social demands placed upon the typical Jewish Community Center forced to follow its congregation into the wilderness of the expanding suburban frontier. Restricted access to private facilities within these new communities became all the more conspicuous in their non-urban context. The exclusiveness of suburbia harbored its own distinctly inescapable ghettos. Zarecor argues that dispersion required accommodation of community functions within the social structure of the synagogue. It is reasonable to credit the exclusionary nature of the suburban environment as also playing a part in the segregation of community facilities in the early years of development. The resulting demands appear generally consistent across the country for members of the evolving Jewish community. Jewish institutions were called upon to close the gap in the social contract of the suburban settlement, “to fulfill multiple duties that were not required in the former setting, such as sponsoring social gatherings, encouraging professional networking, and organizing youth activities to insure that the younger generation would not stray from their Jewish roots.”¹¹²

The Poet's Voice

*Truth is discovered in moving toward the untrue. A work of art embodies the period of its creation and, at the same time, breaks through prevalent social structures to reveal a reality hidden behind the surface. Art defines the appearance of its age while leaving a trace of the true conditions of its time. To interpret a work of art requires seeing both the untrue and the true, to glimpse reflections in the mirror and to perceive what is concealed.*¹¹³

Professor Goehr paused momentarily in her description of Benjamin's theory to find the word that had suddenly escaped her as she silently tracked across the front of the crowded lecture hall.

Kaleidoscope.

Kaleidoscope, she continued.

Walter Benjamin had envisioned a reconfiguration of scattered elements, a constellation of fragments seen as if viewed through some gigantic kaleidoscope; an imposition of order that denied random interpretation. Like the transformation of common Spanish tiles into fantastic mosaics (*trencadís*) by shattering discarded pottery, Benjamin's aesthetic theory suggests the destruction and re-visioning of the status quo as art's primary function. He proposed destroying the dark constraints of established order to reveal the brilliant light of new meaning. Fireworks for the mind.

By the Numbers

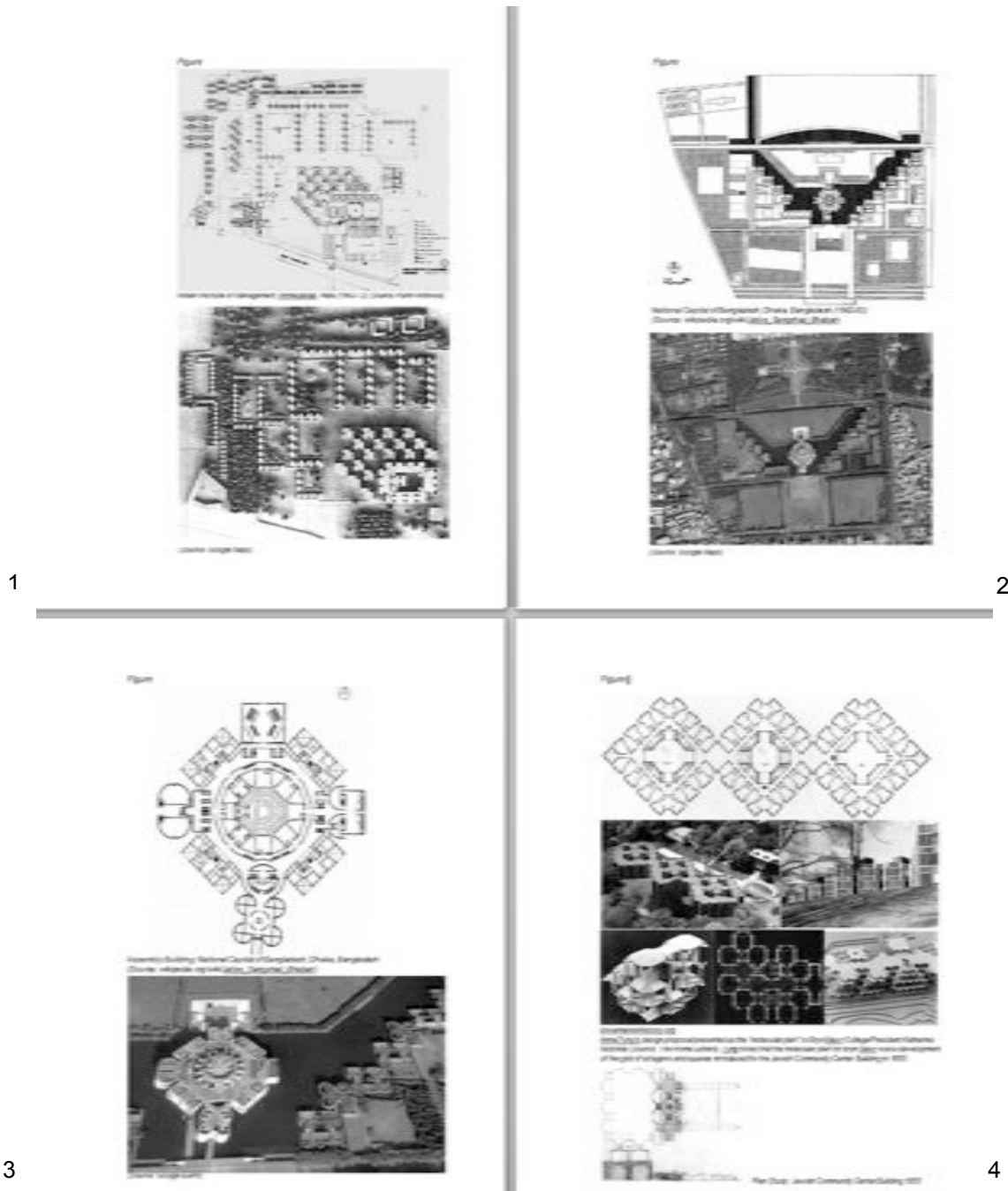
The kaleidoscope's geometric order was the structure Louis Kahn employed to inform the vision of his architecture. It was this rationalism beyond his Beaux Arts training that Anne Tyng introduced and which he freely acknowledged as her

contribution as “geometry conceiver.” After Tyng left Kahn’s office and undertook part-time teaching in 1968 at the University of Pennsylvania, Kahn asked her to help with “randomizing the geometry” of site plans for the Indian Institute of Management in Ahmedabad, India (1962-72) and the National Capitol of Bangladesh, Dhaka, Bangladesh (1962-83) (Figure 24). Tyng, who was by this time, at least within academic circles, identified as a talented mathematical theorist and an early proponent of the application of space frame technology, agreed to the request.

In her earlier work with Louis Kahn, Tyng provided not only the basic concept for the Bathhouse but also the geometric configurations of the grid for the site plan as well. Throughout her career, she continued to explore implications of two-dimensional Beaux Arts planning expanded into three dimensions. Kahn resisted and ultimately rejected this more rational, structured approach and sought, instead, a poetic interpretation as the source for his architecture. Unlike the innovative space frame assemblies of Buckminster Fuller’s engineering or the mega-structure configurations of Tyng’s cellular geometry, Kahn’s architecture emphasizes classical composition of individual, repetitive elements skillfully orchestrated into a commanding whole that is both unified and clearly symphonic at the same time.

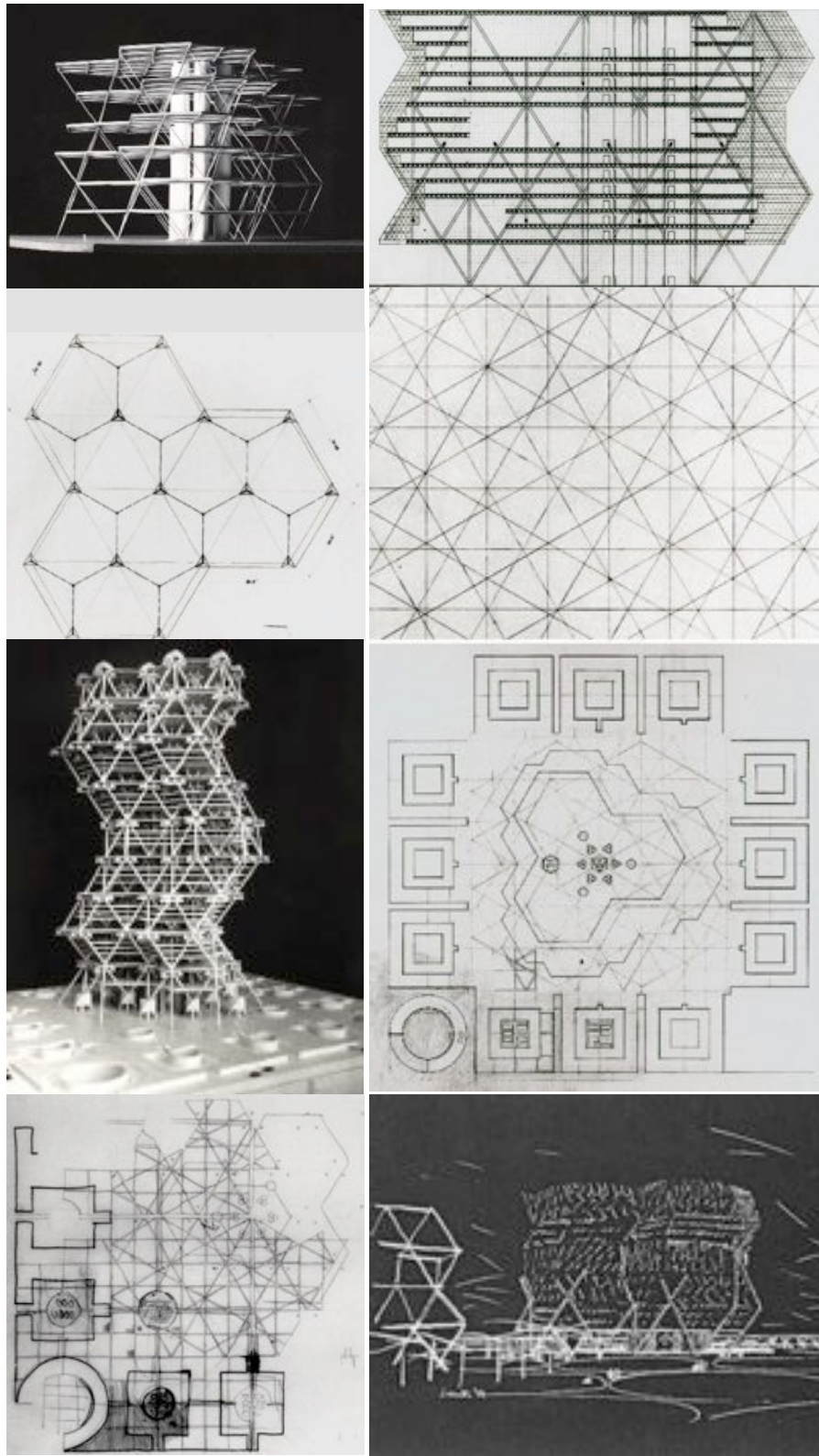
The distinction of this approach can be seen in the competitive designs that were simultaneously developed in Kahn’s office for the Erdman Hall dormitories at Bryn Mawr (1960-1965) (Figure 24). Tyng describes in her book, *The Rome Letters*, how Kahn established two teams to produce separate design schemes for weekly presentations

Figure 24



- 1: Indian Institute of Management, Ahmedabad, India (1962-74), site plan and model. (Source: Louis I. Kahn Archives, University of Pennsylvania).
- 2: National Capital of Bangladesh, Dhaka, Bangladesh (1962-83), site plan and satellite photograph. (Source: Louis I. Kahn Archives, University of Pennsylvania and Google Earth).
- 3: Assembly Building, National Capital of Bangladesh, Dhaka, Bangladesh (1962-83), plan and satellite photograph. (Source: Louis I. Kahn Archives, University of Pennsylvania and Google Earth).
- 4: Eleanor Donnelley Erdman Hall, Bryn Mawr, Pennsylvania (1960-65). Top plan and site photographs of Bryn Mawr Dormitory by Louis Kahn. Model and plan study by Anne Tyng for "molecular plan" concept. Bottom drawing is grid developed for the Community Center Building which was modified for Tyng's design for the Bryn Mawr project. (Source: Louis I. Kahn Archives, University of Pennsylvania).

Figure 25



City Tower Project, Philadelphia, Pennsylvania (1952-57). The top four illustrations show Tyng's concept for the building and the lower four illustrations indicate Kahn's contributions which added poetry to the geometric structure of Tyng's design. The work was finally credited to both architects in joint authorship of the project. (Source: Louis I. Kahn Archives, University of Pennsylvania).

to the client over the months of the project's early development. Tyng's architecture is holistic in concept and is readily predictable as her plans move to a three dimensional reality. Kahn's work, true to traditions of the Beaux Arts, is controlled by the implications of his plans; the culmination of his architecture, however, cannot fully be anticipated by its two-dimensional structure. Louis Kahn's blending of the rational and the poetic, the picturesque and the sublime, the counterpoint of rhyme and reason is nowhere more clearly expressed in graphic terms than in the plan he developed with Anne Tyng for City Tower in Philadelphia (1952-57) that was discussed in Chapter 2 (Figure 25). Here is recorded the literal overlay of Kahn's poetic intentions upon Tang's drawings of geometric order. Whereas Tyng's interests "lay in the rigor of a three-dimensional 'reading' of how geometry comes together, its genetic tendency, and how and where that tendency can lead to variations," Kahn's "extraordinary ability to draw and express the imagery of the space-frame tower made him impatient with the more time-consuming process of figuring out specific geometric relationships."¹¹⁴

The combination of these two forces – science and art – produced a new architecture that was powerful, direct and universal. Anne Tyng observes that design, at its best, is an amalgam of masculine, extroverted superimposition moderated by feminine, introverted receptivity. Such an amalgamation allows recognition of "all the complex multiple possibilities of time and space out of which the synthesis of a simple order may occur."

¹¹⁵ Louis Kahn's architecture remains original and still relevant more than 50 years after he created his earliest work. It is the essence of this timelessness that needs to be captured

in an interpretation of his architecture for the Jewish Community Center. What is significant is the message in the mastery of his art.

So What If I Owned the Bathhouse?

Engage, relate, reveal, signify – for interpretation, that’s the whole ball game. How one gets there is by moving across a bridge structured by the architecture of interpretation. In the case of Kahn’s work in New Jersey, once you look beyond fifty years of dirt, decay and defiant neglect, the deceptively-simple individual buildings can be seen as possessing a complex range of relationships that yield a meticulously-crafted, integrated whole. Yet a doubt remains. In a state of ruin, why is there such an apparent, aggressive dislike for these buildings and the environment of their existence? What can be done to create a more positive appreciation?

Essentially, as a society, why should we bother, why care, so what?

The debate invokes consequential issues not limited to New Jersey, suburbia, the 50s, Louis Kahn, modernization, segregation, or such general historical misunderstandings as the Cold War with its prospect of total nuclear annihilation. What is to be examined is the value of preserving our cultural heritage as part of man’s legacy to future generations. In this regard the discussion can be directed toward an optimistic point of view. Failure, if it exists at all, is in the misunderstanding of value. The antidote to this is the elemental purpose of interpretation.

So what if you owned the Bathhouse? The situation has significantly changed since Susan Solomon first asked the question in 2005. Then, the buildings of the Jewish Community Center were private property, up for sale and slated for possible demolition to make way for 130 units of luxury condominium housing. Today the historic site is in public ownership through a purchase by Mercer County and Ewing Township under New Jersey's Green Acres Open Space Conservation Program; the facilities will be used for local community recreational needs. As public property, and allowing an admittedly broad interpretation of possession, I now indeed do own the Bathhouse.

So what?

So the proposal is made that preservation activities for the Community Center support five primary conditions in an interpretive program structured to *engage, relate, reveal and signify* to all visitors the importance of Louis Kahn's plans for the site.

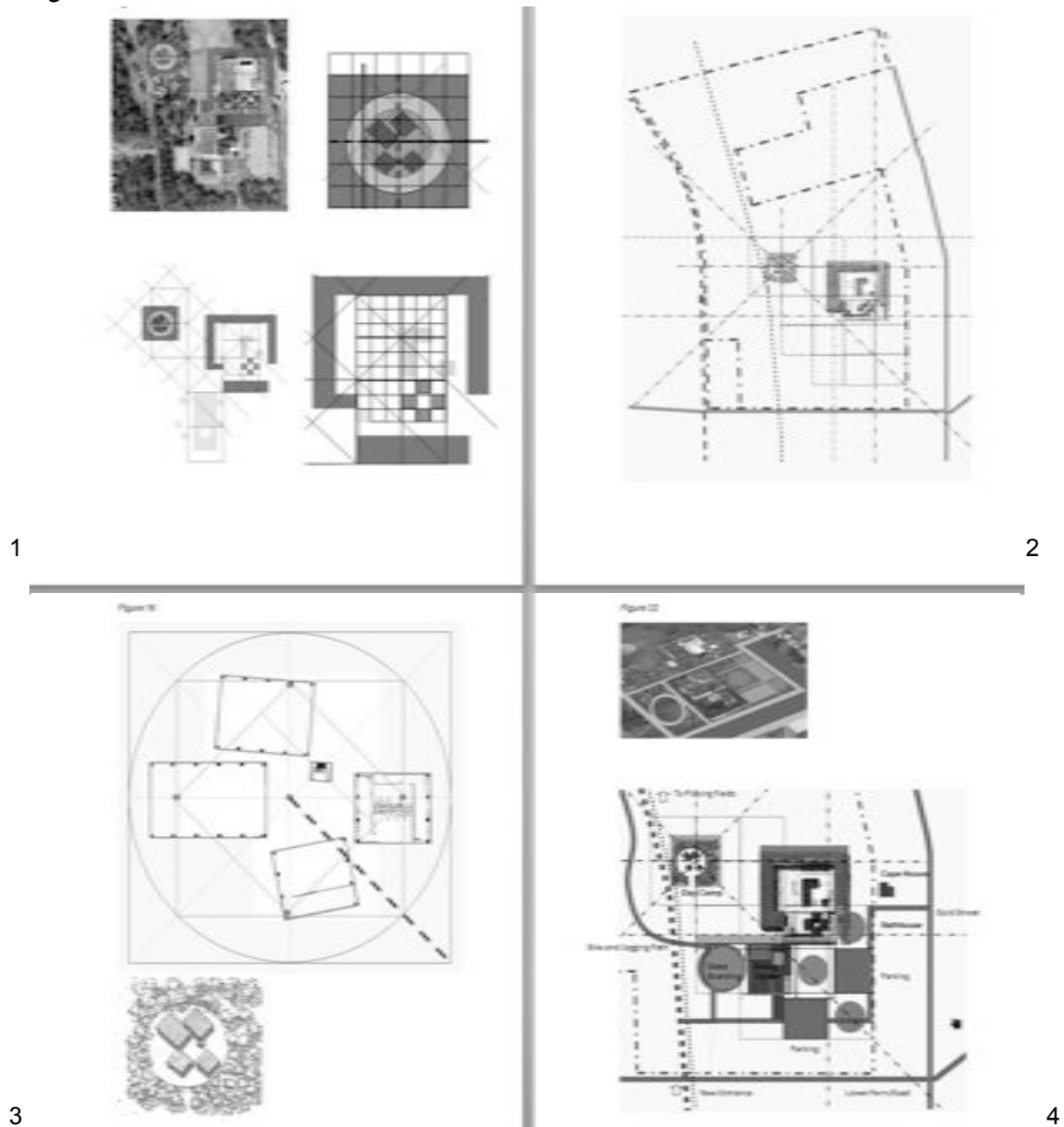
Condition 1: Nothing is Random

Kahn states that there is a universal order to all things. He concludes that this order can never be fully understood but that it exists, non-the-less, as an all-pervasive condition. Just as a kaleidoscope allows imparting a perceived structure to apparently random elements, the repetition of any system creates a geometrical pattern of predictable probability. Such patterning can be found in all of Kahn's work, even when he chooses to deny the constraints of the selected order. This pattern of

negation is evident in such designs as the Adler and DeVore residences (1954-55). Kahn describes the anomalies in these plans as contributing tension to the architectural dialogue. To explore the condition of accommodation and conflict and to suggest a structure in the apparently random layout of the Day Camp Pavilions, two studies are described with the following illustrations. The first (Figure 26) shows Kahn's site plan for the Jewish Community Center originating from the tartan grid of the Bathhouse's design. The grid for the main Community Center Building has been superimposed upon the grid for the Bathhouse to produce the grid of the final site plan (July 1, 1957).

The second series of diagrams (Figures 27 & 28) shows a similarity between the layout of the Day Camp Pavilions and the plan of the Agora in Athens (c.450 BC) as documented by the American School of Classical Studies at Athens in 1937. That plan, superimposed with Kahn's site plan (July 1, 1957), reveals a surprising alignment of buildings and a matching north orientation when the planning grid for the Community Center is rotated 45° to parallel the line of the processional way, the Dromos, traversing the agora. Although possibly coincidental, the arrangement suggests the Greek plan as a likely origin for the layout of the Day Camp Pavilions.¹¹⁶ The conclusion may be made that order, as Kahn believed, resides in everything. This is the principle that Kahn imposes on his plans for the Jewish Community Center and is the one that should be a primary consideration in preservation and interpretation of the site.

Figure 26



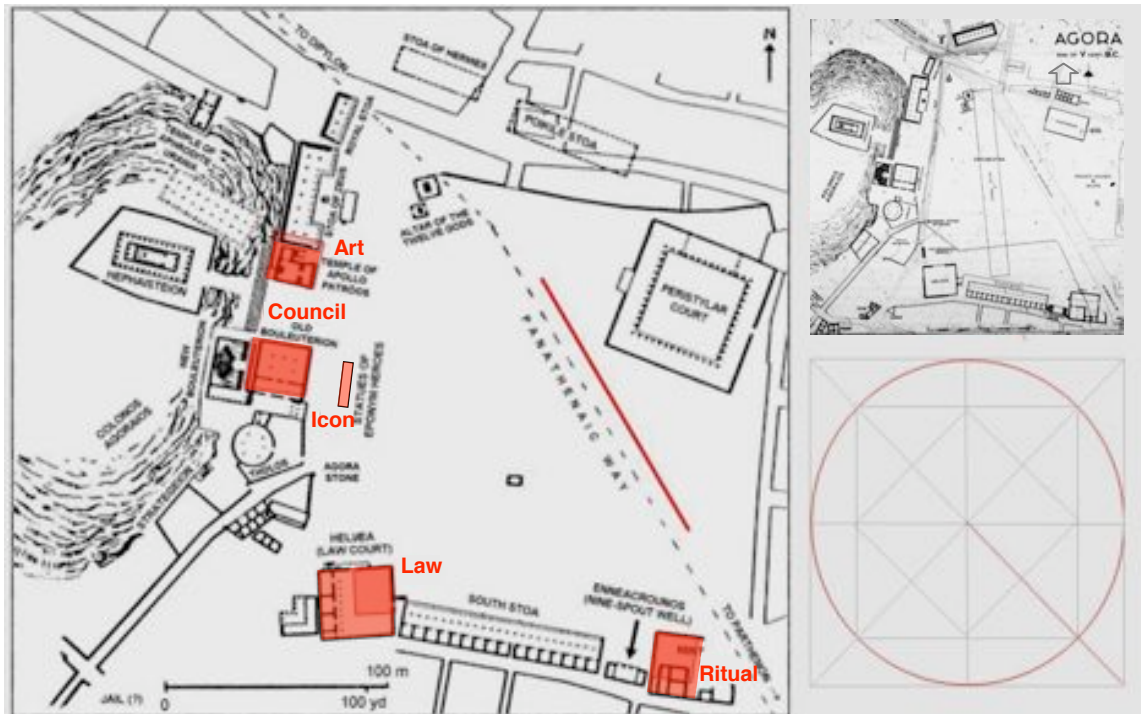
1: Grid studies showing the grid in Kahn's drawings for the Bathhouse and site construction drawings extended to the area of the Day Camp. A second grid is shown rotated 45° to intersect with the original grid. This compound grid system can be placed in alignment with a satellite photograph of the site and with Kahn's final site plan (July 1957). Significant elements of this grid are highlighted for the Day Camp Pavilions.

2: Major intersections and location points for relationships between the Bathhouse and the Day Camp are suggested in a larger scale grid superimposed on Kahn's site plan. Property boundaries are shown in dashed lines.

3: The layout of the Day Camp Pavilions can be plotted within the geometric order implied by the planning grid. The suggested linkage of this geometry to the Agora in Athens (c.450BC) is discussed in diagrams on the following page.

4: The grid of the original plan is shown extended south to cover the later construction and to indicate planning implications for proposed modifications to the site for preservation and interpretation.
(Source: Diagrams and illustrations by Author.)

Figure 27



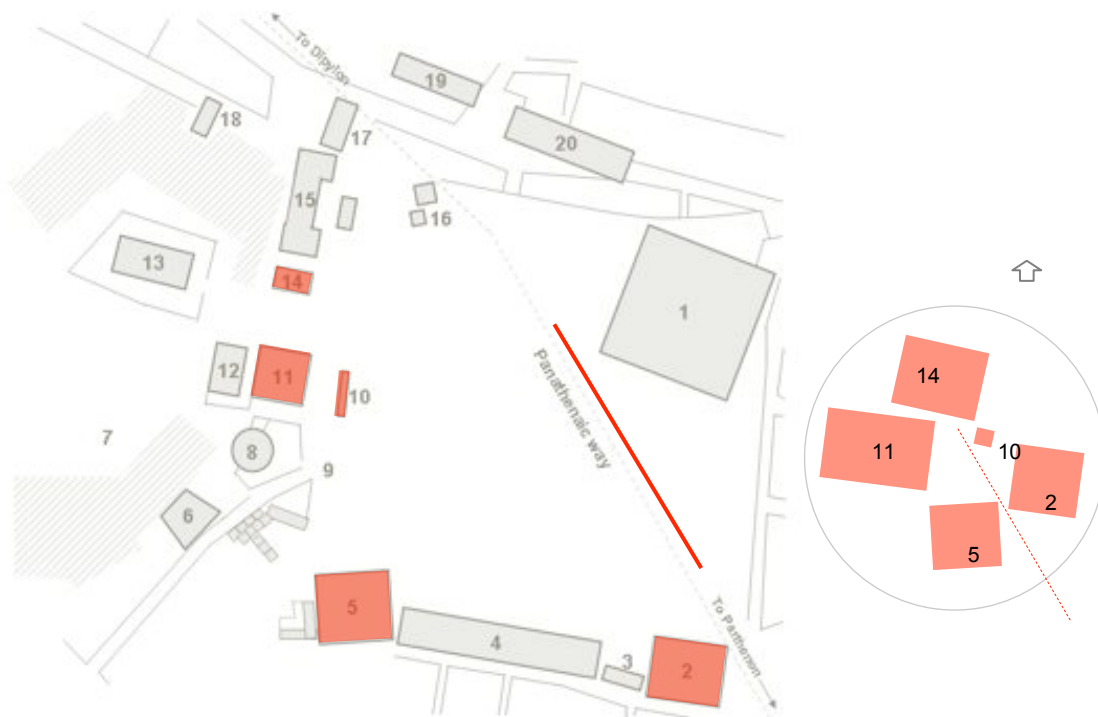
Agora, Athens, Greece c450 BC: American School of Classical Studies at Athens
(Source: ccat.sas.upenn.edu/~dromano/classes and plato-dialogues.org/tools/agora)



Athans, Greece 5th Century BC (Source: Boardman , John. The Cambridge Ancient History Volume 5, The Fifth Century BC, 2nd Edition, (Cambridge University Press, 1923).

Figure 28

- Key
- | | |
|---|--|
| 1 Peristylar Court | 11 Old Bouleuterion (Council) |
| 2 Mint (Ritual) | 12 New Bouleuterion |
| 3 Enneacrounos | 13 Temple of Hephaestus (Hephaestion) |
| 4 South stoa | 14 Temple of Apollo Patroos (Art) |
| 5 Heliaea (Law) | 15 Stoa of Zeus |
| 6 Strategeion | 16 Altar of the Twelve Gods |
| 7 Colonos Agoraios | 17 Royal stoa |
| 8 Tholos | 18 Temple of Aphrodite Urania |
| 9 Agora stone | 19 Stoa of Hermes |
| 10 Monument of the Eponymous Heroes (Icon) | 20 Stoa poikile |



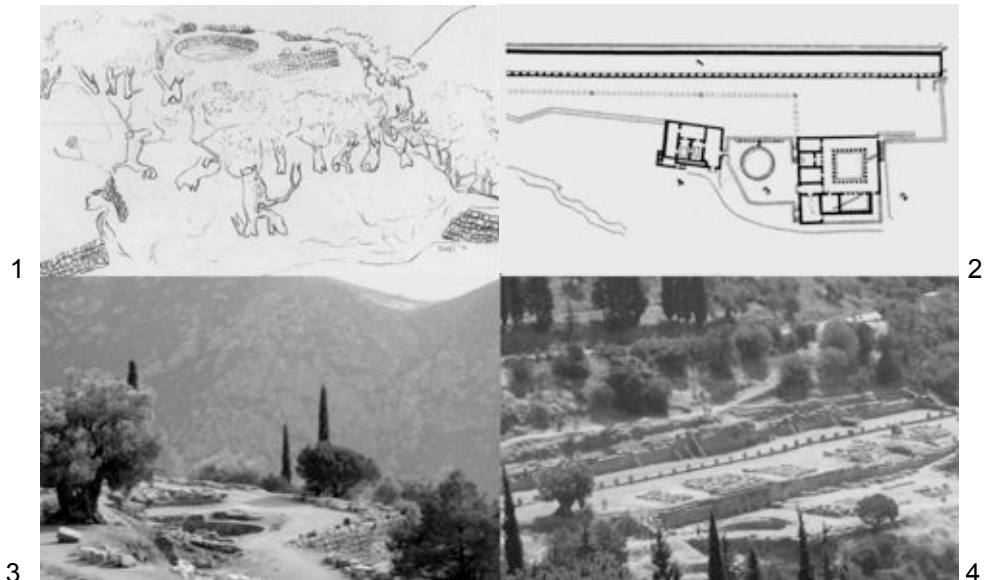
Agora, Athens, Greece c450 BC (Source: commons.wikimedia.org/wiki/Image:AgoraAthens5thcentury)

Figure 29



Kahn Rendering: Pine Ford Acres, Children's Play Area beside Administration Building Middletown Housing Development, Defense Housing Project, Middletown, Pennsylvania. Federal Works Agency and United States Housing Authority 1941-1943: Howe & Kahn, Architect; Daniel Urban Kiley, Landscape Architect (Source: Louis I. Kahn Collection, Architectural Archives of the University of Pennsylvania).

It is interesting to note details that seem to anticipate elements Kahn used later in the design of the Day Camp Pavilions and landscaping for the Jewish Community Center. The recessed oval of the central space shows dancing and gymnastics in the sloped area before a fireplace and floor drain. Observers rest beneath trees at the edge of the play area and promenade under the sheltering canopy of the Administration Building.



A similar configuration is suggested in Kahn's sketch of the gymnasium at Delphi in Greece which he visited in 1951.

Condition 2: Day Camp for Exploration – engagement and expression

The program for the interpretation of the Day Camp should reference a child's world. It should foster the creation of a fantastic environment that is unconstrained by (but relevant to) everyday concerns. The essential nature of play, as Kahn notes, is found in its incompleteness and open-endedness, in the process of discovery rather than in any specifically anticipated results. He creates an architecture that is suggestive, offering a framework, setting a beginning. Children themselves, however, must complete their own stories (Figure 29).



Day Camp Pavilions with plywood and metal fence safety barrier enclosing building on left. (Source: Author photos.)

Kahn demonstrates that nothing is ultimately what it initially seems. He conjures solids that change into voids as walls transform into columns when viewed from different angles. He balances building mass with structural transparency. Forced by his landscaping plan to enter the Day Camp beside the solidity of the locker room pavilion and deflected in a clockwise direction, one perceives enclosures becoming progressively less and less significant.

(In a matching sequence from the Agora, the progression may be interpreted as moving from *Ritual* to *Law* to *Council* to *Art*) At the end of the cycle, behind the fireplace at the top of the gathering space, two options are offered: confrontation with the now obstructing locker room pavilion and release into the open environment of the surrounding woods. There are temptations of freedom and unexplored beginnings to be engaged at the point farthest from the entry to the site, just beyond the ceremonial fires.

Condition 3: Bathhouse for Revelation – judgment and evolution

With the Bathhouse, Kahn suggests that significance is finally a question of honor. Not traditional or shared, but personal and individualistic. It is an understanding of the consequences of action, or inaction, a consciousness within a higher order. It is a place of ecumenical respect.¹¹⁷ Presented with the interpretation of the Bathhouse in Chapter 7, issues of water management were introduced to suggest how preservation plans and interpretive programs accommodate individual judgment and evaluation in support of the integrity of historic structures. The suggestion of the spiritual in Louis Kahn's architecture has often been challenged on the basis of his declared independence of formal religious affiliations. His professed intimacy with the essential order of things, however, contests any doubt of his belief in a greater consciousness. It is reasonable to conclude that Khan was attuned to architectural implications of the traditional Jewish *makvah*, the ritual purification bath, which would most likely have been a direct association for many members of

the Jewish community, if not for Kahn himself. A defining requirement of the mikvah is the purity of its water assured through carefully prescribed methods of water collection. Authors Slonim and Rosenberg provide an introductory description of the mikvah in their book, *Total Immersion: A Mikvah Anthology*.

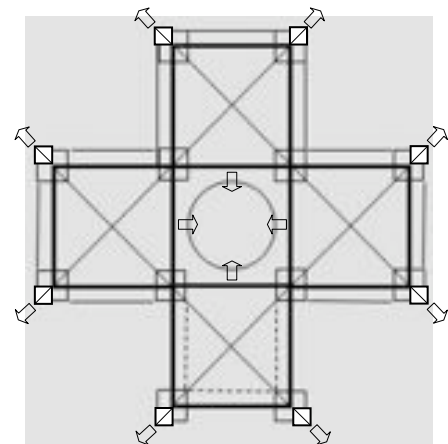
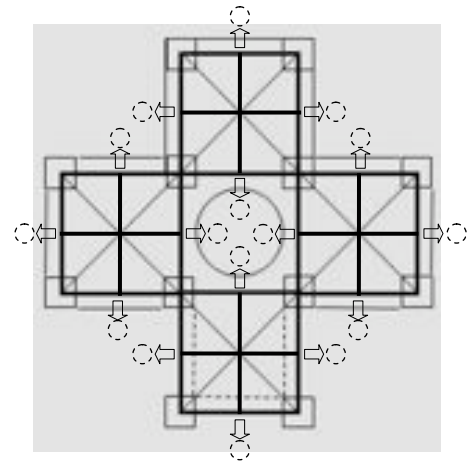
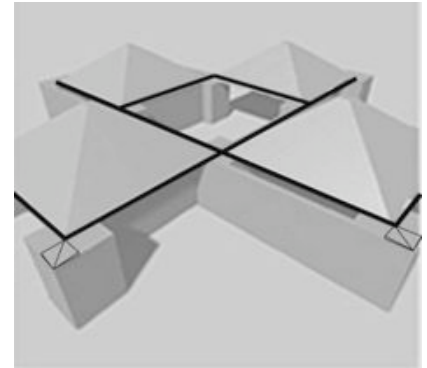
The world's natural bodies of water - its oceans, rivers, wells, and spring-fed lakes - are mikvahs in their most primal form...In many ways mikvah is the threshold separating the unholy from the holy, but it is even more. Simply put, immersion in a mikvah signals a change in status -- more correctly, an elevation in status. Its unparalleled function lies in its power of transformation, its ability to effect metamorphosis.

*At first glance, the mikvah system speaks of limitations and constraints - a loss of freedom. In truth, emancipation is born of restriction...The drawing of parameters creates terra firma amid chaos and confusion and allows for traversing of the plain we call "life" in a progressive and productive manner.*¹¹⁸

Jason King (Jason King Associates, Architects) describes architectural considerations in the design of the Mei Menachem Mikvah in Brooklyn, New York. "Rainwater, certain springs, wells, rivers, lakes and oceans can...be used for the pool, as can snow and other naturally precipitated frozen water...The primary function of the roof [in the design of Brooklyn building is] as a rain capturing device...There are also requirements for the manner in which the water can be stored and transported to a pool. In general, water must flow naturally e.g. by gravity or pressure gradient (it cannot be pumped or carried)." ¹¹⁹ It is not difficult to discern Kahn's concept for water management in the design of the Bathhouse from drawings for the project and from his ideas for similar work of this period. His later projects offer an understanding of his maturing attitudes for water management as evident in his

architecture and landscape details. Chapter 7 outlines Kahn's consideration that water should be "honored" as it is channeled (managed) through a building's architecture. He creates points of transition to allow celebration.

A concept for the management of drainage for the Bathhouse that is consistent with Kahn's design principles may be developed as an interpretation of the system indicated at the right. A network of collection channels propels runoff to the exterior corners of the building. Termination is clearly expressed and is consistent with the free and natural movement of water away from the confines of the structure. (The temptation to conceal catch basins and drain pipes at these locations defies the design's integrity.) Further resolution may be considered for the drainage of the atrium courtyard. The original roof design allowed runoff to follow a natural course. The proposed system of collector channels may be refined to more closely follow this original concept for the area of the central atrium.



(Source: Diagrams by Author).

Condition 4: Cape House for Context – relationship

Of all the elements of the interpretive program for the Community Center, Cape House sustains the most critical role in establishing a point of reference for the illumination of meaning for the historic site. Its inclusion helps define standards against which Louis Kahn and the Jewish community proposed their dramatic departure. The building's existence testifies to a legacy of the Post War era and the values that everyone across the country was striving to keep up with. The house survives as the second part of the historic equation of the Jews and the Jones in the new suburbia of 1950s America. The simple structure maintains the image of a



The Bathhouse as seen from the south with Cape House pictured to the right. (Source: Author photo.)

universally dependable
commonality that forces the
architecture across the street to
state its condition as
extraordinary.

It is proposed that Cape House be designated as an essential component of the interpretive program for the historic Community Center site. The building would be expanded, as described in Chapter 8, to provide accommodation for all remaining considerations not now incorporated in plans for the preservation and reuse of the Community Center. By its clear definition of what the Center is not, Cape House conversely identifies the explicit nature of community itself. The house is to function

as a museum, orientation center, research facility, visitor support area and gift shop. Its operational mission is to provide information, promote education, manage services and achieve financial independence for the entire project. The interpretive theme highlights the family unit as the origin of group identity and general social awareness. It sets the stage for the discovery of the institution that is at the heart of the community, Ewing Center.

Condition 5: Ewing Center for Association – interaction and consensus



Ewing Center is the embodiment of the values and aspirations that defines its community.

The challenge is to represent a consensus of a shared and evolving morality. Interpretation must respect the building's past, configure its objective future and express its compelling

present relativity. An easier approach might be to concede a more obvious relationship to the view across to street and, therefore, not promote an association with other buildings within the bounds of Louis Kahn's design for the Jewish Community Center. For the Community Center, however, contradiction is an essential interaction and what is preferable in the building's interpretation is maintaining the existing view across the street from both sides of the block. In Chapter 8 an accommodation for Ewing Center was outlined that preserves the building as designed by architects Kelly and Gruzen and allows integration with

primary elements of Kahn's plans for the site. Walled courtyards have been introduced and architectural emphasis is added to the gallery running through the center of the building. These modifications expose the building to new circumstances while maintaining its historic condition.

Circa Now

There is nothing like returning to a place that remains unchanged to find the ways in which you yourself have altered. - Nelson Mandela¹²⁰

In the final analysis, interpretation has its greatest value in providing a language for the dialogue between our age and the society of our cultural legacy. Today, with perceptions of time and space collapsed in the wake of rapidly advancing technologies, a new urgency is imposed upon the question of how the record of our times is to be written. As significant buildings of the Post-War era, exemplified by Kahn's work in New Jersey, are reaching the fifty-year threshold for landmark designation, broader standards are needed to help guide preservation and interpretation efforts.

The preservation movement has come a long way since its early years - the loss of New York's Pennsylvania Station in 1963 and the belated restoration of Grand Central Terminal in 1998.¹²¹ Our concerns have expanded, allowing a richer interpretation of historic sites and structures, with the commitment to protecting the context of buildings in addition to preserving the buildings themselves. Forces have aligned to promote a better appreciation of the value of interpretation to inform the social, economic, and cultural

conditions that produced a historic diversity in response to the human need for creating shelter. The impact of interpretation is especially pronounced when addressing vernacular architecture. The rationale for such buildings rests within a particular time and place - the conditions that produced them. This is what gives these artifacts meaning.

Significantly, it is this contextual record that is being plowed under by ever-increasing economic and developmental pressures. The impact on preservation interests of uncontrolled growth in rapidly expanding towns and cities throughout the United States needs to be comprehensively addressed. To this end, preservation planners have taken up leadership positions in the creation and management of public policies and programs for the promotion of preservation and historic interpretation. To advance effective planning for the safeguarding of our shared heritage, several areas of education and professional practice are in urgent need of reconsideration. Currently, groups with diverse interests and independent concerns are undertaking preservation initiatives in areas of architecture, urban design, planning and property management, as well as in the fields of law, economics, sociology and practically everything else in between. What is critically needed is a more focused point of view to help construct a more comprehensive and effective structure for future progress in preservation work. Randall Cotton, associate director of the Preservation Alliance for Greater Philadelphia, outlines a compelling vision in his essay "New Horizons in Historic Preservation."

We'll see the value of preserving entire historic environments as more cost-effective than isolated buildings... There will be more emphasis on conserving, for example, the agricultural landscapes of historic farmsteads or the traditional mixed uses... Reinvesting public and private dollars to our existing traditional communities... will help redirect growth

away from the wastefulness, inefficiencies, and “characterless-ness” of sprawling new development.

[W]e will need to promote historic preservation as a civic value that improves our quality of life, stimulates local economies, provides preservation incentives to developers and homesteaders, reins in unmanaged growth, and offers the public a more accurate portrayal of our diverse American history.¹²²

Emerging tools for portraying America’s history have never been so readily available or so personally compelling. Recent advances in technology and communication have altered fundamental, historic concepts as the pace of progress increases exponentially. Traditional limits of time and place have been redefined as cosmic forces align to produce something powerfully new - a virtual reality for the architecture of interpretation. What this suggests is that if we, as preservationists, fail to keep ahead of or redirect the implications of progress, history will surely come up short. If, however, we can reconstitute our position to allow for probable change, history – in terms of interpretation - will have a much better shot at survival.

1: Trenton Community Center 1916 2: Ewing Jewish Community Center 1955 3: West Windsor Community Center 2007



1: In 1916, the Trenton YMHA-YWHA purchased the old Interstate Telephone Building on South Stockton Street for a community home. The building was dedicated on December 9, 1917 and featured a swimming pool in the basement and a gymnasium on the top floor which was also used as an auditorium. By late summer of 1954, the Trenton Jewish Community Center had assembled 47 ½ acres in Ewing, New Jersey for construction of a new, nonurban facility. (Source: The Vision for the Jewish Community Campus Princeton Mercer Bucks Counties, jccampus.org/campusvision.html#video)

2: First sketch of Jewish Community Center Bathhouse, Louis Kahn, February 1955. (Source: Louis I. Kahn Archives, University of Pennsylvania)

3: Rendering of main campus building of the Jewish Community Center for Princeton-Mercer-Bucks Counties to be built on 80 acre site in West Windsor, New Jersey. (Source: jccampus.org/campusnews)

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Important Note:

Some material in the Appendix has, in whole or in part, been edited or represents a compilation by the author and is included in support of concepts and conclusions expressed in the main body of the thesis. This information was not found to be readily available or lacked a focus appropriate to the extent of the thesis. It is noted that most of the material in the Appendix was not originated by the author and referenced is given at the beginning of all such articles.

Supporting Visitor Center Proposal

(Source: Bureau of Land Management: DD 8/7/98)

Introduction

Visitor centers are one method for providing interpretive technique for implementing an interpretive program. Developing interpretive techniques is limited only by a person's imagination. Some examples of common interpretive techniques are: wayside exhibits, kiosk, brochures, audio tapes, videos, displays, guided hikes, living history programs, and presentations. Choosing the right interpretive techniques depends on the goals of the interpretive program, the needs of the agency, the needs and type of visitors, and the resources to interpret. Many times visitor centers are chosen as the interpretive technique before proper consideration is given to other interpretive methods. In the proper environment, a visitor center is a very effective interpretive technique. Good interpretive planning is needed to determine when a visitor center should be used.

Below are questions that must be answered before a decision can be made as to whether a visitor center is the best interpretive option.

1. Does the proposed visitor center relate to the BLM's [Bureau of Land Management] mission and management objectives?
 - a. Does the purpose for the visitor center match the mission of the BLM? There should be a direct relationship between the interpretive program and the management objectives of the agency. Does it promote resource use or does it promote the use of a building?
 - b. Is the project identified in the Resource Management Plan, an amendment, or a Special Recreation Management Area activity plan? An effective visitor center is supported by the interpretive program and is not a separate part of the overall visitor services effort. The goals and objectives for building a visitor center should be clearly identified in planning documents related to the site and interpretive program. This includes addressing some of the challenges visitor centers bring to an area, such as potential to concentrate visitor use.
 - c. Are the interpretive objectives and messages consistent with BLM's philosophical positions? The BLM must be involved in developing the interpretive exhibit text and themes. This involvement will strengthen the understanding between the partners and the BLM and help the public understand the long-term effects of management decisions. The exhibit text focuses on serving visitor needs, while weaving-in resource management programs and natural and cultural resource information. We should show BLM management programs wherever there are opportunities within the exhibit text, but should not use this as an opportunity to "sell the public" on our management programs. That approach will lead to text that

sounds like propaganda to the visitors, and often results in their lack of support or distrust of government approaches.

- d. Does the Center help visitors discover and appreciate resources on the public lands? An important objective in any BLM visitor center is to help the public appreciate and discover the resource diversity and recreation opportunities on public lands. We should also encourage visitors' feeling of ownership and involvement in trying to protect the resources. The visitor center should be supported by a good brochure supply. Brochures are still the most commonly preferred source of information for the public.
2. Are there signed documents showing clear commitment of partners and State and Federal Congressional support for the visitor center?
 - a. Are costs being shared with partners, including private, state, and/or federal entities? A cost analysis should be done showing the predicted staff, operations, and maintenance costs including each partner's share. This should be realistic, reflecting the true ability of partners to live up to their promises. For instance, if the project expects to be staffed by a private group, such as a cooperative association, it should be shown that the association is truly prepared and able to take on this responsibility. These partnerships and economic commitments should be used to explain the project to the Department, OMB and Congress.
 - b. Are there agreements clearly identifying the responsibilities of each partner and an identified procedure for maintaining the agreement long term? The agreement must include expected in-kind services as well as percentage or amount of financial commitments. There also must be an agreement on the type of long-term commitment expected. Responsibilities and needs change, so a procedure for regularly scheduling reviews and updating of the agreement must be established. Once the Corporate Team approves the project, the field staff will be expected to have these agreements signed.
 - c. There should be good documentation showing State and Federal Congressional support for the project. Congressional member(s) should show support for the project and be willing to lobby for it, including O&M funding. The proposed construction project should be divided into phases in order to maximize funding options.
 - d. Is there a clear commitment on the scope and magnitude of the project so it does not expand beyond fiscal reach? So often, as more partners get involved, more ideas get adopted. In order to incorporate these ideas, the facilities get bigger which is "project creep." There should be an up-front agreement to control project expansion.
 3. Are we prepared to accept the long-term commitment that visitor centers require? All new visitor center plans must have cost-analysis for operation and maintenance. Items to include in the cost analysis are as follows:

a. Proper staffing commitments:

- (1) Effective hours of operation--visitor centers should be open when the public wants to use them. Usually, this means weekends and late hours on Friday and Saturday. It is poor customer service to have the doors closed when visitors expect them open.
- (2) Developing and presenting interpretive programs--this is especially true when meeting the needs of students. Teachers and students are better served when the ratio of students to interpreter does not exceed 10.
- (3) Giving programs to the general public--visitors enjoy personal presentations that go beyond the materials in the exhibits and enable them to ask questions. People also have different learning strategies and preferences. Some people learn best by reading the materials; others by listening. It is important for the success of the interpreter program to use several different interpretive techniques.
- (4) There should be sufficient staff to help in the book store, schedule interpretive events, run the volunteer programs, and coordinate special exhibit showings. There should also be staff preparing temporary exhibits on the latest issues. One person cannot effectively do all these tasks.

b. Proper budget for operation and maintenance of the building includes:

- (1) Repairs and replacement of outdated exhibits. Exhibits should generally be replaced every 5-10 years. This means future funding commitments.
- (2) Supplies for the interpretive program include printing of posters and brochures and supplies for props. Interpretive programs with children should consider puppets, magnifying hand lens, etc. If there is a cultural theme to the interpretive program, there should be funds for purchasing sample artifacts replicates and period dress.
- (3) Funds are needed for supplies necessary to backup equipment for the exhibits because they wear out, become damaged, get broke. This too will require a future funding commitment.
- (4) Maintenance of the building and internal facilities, such as lights, heat, audio visual equipment, special light bulbs, etc.

c. The design should consider the need for fee collection facilities?

- (1) Almost all visitor centers will become involved with the collection of fees. At present BLM only has authority to collect fees at visitor center in recreation demonstration pilots.

d. Are there steps for design and value engineering review of the project?

- (1) Value engineering must be done on all Visitor Centers that cost more than \$1 million to construct, to ensure that the proposed design of the building best serves the established goals and objectives for the facility. It should address important issues such as the location of the restrooms and any potential sales area.
- e. Has a cost/benefit analysis been done showing the long term cost per visitor?
 - (1) During the first five years there should only be minor repairs and maintenance cost for the visitor center. After five years many of the exhibits will need updating and major repairs maybe needed for some of the exhibits and for the building itself.
4. Is a visitor center the most effective interpretive medium to use for the specific location, audience, resources, and purpose of the interpretive program?
 - a. Have the potential visitor needs been analyzed through an interpretive prospectus?
 - (1) A visitor center is an expensive interpretive tool and should be chosen only after it is determined to be the most cost effective means of accomplishing the objective. This decision should be obtained through the development of an interpretive prospectus, which will help identify the interpretive goals, objectives, and themes for the overall interpretive program. It also needs to identify the different areas, in addition to the visitor center, where interpretive media will be used to accomplish your objectives.
 - (2) As with any interpretive medium, visitor centers need to serve the visitors. This is especially true where there are repeat visits. Have you walked into a visitor center where there were all sorts of exhibits on the historic and natural resources of the site, yet the front desk is five people deep and no one is looking at the exhibits? People are trying to find out where they can go camping or hiking trails, or where there the concessionaires are located, or where to sign up for permits. Often the exhibits do not provide answers to these questions.
 - (3) In general, the effectiveness of a visitor center greatly depends on the type of visitors and their interest.
 - (a) First-Time Visitors - Visitor Centers are very effective at orienting first-time visitors that are unfamiliar with an area. They want information on facilities, recreational opportunities, and the cultural and natural resources of an area.
 - (b) Repeating and/or Recreational User - Visitor Centers are not as effective for repeat visitors or recreational users who are coming to an area for a specific recreational activity, such as river rafting, fishing, mountain biking, and boating. They have their equipment and are usually very ready to start their recreation activity. They are usually traveling with people familiar with the area and are not anxious to take time out from their activity to attend "educational programs." Their main interest is information on conditions

related to their chosen recreational activity, such as where the fish are biting, or what the river flows and conditions are.

b. Special Interest Visitor

Visitor Centers are effective in reaching the public with specific interests or at sites with significant resources. Many times, these facilities become designation points. However, one should be very careful in developing visitor centers for this purpose; it is very difficult to correctly predict if there is an interest market and the market is big enough to justify building a visitor center.

c. Has an interpretive prospectus analyzed the best site location?

- (1) The main criteria for deciding the best location of a visitor center is the purpose of the interpretive program and visitor center. Orientation/information visitor centers are best located at points before the visitor makes a decision as to where to go. If the region has a specific theme that the visitor center was built to serve, then the best location should be as close to the main access road. The visitor should be able to find the visitor center easily and shortly after they enter the area. In general, poor locations for visitor centers are at the end of long dirt roads, more than a few miles off the main road, within an area, or away from the main entrance to a resource.

d. Has an interpretive prospectus been done which identifies the interpretive program goals, objectives and theme?

- (1) Developing the purpose of the visitor centers. Before any design work is done on a visitor center, there must be clear goals, objectives, and themes developed on the purpose of the building and interpretive program. This should be done with all the resource specialists and potential partners involved in a facilities planning session. Everyone should be clear about the purpose for the visitor center.
- (2) Interpretive themes between agencies and other local facilities should be coordinated, so that the information is not repeated in each facility. Many regions of our country have specific interpretive themes, such as desert ecology, Lewis and Clark, Southwest Indian Cultural, Gold rush, or western settlement. Coordination will help each facility support the overall theme and message so the visitor has a more holistic understanding of the area.
- (3) A visitor center can help develop an interpretive program. Visitor centers are very effective in providing a focus for the interpretive programs. Tours and special events are often easier to organize when there is a visitor center. Interpreters can use many of the visitor center exhibits to help illustrate concepts and ideas before head out on the trail or take the visitors on a tour. Visitor centers should not be viewed as the interpretive program. It is only one of many possible tools.

- (4) Potential Economic Enhancement Project - Large visitor center projects often result from a proposal growing beyond its original intent, or as an economic development project for a local community. The success of a Visitor Center as an economic development effort depends on many factors, such as proximity to major travel routes, promotional efforts, quality of the exhibits and interpretive program, and potential market for the topics in the visitor center. A market evaluation and cost-benefit analysis in a business plan must be done before design work starts on a visitor center which has economic benefits as one of its principles as a goal.
- e. Are the visitors and managing agency goals and objectives already being served by another existing facilities?
- (1) Before a visitor center proposal is approved, there should be a thorough survey of other visitor centers and interpretive efforts in the region. This survey must identify if visitor needs are already being met by other facilities, and if the BLM could more easily accomplish its mission entering into a partnership with the existing facility managers. Whenever possible, visitor centers should be an interagency venture. Visitors do not generally know nor care about different agencies and boundaries. They usually go to a visitor center for orientation information that interests them.

Interpretive Strategy Plan

(Source: Bureau of Land Management: DD 8/7/98)

PREFACE

Interpretation is a voice for all of the resource management programs within the Bureau. This strategy clarifies and sets the direction for BLM's interpretive program. This strategy builds on the diversity of many excellent agency initiatives already in place. Although BLM has had some interpretive facilities, programs and products in place since the late 1970's, the program is relatively young.

In the last ten years, BLM's interpretive program has developed into an award winning effort that has served millions of people at locations throughout the country. BLM manages nineteen interpretive centers and provides interpretive services at many BLM offices and interagency facilities. Most of our programs and services are done in collaboration with other public agencies, cooperating associations and other private sector organizations. In order to continue and improve upon this tradition of quality public service we are implementing this strategy plan for 1999.

This strategic plan was developed by an interdisciplinary Bureau of Land Management team and evaluated by outside partners who are leaders in the field of interpretation. In addition there was extensive internal review at all levels of the BLM. This plan is based on the Bureau of Land Management's "Blueprint for the Future". This strategy also incorporates "Guidelines for Interpretation." (IM 95-177)

Mission Statement

The Bureau of Land Management Interpretive program supports the Bureau's mission and goals by serving customers, promoting the health of the land and enhancing the public's enjoyment, understanding and appreciation of public land natural and cultural resources and management.

Vision Statement

The BLM interpretive program fosters an appreciation of the resources and knowledge of the diverse recreational opportunities on public lands. Interpretation increases understanding about the relationships between people and the public lands. Interpretation communicates how the BLM manages resources and provides opportunities for public use. As a result of BLM's interpretive program, the public will be more environmentally responsible while enjoying their public lands.

GUIDING PRINCIPLES

Interpretation:

1. Uses accepted interpretive principles.

2. Provides universally accessible services using a diversity of media and techniques to reach different learning styles, abilities, generations, ethnic groups, and cultures.
3. Serves visitor needs and enhances their experience
4. Conveys accurate information through current interpretive techniques.
5. Incorporates appropriate safety and health considerations into planning, design and content of interpretive services.
6. Measure effectiveness of programs, services, facilities, and media for all audiences.
7. Supports agency initiatives, resource protection and environmental ethics.
8. Encourages visitor involvement in activities and “hands-on” experiences that increase understanding of ecosystem management goals.
9. Requires a “regional approach” to planning and providing services and facilities build upon interpretive efforts at other sites and identify our unique resources to focus on.
10. Employs effective planning processes and tiers interpretation to other BLM planning efforts.
11. Address interpretive media choices based on the goals and objectives identified in BLM policies, such as Recreation 2000, and the Visitor Center memorandum.
12. Interpretation will serve current and future customers.
13. Interpretation will promote and support BLM’s mission to restore and maintain the health of the land.
14. Interpretation will seek collaborative management.
15. Interpretation will improve accountability performance and evaluation.
16. Seek funding to ensure sustain ability of interpretation in BLM.
17. Interpretation will improve human resources management.
18. Improve internal communications and public awareness.

GOAL 1

INTERPRETATION WILL SERVE CURRENT AND FUTURE CUSTOMERS.

OBJECTIVE: BLM will provide interpretive opportunities to diverse audiences in a variety of settings using a variety of effective techniques.

Actions:

1. Evaluate existing interpretive programs, products, sites and facilities to identify those to be retained, improved or replaced.
2. Identify gaps/needs/opportunities to reach under represented audiences.
3. Work with professional organizations such National Association for Interpretation and North American Association for Environmental Education to develop effective programs.

OBJECTIVE: Working with user groups and other partners, BLM will canvas our customers to understand their needs and desires.

Actions:

1. Develop and begin to implement standardized procedures for measuring customer satisfaction with interpretive services and facilities.
2. As part of the BLM interpretive planning process staff will evaluate visitor perceptions and information needs, through direct communications with the visitor
3. Evaluate interpretation and education activities using feedback from visitors to ascertain if desired messages are effectively communicated.
4. Consider tourism and customer data when determining trends and identifying new audiences.

OBJECTIVE: The BLM interpretive staff will collaborate with other groups such as public affairs, the land offices, and outfitters and guides to provide safety and basic information about public lands.

Actions:

1. Identify and compile basic information to be provided to customers 24 hours/day.
2. Provide information to visitors through appropriate media
3. Update basic public lands information (Field Offices & Visitor Centers, Ongoing).

GOAL 2

INTERPRETATION WILL PROMOTE AND SUPPORT BLM'S MISSION TO RESTORE AND MAINTAIN THE HEALTH OF THE LAND.

OBJECTIVE: On an annual basis, BLM staff will identify site specific and agency-wide management goals that can be addressed by interpretation and environmental education

Actions:

1. Identify and incorporate agency-wide management goals into interpretive directives.
2. Target interpretive services to enhance appreciation, understanding and protection of significant natural, cultural and recreation resource values. (Field Offices, Ongoing)
3. Identify opportunities to interpret BLM's successful efforts to restore, improve and protect the land.

OBJECTIVE: Develop interpretive services that promote and encourage public understanding of resource management goals and the importance of resources to individuals and communities.

Actions:

1. Review existing interpretive services to assess how resource issues are addressed.
2. Identify and provide specific tools and techniques to BLM staff that have been successfully used to increase public knowledge and appreciation of resources and resource management.
3. Evaluate the effectiveness of interpretive messages in promoting and encouraging public understanding of resources and resource issues.
4. Interdisciplinary teams will identify local resource management issues to address by local interpretive efforts.

OBJECTIVE: Select interpretive media/techniques that minimize impacts to and, whenever possible, enhance the protection of resources.

Actions:

1. Use interpretive planning techniques to select effective and appropriate media choices.

GOAL 3

INTERPRETATION WILL SEEK COLLABORATIVE MANAGEMENT.

OBJECTIVE: Expand collaboration between BLM's Interpretation and Environmental Education (E.E.) programs.

Actions:

1. Identify opportunities and develop specific goals to cooperate on national level initiatives, priorities and programs such as the National Weeds initiatives, Leave No Trace and Wilderness Program.

2. Develop specific interpretive strategies to effectively use personnel and resources at the state office and field office levels to achieve mutual goals.

OBJECTIVE: Promote partnerships by establishing programs and projects that share staff, have interagency cooperation, work with cooperating associations, and friends groups to achieve mutual goals.

Actions:

1. Promote interagency cooperation and national partnerships through the Federal Interagency Council for Interpretation, the National Association for Interpretation, the Association for Partners for Public Lands, the American Recreation Coalition, and other organizations.

2. Outreach to cooperating associations and develop partnerships with them.

3. Evaluate partnerships annually for effectiveness in accomplishing mutual goals.

4. Identify ways to increase BLM's interpretive services through cooperative efforts with other public agencies, cooperating associations, outfitters and guides, concessionaires, and other government and non-government organizations.

OBJECTIVE: Leverage BLM funding and in-kind contributions to help achieve management and interpretive goals.

Actions:

1. Use existing databases and grant coordinators to identify alternative funding sources for interpretation projects.

2. Increase partnership funding for interpretation.

GOAL 4

INTERPRETATION WILL IMPROVE ACCOUNTABILITY, PERFORMANCE AND EVALUATION (BUSINESS PRACTICES).

OBJECTIVE: Improve the interpretive programs' accountability, performance and evaluation practices.

Actions:

1. Define directives and workload measures to increase visibility and accountability.

2. Develop a team to keep BLM employees informed of the latest technology and developments for cost effective interpretation and enhanced customer service.

3. Identify interpretive projects and facilities in RMIS and FIMMS.

4. Maintain accurate databases (RMIS, FIMMS) for interpretive projects and facilities.
5. Demonstrate to BLM management and staff how interpretation can meet their program goals, publicize our successes.

OBJECTIVE: Increase involvement of BLM staff at all levels of the agency and across disciplines in identifying interpretive priorities.

Actions:

1. Prepare an annual implementation plan each July which will identify the national priorities to be accomplished for the year.
2. Prepare an annual report each September on the BLM's interpretive program accomplishment for the year
3. Conduct annual interpretive meetings that involve people from varied BLM disciplines
4. Encourage attendance at interpretive training

GOAL 5

SEEK FUNDING TO ENSURE SUSTAIN ABILITY OF INTERPRETATION IN BLM.

OBJECTIVE: Incorporate interpretation into the budget process.

Actions:

1. Promote interpretation in the budget process.
2. Identify key sources of funding (resource activities/sub-activities, fee demonstration, challenge cost share) and incorporate into the annual directives.
3. Develop mechanism tracking interpretive accomplishments with the budget process.
4. Include interpretive accomplishments in the annual performance report.
5. Develop an ongoing dialogue with Budget staff, which inserts interpretation in the Bureau's budget cycles.
6. Work with the BLM budget office to get increase funding for interpretation from Congress

OBJECTIVE: Identify bureau-wide budget needs for interpretive services.

Actions:

1. Evaluate funding needs for existing interpretive services and facilities.

2. Survey Field Office needs for interpretive services

GOAL 6

INTERPRETATION WILL IMPROVE HUMAN RESOURCES MANAGEMENT.

OBJECTIVE: Provide professional training and development opportunities for staff and management especially those involved in implementing interpretive programs and developing partnerships.

Actions:

1. Create and distribute an interpretive tool kit (references, self study training materials, project examples) to field personnel.
2. Coordinate with NTC to assess training needs in interpretation
3. Continue to expand the use of interagency training.
4. Work with NTC to incorporate interpretation into other resource training programs (e.g., cultural, wildlife, recreation).
5. Identify people to serve as mentors and help train other staff.
6. Expand institutional memberships in professional organizations (i.e., National Association for Interpretation, North American Association for Environmental Education).
7. Encourage BLM participation in awards programs such as the National Association for Interpretation media competition, BLM Excellence in Interpretation and E.E.

OBJECTIVE: Provide an effective organizational framework that supports interpretation at all levels of the organization.

Actions:

1. Provide model job descriptions and performance criteria (to supervisors and managers) for positions with interpretive duties at the State Office and Field Office level.
2. Encourage BLM interpreters to obtain professional certification from National Association for Interpretation.
3. Encourage each State Director to have a state lead for interpretation who is qualified and active in the profession and dedicates 50% of their time to interpretation.
4. Evaluate vacant positions as potential interpretive positions when a need for interpretive expertise exists.

5. Establish an internal networking system across different disciplines within the BLM that is available to people involved in interpretation.

GOAL 7

IMPROVE INTERNAL COMMUNICATIONS AND PUBLIC AWARENESS.

OBJECTIVE: Increase the visibility of interpretation as a tool for accomplishing BLM's mission and goals (internal with program leads, staff, managers).

Actions:

1. Prepare articles highlighting effective interpretation for People, Land and Water and other agency newsletters.
2. Identify a champion for interpretation from the ELT and Field Committee.
3. Use BLM web sites (ie: National Internet, Environmental Education, and Recreation Home Page) to show the diversity and accomplishments of interpretive programs.
4. Develop graphics for interpretation to be used to help identify interpretive tools.
5. Develop a manager's award to recognize BLM managers for outstanding use and involvement of interpretation.

OBJECTIVE: Develop comprehensive information for the public about BLM's interpretive programs and sites.

Actions:

1. Encourage field office to publicize interpretive opportunities within their areas.
2. Develop a traveling exhibit highlighting BLM's interpretive programs and accomplishments for organizations such as the National Association for Interpretation, North American Association for Environmental Education, attending teacher workshops and conferences and the Watchable Wildlife Conference.

Jewish Community Center Time Line

1916: YWHA-YMHA opens joint facility on Stockton Street in Trenton, New Jersey.

1944: Louis Kahn writes his essay “Monumentality.” (Published in Paul Zuker, ed., *New Architecture and City Planning* (New York: Philosophical Library, 1944).

1947: Kahn establishes his private practice.

1948: National Jewish Welfare Board’s Building Bureau makes first field visit to the Trenton YWHA. The Building Bureau’s last visit is in 1954 before the start of plans for the new center in Ewing.

1949: Kahn’s first trip to Israel.

1949-54: Kahn’s first commission, a collaborative design for a JCC in New Haven, Connecticut, while he was a visiting critic at Yale University School of Architecture.

18 September 1951: Louis Kaplan presents first site plan for the Ewing JCC at Parkway Avenue. Local contributor offers money if facility is named after him.

1951-1955: Kahn’s residential work (Morton Weiss House: 1947-50, Leonard Fruchter House: 1951-54, Francis Adler House: 1954-55, Weber DeVore House: 1954-55) generates forms used in the Bathhouse which suggest the distinctions between primary and secondary uses (served and servant spaces).

1954: JCC purchases 10 ½ acres in Ewing Township and signs a 90-year lease with Ellis Pierson for 37 acres of land adjacent to the west of the purchased property. Louis Kaplan is hired to develop a site plan. Three architects are considered for the commission: Louis Kahn of Philadelphia (because of his recently completed addition to the Yale Art Gallery and his recommendation by two Yale alumni on the Construction Committee, architect Harold Kramer, Yale 42 and chairman and attorney H. Harvey Saaz, Yale 39), Percival Goodman of New York, and Barney Gruzen (Kelly & Gruzen) of Newark. These three architects are considered because they had offices outside Trenton thereby avoiding the awkwardness of competing with local architect Louis S. Kaplan who provided the original site plan. (Solomon p.63).

In July, Louis Kahn is awarded the JCC commission and must acquire a New Jersey architectural license. For the 47 acre property, Kahn defines a new type of community center, the suburban “campus” with its swim club and day camp. Kaplan participates as part of the construction team with the designation of on-site supervisor. Kaplan had previously designed two synagogues on Bellevue Avenue,

several public school buildings and the Trenton Civic Auditorium (1932) known as the Soldiers and Sailors War Memorial. (Solomon p. 64).

Louis Kahn is announced as the project architect in November with Louis Kaplan designated as associated architect for construction of a \$600,000 building. This budget is considered unrealistic when compared to concurrent construction of the Ewing Junior High and Elementary School for \$1,846,000. (*Trenton Evening Times*, 27 July 1955). In a letter dated 25 July 1969 to Eugene D. Sternberg, author of a book on community centers, Kahn referred to the Ewing budget as “killingly stringent.” (Solomon p.65).

7 February 1955: First site plan is submitted to the TJCC Association and Kahn is authorized to proceed with designs for the first-phase buildings, the Bathhouse and the Day Camp. Construction of the Bathhouse is proposed as the first construction project to promote fund raising. A contributor offers to finance the construction of the Bathhouse if the facility is named in his honor. The Construction Committee seeks to avoid the designation. (Solomon p.68.).

“Sandwiched between the bordered square pool enclosure and a rectangular garden grove, the building was a transitional feature between a small forest and a large swimming pool. It was a slight incident, a functional space, that separated trees and water, thereby evoking such an ancient and noble precedent as the Roman villa...Kahn emphasized the importance of the grove by combining it with the Bathhouse. In order to reach the pool from the community building, it would be necessary to walk through this thick square of densely packed trees. Visitors had to traverse a mini-paradise in order to reach the pool area.” (Solomon p.78.).

The TJCC Association decides to eliminate the planned indoor swimming pool and the auditorium. “Instead, envisioning an economical version of a country club, they proposed a large indoor health facility...and an outdoor swim club...an essential element of suburbanization.” (Solomon pp.73-74.).

1955: Kahn realizes the need to separate “served” and “servant” spaces and the interaction of structure and light. He defined the connection between human activities and gardens, between exploration and contemplation. “Kahn used the Bathhouse to create a synthesis between the wonder of nature and the ability of humans to control it.” (Solomon p. 4.). A plan dated April 14, 1955 introduces the pavilion concept for the design of the Bathhouse.

April 1955: The Building Committee announced in the *Jewish Community Reporter* that “every feature of safety, comfort and use has been considered for the locker-bathhouse and swimming pool.” The roofless area for the men’s and women’s changing rooms and their lack of privacy reflect Kahn’s awareness of the need to

maintain economy in construction of the project. “He saw no need to create artificial privacy within each building. Swimming, after all, was an activity that put participants into a somewhat natural, almost unclothed state.” (Solomon, p.4.).

28 April 1955: The final Bathhouse plan is presented. “The steps up to the pool...were now part of an extended ritual that Kahn wanted to celebrate...[S]upport services were accommodated within their own distinctive space, thereby creating both recognition of their existence and a place for them within a hierarchical scheme.” (Solomon p. 85.). The plan included Kahn’s first use of corner entrances, a hallmark of his later work.

May 1955: Kahn signs architectural contract with the TJCC.

The plan for the Bathhouse is revised shifting the building to the southeast of the pool enclosure (24 May 1955). The gravel court and tree grove are eliminated. (Solomon p. 87.).

June 1955: A sketch of the site plan shows the Bathhouse as finalized in April, a modular, “octa-square” layout for the Community Center building and a circular space surrounded by trees for the main outdoor recreational area.

31 July 1955: The pool and Bathhouse open.

October 1955: Construction of the roof of the Bathhouse is completed. “Most astounding, the roof completed the building in an unexpectedly brilliant fashion. Kahn...wanted to light his wall and have light reflect onto the roof, to be seen from afar.” The gap between the wall and the edge of the roof provided light and views of the surrounding landscape above the trees without the appearance of industrial buildings surrounding the site. (Solomon p.91).

Kahn’s resolution is “a successful integration of light with structure and a synthesis of nature and manufactured materials...[It] was apparent that Kahn had created something out of the ordinary. To the non-architectural world, the clarity of Kahn’s floor plan and the wisdom of his materials would have been difficult to grasp.” (Solomon p.94.).

“Kahn, aided by architect Marie Kwo [employed in Kahn’s office] provided a mural at the Bathhouse. It was completed by opening day. This mural not only announced the building’s entrance but proclaimed the theme of water with an abstracted pattern of fish.” (Solomon p.95.).

1956: A site plan drawn in March shows the completed Bathhouse with pool and the development of octagonal and square modules for the layout of the Community

Center building. By the fall, the planning grid is simplified to a double square designating served and servant spaces for the Community Center.

1957: Plans dated April 12, 1957 show the Day Camp located toward the northwestern corner of the site. Four pavilions are set on a podium 112 feet in diameter. “Kahn offset his picturesque arrangement of pavilions by carefully containing them within a circle, a reminder that Platonic geometry was still an underlying force...but this grouping also seems to indicate the freedom of children’s play...There is a freedom here that was not evident in the strict axiality of the Bathhouse nor in the equally strong processional route that Kahn used to orchestrate the landscape for the 1957 version of the main building.” (Solomon p. 126.).

The Day Camp pavilions are constructed of terracotta flue tiles filled with concrete for the perimeter columns and a clear-span Flexicore precast-concrete roof supported on concrete beams. The “adventure camps” of the Scandinavian children’s developmental movement of the 1940s is instrumental in Kahn’s thinking about the nature of play structures for children. “Kahn ennobled his camp with elegant abstract structures...Circumscribed by a circle and set within a rectangular grove of trees, the Day Camp remained the one element of the TJCC plan where Kahn was able to retain Platonic order within paradise and truly connect the duality he called Form and Design.” (Solomon, p. 128.).

A site plan dated July 1, 1957 shows the Day Camp and Bathhouse with landscaping and the proposed design for the Community Center Building for the next phase of development. “Having merged space and mass at the Bathhouse, Kahn seems to have tried to create open space that was well defined” for the Day Camp site. By the fall Kahn was having trouble with the Construction Committee and the proposed plans for the Community Center building.

1960: Plans for the Community Center building, begun in 1955, are formally abandoned.

1962: The Jewish Community Center building is completed from designs produced by Kelly & Gruzen, Architects.

1984: The Trenton Bathhouse and Pavilions are placed on the National Register of Historic Places.

1996: Robert G. Frey, director of the Jewish Community Centers of the Delaware Valley, informs the National Trust that the deteriorated condition of two Day Camp Pavilions may require demolition. “It could take \$50,000 to \$100,000 to restore the pavilions, and we’re a nonprofit organization. We let them know that demolition was a direction we might need to go...Ideally, we’d like the pavilions to be

preserved and for outside funding to cover the entire costs.” (Ward, Timothy Jack. “Currents: Bathhouse as Shrine,” *The Times of Trenton*, 9 May 1996).

1997: “Secular and Spiritual Humanism: Louis I. Kahn’s Work for the Jewish Community in the 1950s and 1960,” is completed by Susan Solomon as a Doctorial dissertation at the University of Pennsylvania. The Philadelphia Chapter of the American Institute of Architects places the Trenton Bathhouse on its list of endangered buildings along with a listing on the Endangered Historic Site Register of Preservation New Jersey.

2000: *Louis I. Kahn’s Trenton Jewish Community Center* by Susan G. Solomon is published. The Garden State Historic Preservation Trust Fund provides \$23,325 for a historic structures survey.

2003: A historic structures report is completed by the Princeton architectural firm of Ford, Farewell, Mills & Gatsch estimating that required work on Bathhouse could cost more than \$486,000 and that preservation of the Day Camp Pavilions could cost \$400,000.

January 2004: JCC announces plans to move to an 80-acre site in West Windsor.

Spring 2004: West Windsor Township Planning Board approves preliminary site plan for construction of new Jewish Community Center. Contract for purchase of West Windsor site is signed. Closing of property sale is scheduled for 2005.

Summer 2005: “If I Owned the Trenton Bathhouse” exhibit opens at Art’s Garage, Ewing, NJ. (DOCOMOMO, Summer 2005).

January 2006: Mercer County considers purchase of the JCC site for use as recreational open space acquisition. (*The Times of Trenton*, 5 August 2006)

February 2006: Ewing Township considers purchase of the main building of the Jewish community center for use as a senior center.

March 2006: “Ewing Township council voted to buy a nine-acre site on Lower Ferry Road from landowner, American Properties and renovate the building for a senior center. The estimated cost of the purchase and renovation was \$3.5 million. [Many] residents denounced the plan as too expensive.” (*The Times of Trenton*, 5 August 2006)

9 May 2006: “JCC to close its facility in Ewing,” by Marilyn Silverstein, *New Jersey Jewish New*, June 15, 2006. The JCC board voted to dissolve and to form a new board to address development plans for the West Windsor campus beginning with the new fiscal year beginning October 1.

30 July 2006: "Bathhouse's life draining away: Architectural gem needs help soon," *The Times of Trenton*, Jewish Community Center is scheduled to close on September 4 at end of the summer season. Susan Solomon comments to Joyce J. Persico of *The Times of Trenton*, "Why haven't they mounted a national campaign?...I would say there is a moral obligation when you own an historic building to make sure it goes to someone who will protect it and preserve it." The 42-acre site is to be sold. The 13 acres owned by the JCC are to be sold outright and its lease of an additional 29 acres owned by the Ellis Pierson Estate is to be transferred to the new owners for completion of the term of the lease in 2044. (*The Times of Trenton*)

Ron Emrich, executive director of Preservation New Jersey, is quoted as saying that there is worldwide interest in Kahn's buildings but the JCC "hasn't been especially aggressive in seeking help from people like us...There are lots of organizations around the world that could be tapped." (*The Times of Trenton*)

Meredith Bzdak of Farewell, Mills, Gatsch, Architects of Princeton comments, "The composition of the original concrete block was not as good a quality as concrete would be today. The deterioration of the blocks is due to the biggest problem, which is water infiltration. There is no system of taking water off the roof and channeling it properly. There are no gutters or leaders off the building. Kahn had envisioned something less obvious than that. He probably never finished because of budget cuts." (*The Times of Trenton*)

5 August 2006: "Ewing senior center possible at JCC site," by Lisa Coryell. Community Center building is to be purchased by Ewing Township and is to be used as a 42,000 square foot senior center. (*The Times of Trenton*)

11 August 2006: "Pact to buy JCC, restore Bathhouse" by Andrew Kitchenman. JCC agrees to sell property to Mercer County and Ewing Township for \$8.1 million. Its new campus in West Windsor will cost \$23 million. County freeholders must vote to approve the sale in September. (*The Times of Trenton*)

11 August 2006: "Mercer County buys JCC for 8.1 m" by Artemis Coughlan. "Mercer County will transfer ownership of its 36 acres to Ewing with a conservation easement, which protects the recreational and outdoor character of the property, and an historic preservation easement, which protects the historic integrity of the bathhouses, the Pavilion and the surrounding land" as described by Pete Daly, Mercer County spokesman. (*The Trentonian*).

The county will preserve the historic structures and Ewing will be responsible for maintaining the property and the buildings. Susan Solomon commented that, "The County has an excellent reputation for preserving historic Structures." Property transfers are expected to be completed by early 2007. (*The Trentonian*)

Day Camp Specifications

SPECIFICATIONS

For Construction of Buildings and Pavilions
For Day Camp

Trenton Jewish Community Center
Lower Ferry Road West or Parkway Ave.
Ewing Township, Mercer County, New Jersey

For

The Trenton Jewish Community Center Association
18 South Stockton Street, Philadelphia 3, Pa.

Louis I. Kahn Architect
138 S. 20th Street, Philadelphia 3, Pa.

John M. Hirsch & Stanley R. Dube
Associated Supervising Architects
115 West State Street, Trenton, New Jersey

April 16, 1957

Instructions to Bidders

1. Plans specifications may be inspected at the office of Louis I. Kahn, Architect 138 S. 20th Street, Philadelphia, Pa. or at 115 W. State Street, Trenton, New Jersey, office of the Associated Supervising Architects, John M. Hirsch and Stanley R. Dube.
2. Proposal form bound herein shall be copied on the stationery of the bidder and shall be submitted in typed form with figures printed in words and numerals, and properly signed.
3. Due date for proposals April 23, 1957
4. Deliver proposals to The Trenton Jewish community Center Association 18 S. Stockton Street, Trenton, New Jersey.

(ON LETTERHEAD OF BIDDER)

PROPOSAL

TO: THE TRENTON JEWISH COMMUNITY CENTER ASSOCIATION
18 SOUTH STOCKTON STREET
TRENTON, NEW JERSEY
Date _____

Gentlemen:

The undersigned, having familiarized _____
(himself) (themselves)

with the local conditions affecting the cost of the work, and with the requirements (including Instructions to Bidders, this proposal, the General Conditions, the Supplementary General Conditions, the General Scope of Work, the Technical Specifications and Drawings) and Addenda, if any thereto, as prepared by Louis I. Kahn, Architect, hereby proposes to furnish all labor, materials, equipment and services required to construct and complete the construction of the Day Camp Buildings for the Trenton Jewish Community Center, Lower Ferry Road West of Parkway Avenue, Ewing Township, Mercer County, New Jersey, all in accordance therewith, for the following proposal:

BASE BID NO. 1

For all General Construction Work required by the documents, the sum
of _____
_____ Dollars (\$ _____).

The undersigned proposes to complete, if awarded the contract, the complete contract work within _____ calendar days after date and time of signing of the contract.

The Bidder hereby acknowledges the receipt of the following issues of Addenda, if any.

Addendum No. _____ dated _____

Addendum No. _____ dated _____

Day Camp

SUPPLEMENTARY GENERAL CONDITIONS

Amendments and Additions to the General Conditions

ARTICLE 45 – EXECUTION, CORRELATION AND INTENT OF DOCUMENTS

Article 2 of the General Conditions shall be supplemented as follows:
It is intended that the work and materials not expressly shown or called for in the documents but reasonably inferable and necessary for the proper execution of the work shall be performed or furnished even though not specifically required.

ARTICLE 46 – DETAIL DRAWINGS AND INSTRUCTIONS

Article 3 of the General conditions shall be supplemented as follows:
In giving additional instructions, the Architect shall have authority to make minor changes in the work not involving extra cost, and not inconsistent with the purposes of the building.

ARTICLE 47 – COPIES FURNISHED

Article 4 of the General Conditions shall be modified as follows:
The Architect will furnish to the contractor free of charge, six (6) sets of contract drawings and specifications and three (3) prints of each detail drawing.

ARTICLE 48 – SHOP DRAWINGS

Article 5 of the General Conditions shall be amended as follows:
contractor shall submit at least four (4) copies of all shop and setting drawings for review and approval.

1. Excavation, Grading, Seeding and Sodding

- a. Excavate for column footings and slab edges.
- b. Obtain required fill from designated area on site. Place fill in layers not to exceed 8" in depth and tamp to a firm bed.
- c. Provide and place in the circular area around buildings crushed stone or gravel to a depth of 3" and top with slate shale chips of a kind approved by architect to a depth of 1 ½". Bring the top of shale chips up to grade elevations shown on plans.
- d. Seeding and Sodding not part of this contract.

2. Concrete

- a. Concrete - 2500 p.s.i. certified central mix stone concrete.
- b. Reinforcement – intermediate grade new billet steel. ASTM 305-15
- c. Form work – for columns use 13" x 13" terra cotta flue tile stacked without mortar joints and properly aligned and braced. Columns can be poured in 2 or 3 24" sections per day.
For slab edges use board forms.
- d. Cure slabs 10 days by covering with a kraft paper that will retain moisture.
- e. Expansion joint between slabs in C building ½" asphalt saturated Celetex.
- f. Place floor slabs in Buildings A, B, and D in alternate sections to create joints where shown.
- g. Floor finish – wood floated.
- h. Bolts, anchors etc. shall be supplied and located by the contractor receiving same.

3. Masonry

- a. Brick – allow \$40.00 M for purchase. Brick to be as selected by architect.
- b. Joints nominal ½" thick, plain out with no particular care.
- c. Drain openings at bottom of walls where indicated of alternate openings and header size bricks.
- d. Mortar – cement lime 1:5 with 15% of cement content in hydrated lime.
- e. Anchors – galvanized sheet metal corrugated in column joints where brick adjoins.
- f. Painting in Section 6

4. Miscellaneous Metals

- a. Woven wire partition and horizontal rolling woven wire door not part of this contract.

5. Canvas Toilet Cubicles

- a. Canvas, one thickness of standard grade awning material of color and pattern as selected by architect.
- b. Turn back and stitch all edges of material for threading of wire rope as detailed.
- c. Furnish and install galvanized eye bolts in floor, ceiling and walls.
- d. Furnish and thread galvanized wire cable and tighten with turnbuckle

6. Painting

- a. Paint all brick walls inside and out with one coat of an approved white portland cement paint applied in accordance with manufacture directions.

7. Plumbing

- a. Provide and install complete system of plumbing and drainage in accordance with all applicable codes and regulations.
- b. Trenching and back-fill by plumbing contractor
- c. Drainage piping – cast iron soil pipe to existing man hole about 10' from Building C
- d. Lavatory wastes 1 ½" galvanized iron pipe.
- e. Water supply 2" cast iron water pipe from quieting 2" reducer on existing supply about 10' from Building C.
- f. Cold water supplied to fixtures – ½" type L copper tubing.
- g. Plumbing Fixtures

Water closet – American Standard – Compact F-204 CN black Mol-tex without cover – fitted tank with locking cover.

Urinal – Eljer E-2880 C 36 long

Lavatory – American Standard Hexagon – 20" x18" P3867R

Shower head – Speakman S-1350 pull chain with 4" head

Drain – Josam Series 0534

Day Camp

8. Electrical Work

- a. All work to be in accord with National Electrical code, rules of Public Services Electric and Gas Company and any public or municipal authorities having jurisdiction.
- b. Obtain and pay for all permits and certificates pertaining to this work. Upon completion secure certificate of approval from local inspection bureau of National board of Fire Underwriters.
- c. Provide terminal pole in accordance with requirements of the Public Services E & A company to receive the serial extension from pole at highway by the Power co. Include all brackets, hardware and guying.
- d. Extend 1 1/4" conduit with 3 #4 RHW cables down pole and underground into meter cabinet in building.
- e. Provide a 100 Ampere, 150/230 Volt, 3 wire single phase meter cabinet and entrance switch in storage room.
- f. Branch circuit panel to be provided with 100 Amp. 118/230 volt 3 wire bus and 20 Amp. single pole circuit breakers.
- g. Extend branch circuit wiring in galvanized rigid conduit to lighting and receptacle outlets. Minimum wire size to be 12 ga. Conduits to be sized in accordance with N.E. code tables.
- h. Lighting and receptacle outlet boxes to be drip proof type with gasketed covers where they are exposed to the weather.
Convenience receptacles in pavilions to be weather proof type equipped with hinged covers arranged for padlocking. Similar to Crouse Hinds Co. F8 #1514.
Receptacles on columns are to be recessed in the Terra-cotta tiles.
Care shall be exercised to locate them in joints in the tile, openings shall be neatly sized to fit the outlet boxes.
- i. Provide outlets for lighting fixtures at locations indicated in drawings. Include the sum of sixty dollars in estimate for the purchase of lighting fixtures.
- j. All branch circuits are to be panel controlled.
- k. All conduits and equipment shall be grounded in accordance with requirements of the National Electric Codes.

Biography: Louis Isadore Kahn (1901-1974)

- 1901 Louis Isadore Kahn is born on the island of Osel (now Saaremaa) off the coast of Estonia to Leopold and Bertha Kahn.
- 1906 Bertha takes Louis, his sister Sarah and brother Oscar, to join Leopold in Philadelphia, where he emigrated to find work in 1904.
- 1912 Kahn starts high school, where his talents for art and music are recognized and he wins prizes and scholarships.
- 1920 Wins a scholarship to study architecture under Paul Cret at the School of Fine Arts, University of Philadelphia.
- 1924 Graduates from university with numerous awards and is employed as a draughtsman by the architect John Molitor.
- 1928 Embarks on a two-year tour of Europe visiting the UK, Netherlands, Germany, Scandinavia, Estonia, Latvia, Switzerland, Hungary, Austria, Italy and France.
- 1930 On his return from Europe, Kahn marries Esther Israeli, but has difficulty finding work during the economic depression.
- 1935 Establishes an independent architectural practice in Philadelphia, but struggles to find work other than modest local housing projects. Birth of his daughter Sue Ann.
- 1947 Starts teaching at Yale.
- 1950 Wins a fellowship to the American Academy in Rome and travels to Greece and Italy, where he is inspired by the ancient ruins.
- 1951 On his return, Kahn puts his new ideas into practice in the design of an extension to the Yale Art Gallery and the Trenton Bathhouse.
- 1954 Alexandra, daughter of Louis Kahn and architect Anne Tyng, is born.
- 1955 Becomes professor of architecture at the University of Pennsylvania, where he teaches until his death in 1974.
- 1957 Designs the Alfred Newton Richards Medical Research Building at the University of Pennsylvania.
- 1959 Begins a six-year project to construct the Jonas Salk Institute for Biological Studies in La Jolla, California.

- 1960 Designs the Dr. and Mrs. Norman Fisher House in Hatboro, Pennsylvania, and starts work on the campus at Bryn Mawr.
- 1962 Starts work on a twelve-year program to build the Indian Institute of Management in Ahmedabad and on the construction of the Capital Complex in Dhaka, Bangladesh, which will be completed after his death. Nathaniel, son of Louis Kahn and landscape architect Harriet Pattison, is born.
- 1965 Designs the Library and Dining Hall for the Phillips Exeter Academy in New Hampshire.
- 1966 Begins work on the design of the Kimbell Art Museum in Fort Worth, Texas. The Museum of Modern Art, New York, mounts a retrospective exhibition of Kahn's work.
- 1969 Wins his second major commission at Yale University to design the Yale Center for British Art.
- 1974 Dies of a heart attack in Pennsylvania Station, New York, on his return from India.

List of Projects

(Source: The Louis I. Kahn Collection, Architectural Archives of the University of Pennsylvania)

1935-39:

Jersey Homesteads Cooperative Development, Hightstown, NJ; 1935-37

Prefabricated House; 1937 (unbuilt)

1940-49:

Oser House, Melrose Park, PA; 1940-42

Carver Court Housing, Coatesville, PA; 1941-43

Pine Ford Acres, Middletown, PA; 1941-43 (partially demolished)

Bomber City (Willow Run), Detroit, MI; 1942-43 (unbuilt)

Lily Ponds Housing, Washington, DC; 1942-43 (partially demolished)

Hotel for 194x, published; 1943 (unbuilt)

Parasol House Type for Knoll Associates; 1944 (unbuilt)

Pittsburgh Plate Glass Company, Store Design, published; 1944 (unbuilt)

Radbill Oil Company, Philadelphia, PA; 1944-47

Finklestein House (addition), Ardmore, PA; 1945-48 (unbuilt)

Hooper House (addition), Baltimore, MD; 1946 (unbuilt)

Philadelphia City Planning: Triangle Area, Philadelphia, PA; 1946-48 (unbuilt)

Jefferson Expansion Memorial Competition, St. Louis, MO; 1947 (unbuilt)

Ehle House, Haverford, PA; 1947-48 (unbuilt)

Roche House, Conshohocken, PA; 1947-49

Tompkins House, Philadelphia, PA; 1947-49 (unbuilt)

Weiss House, Norristown, PA; 1947-50

Genel House, Wynnewood, PA; 1948-51

Jewish Agency for Palestine Emergency Housing, Israel; 1949 (unbuilt)

1950-59

Philadelphia City Planning: Traffic and Row House Studies, Philadelphia, PA; 1951-53 (unbuilt)

Yale Art Gallery, New Haven, CT; 1951-53

Fruchter House, Philadelphia, PA; 1951-54 (unbuilt)

Mill Creek Housing, Philadelphia, PA; 1951-56

Philadelphia City Planning: Penn Center, Philadelphia, PA; 1951-58 (unbuilt)

City Tower Project, Philadelphia, PA; 1952-57 (unbuilt)

Adath Jeshuran Synagogue, Elkins Park, PA; 1954-55 (unbuilt)

Adler House, Philadelphia, PA; 1954-55 (unbuilt)

Weber DeVore House, Springfield, Philadelphia (1954-55)

Jewish Community Center, Trenton, NJ; 1954-59 (Bathhouse and Day Camp built)

Wharton Esherick Workshop, Paoli, PA; 1955-56

Morris House, Mt. Kisco, NY; 1955-58 (unbuilt)

Washington University Library Competition, St. Louis, MO; 1956 (unbuilt)

Philadelphia City Planning: Civic Center, Philadelphia, PA; 1956-57 (unbuilt)

Research Institute for Advanced Science, Baltimore, MD; 1956-58 (unbuilt)

Clever House, Cherry Hill, NJ; 1957-62

Richards Medical Research Laboratories, Philadelphia, PA; 1957-65

Tribune Review Building, Greensburg, PA; 1958-62 Fleisher House, Elkins Park, PA; 1959 (unbuilt)

Goldenberg House, Rydal, PA; 1959 (unbuilt)

Awbury Arboretum Housing Development, Philadelphia, PA; 1959-60 (unbuilt)

Esherick House, Chestnut Hill, PA; 1959-61

United States Consulate, Luanda, Angola; 1959-62 (unbuilt)

Salk Institute for Biological Studies, La Jolla, CA; 1959-65

First Unitarian Church, Rochester, NY; 1959-69

Fine Arts Center, Fort Wayne, IN; 1959-73

1960-69:

Roosevelt Memorial Competition, Washington, DC; 1960 (unbuilt)

Barge for American Wind Symphony Orchestra, England; 1960-61 (unbuilt)

Bristol Township Municipal Building, Levittown, PA; 1960-61 (unbuilt)

Philadelphia City Planning: Market East, Philadelphia, PA; 1960-63 (unbuilt)

University of Virginia Chemistry Building, Charlottesville, VA; 1960-63 (unbuilt)

Eleanor Donnelley Erdman Hall, Bryn Mawr, PA; 1960-65

Philadelphia College of Art, Philadelphia, PA; 1960-66 (unbuilt)

Fisher House, Hatboro, PA; 1960-67

Carborundum Warehouse and Sales Office, Atlanta, GA; 1961-62 (unbuilt)

Levy Memorial Playground, New York, NY; 1961-66 (unbuilt)

Mikveh Israel Synagogue, Philadelphia, PA; 1961-72 (unbuilt)

Esherick House (addition for Mrs. Parker), Chestnut Hill, PA; 1962-64 (unbuilt)

Indian Institute of Management, Ahmedabad, India; 1962-74

National Capitol of Bangladesh, Dhaka, Bangladesh; 1962-83

Hall of Ocean Life, Peabody Museum, New Haven, CT; 1963-65 (unbuilt)

President's Estate, Islamabad, Pakistan; 1963-66 (unbuilt)

Interama Community B, Miami, FL; 1963-69 (unbuilt)

Barge for American Wind Symphony Orchestra, Pittsburgh, PA; 1964-67 (unbuilt)

Dominican Motherhouse St. Catherine de Ricci, Media, PA; 1965-69 (unbuilt)

Maryland Institute College of Art, Baltimore, MD; 1965-69 (unbuilt)

Phillips Exeter Academy: Library/Dining Hall, Exeter, NH; 1965-72

Broadway Church and Office Building, New York, NY; 1966-68 (unbuilt)

Olivetti-Underwood Factory, Harrisburg, PA; 1966-70

Stem House, Washington, DC; 1966-70 (unbuilt)

Kimbell Art Museum, Fort Worth, TX; 1966-72

Memorial to the Six Million Jewish Martyrs, New York, NY; 1966-72 (unbuilt)

Temple Beth-El Synagogue, Chappaqua, NY; 1966-72

Kansas City Office Building, Kansas City, MO; 1966-73 (unbuilt)

Rittenhouse Square Housing, Philadelphia, PA; 1967 (unbuilt)

Hill Renewal and Redevelopment, New Haven, CT; 1967-74 (unbuilt)

Hurva Synagogue, Jerusalem, Israel; 1967-74 (unbuilt)

Palazzo Congressi-Biennale, Venice, Italy, 1968-74 (unbuilt)

Wolfson Center for Engineering, Tel-Aviv, Israel; 1968-74 (partially built)

Raab Dual Movie Theater, Philadelphia, PA; 1969-70 (unbuilt)

Rice University School of Architecture, Houston, TX; 1969-70 (unbuilt)

Inner Harbor Project, Baltimore, MD; 1969-73 (unbuilt)

Yale Center for British Art, New Haven, CT; 1969-74

1970-75

Family Planning Center, Khatmandu, Nepal; 1970-75 (partially built)

Treehouse, Eagleville Hospital, Eagleville, PA; 1971 (unbuilt)

Bicentennial Exposition, Philadelphia, PA; 1971-73 (unbuilt)

Government Hill Development, Jerusalem, Israel; 1971-73 (unbuilt)

Korman House, Fort Washington, PA; 1971-73

Graduate Theological Union Library, Berkeley, CA; 1971-74

Honickman House, Fort Washington, PA; 1971-74 (unbuilt)

de Menil Foundation, Houston, TX; 1972-74 (unbuilt)

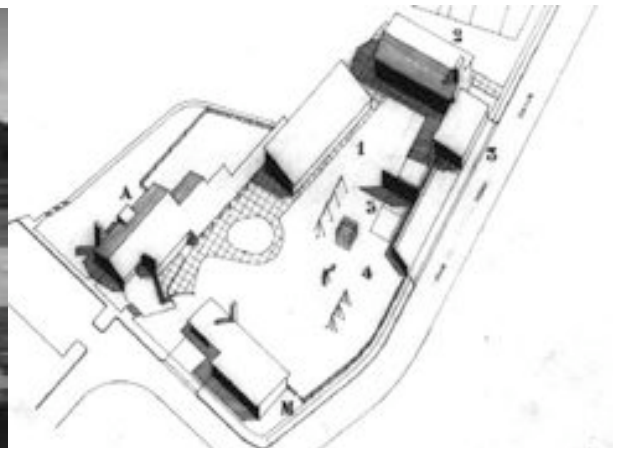
Philadelphia City Planning: Independence Mall, Philadelphia, PA; 1972-74 (unbuilt)

Pocono Arts Center, Luzerne County, PA; 1972-74 (unbuilt)

Abbasabad Redevelopment, Tehran, Iran; 1973-74 (unbuilt)

Roosevelt Memorial, New York, NY; 1973-74 (unbuilt)

Early Work

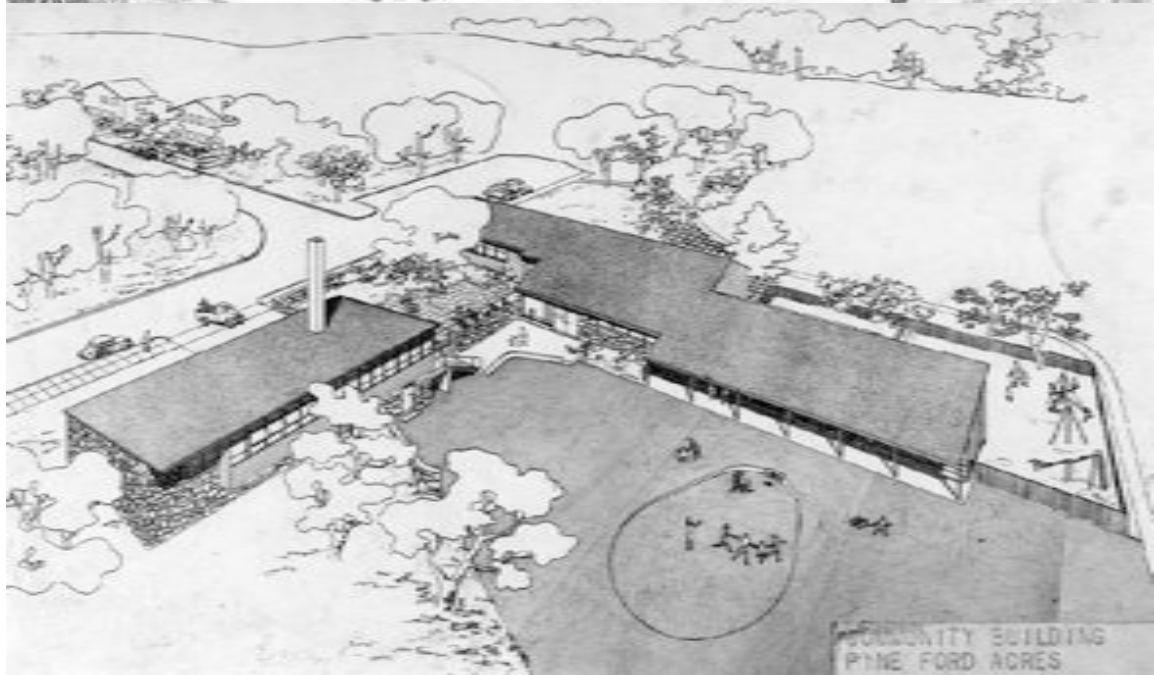


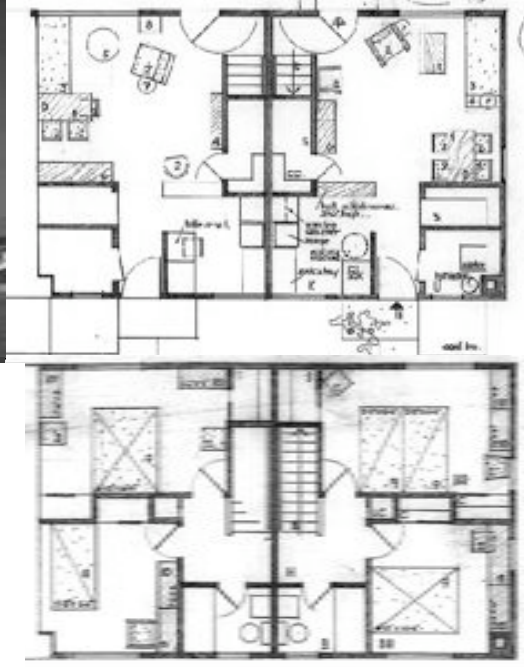
Pine Ford Acres Defence Housing Project, 1941-1943 (Howe & Kahn, architect, Daniel Urban Kiley, landscape architect)

Federal Works Agency and Federal Public Housing Authority, Middletown Housing Development
Housing Development and Community Center

Pine Ford Drive
Middletown Borough, Dauphin County, PA
(Originally part of Olmsted Air Force Base)

Pine Ford Acres consisted of 450 unit housing complex on a 51 acre tract of land.





Carver Court Defense Housing, 1941-1943

(Howe, Stonorov & Kahn, architect, Nathan Cronheim, structural and mechanical engineer, Daniel Urban Kiley, landscape architect)

Federal Public Housing Authority, National Housing Agency

Community Center and Housing Development

Foundry Street
Calm Township, Chester County, PA

Carver Court was completed in the early part of 1944 as a public housing project for 100 black war workers and their families, most of them employed at a nearby steel mill. It comprised 100 concrete block and frame dwelling units and a community building.



Pennypack Woods, 1941-1943 (Howe, Stonorov & Kahn, architect, L.H. Doane Associates, structural engineer, Daniel Urban Kiley, landscape architect)

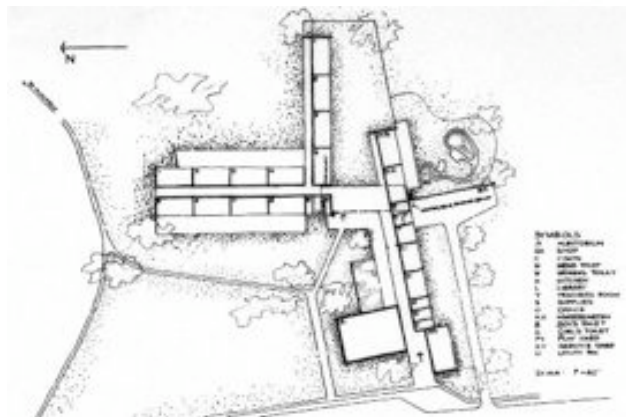
Federal Public Housing Authority, National Housing Agency

Housing Development, Community Center and Stores
Crispin Street, Holme Avenue, Frankford Avenue and
Pennypack Street
Philadelphia, PA



Bomber City (Willow Run Housing Development), 1942-1943 (Stonorov & Kahn)

Union of Automobile Workers and the Federal Public Housing Authority

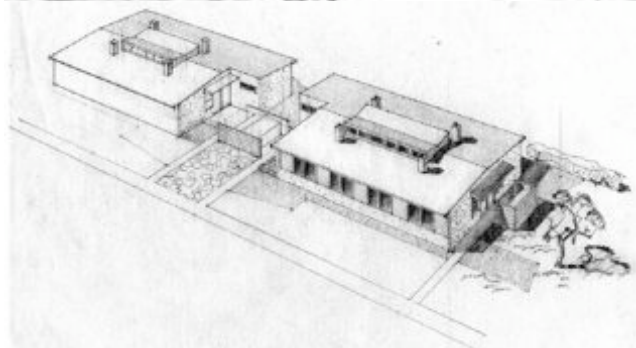


Holmes Road and Geddes Road
Washtenaw County, Michigan

Willow Run was designed as a city to house the families of 6,000 aircraft workers near a bomber plant operated by Ford. Five groups of architects, including the firm of Stonorov & Kahn, were chosen and each was asked to design one neighborhood. A sixth firm was asked to design the town center. Later in the process two of the communities were eliminated. The neighborhood designed by Stonorov & Kahn was part of the final plan, but the project was never realized.



ELEMENTARY SCHOOL, NO. 1
BOMBER CITY
STONOROV & KAHN, ARCHITECTS

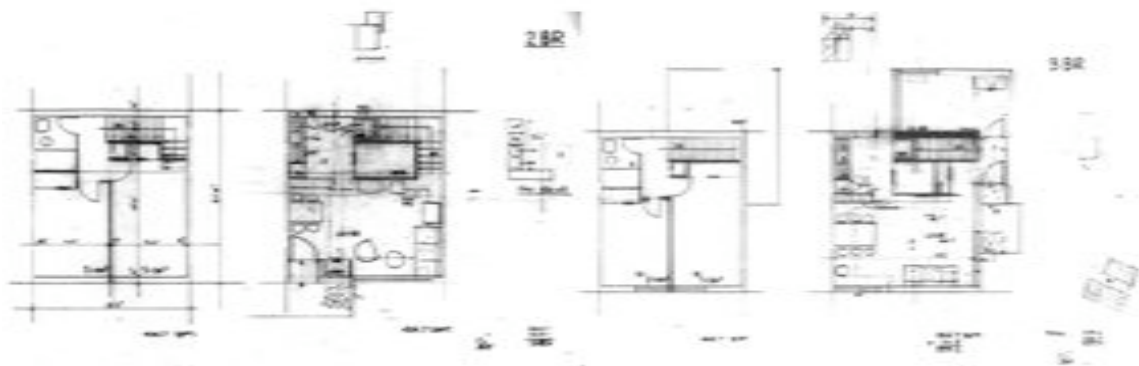


Lily Ponds Houses, 1942-1947
(Stonorov & Kahn)
The United States of America, Alley Dwelling
Authority

Community Center and Housing Development

Anacostia Parkway, Eastern Avenue, and
Kenilworth Avenue
Washington, D.C.

Lily Ponds was a war housing project comprising
475 dwelling units of cinder block, hollow tile and
frame. It also included a community building.

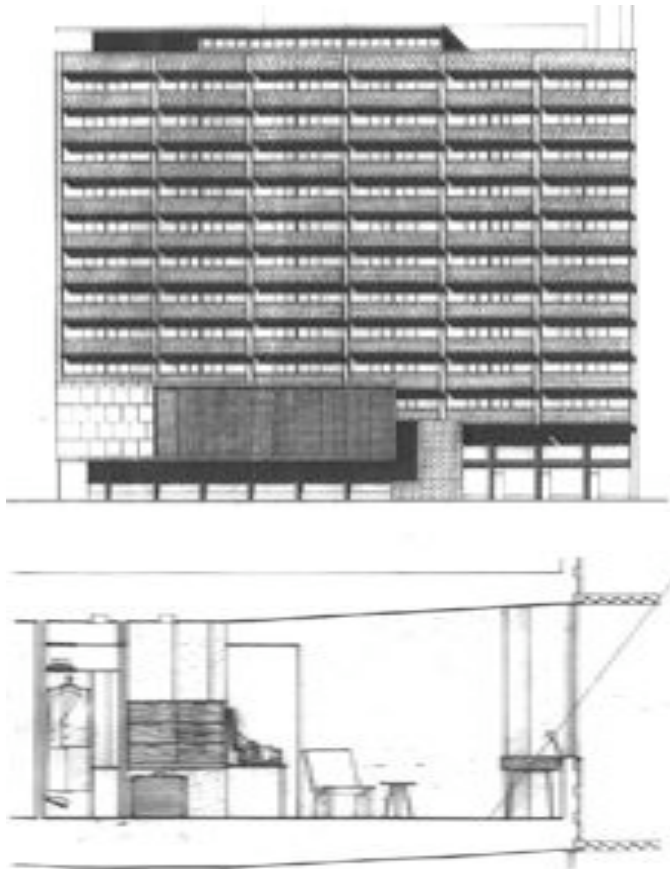


Stanton Road Dwellings, 1942-1947 (Howe & Kahn) (Unbuilt)

Federal Public Housing Authority, National Housing Agency and the National Capital Housing Authority

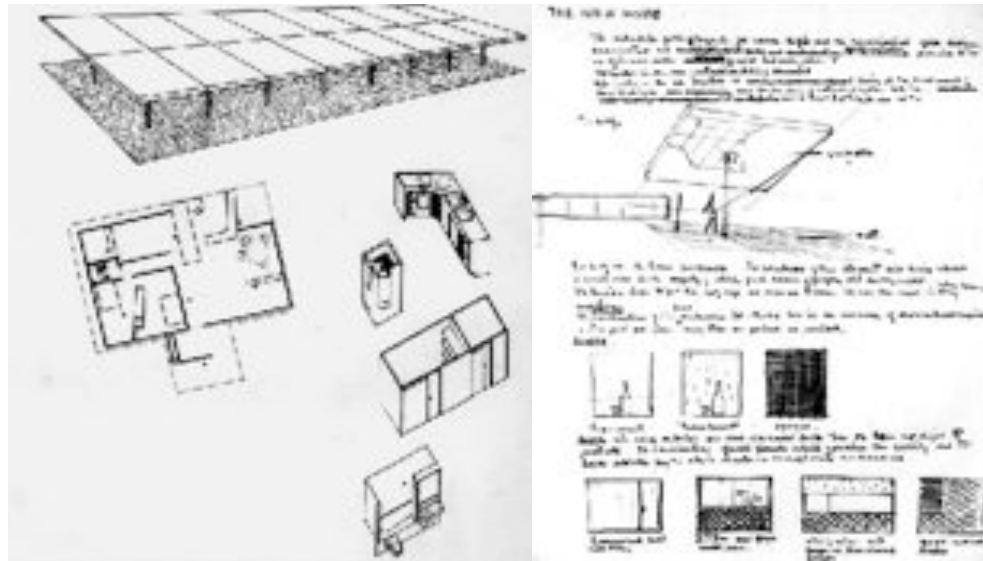
Community Center and Public Housing

Stanton Road SE, Alabama Avenue SE, and 15th Street, SE
Washington, D.C.



Hotel for 194X, *Architectural Forum*, 1943 (Stonþrov & Kahn)



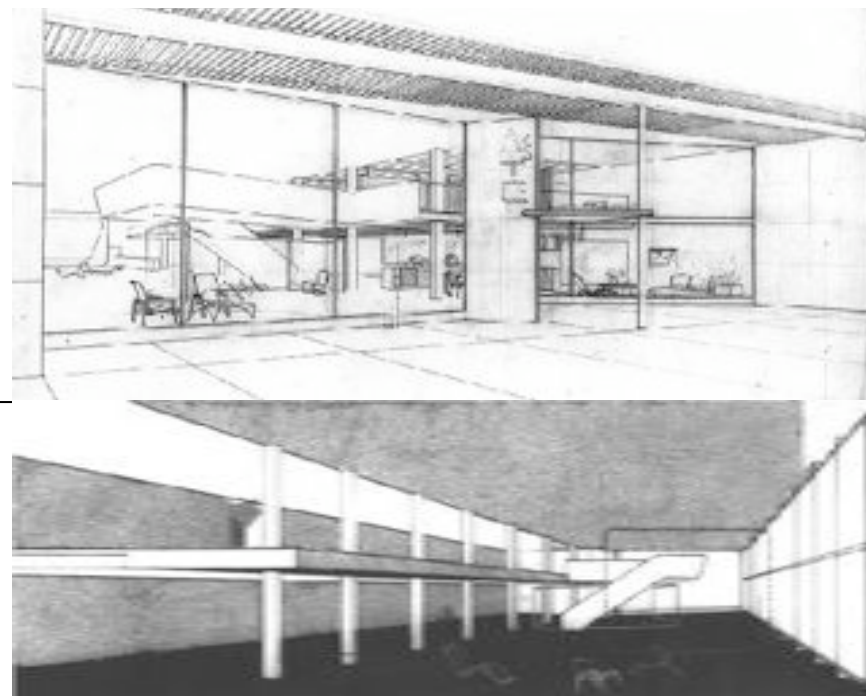


Parasol Houses, Knoll Associates Planning Unit, 1944 (Stonorov & Kahn)

Stonorov & Kahn were invited, along with six other architectural firms, by the furniture manufacturer Hans Knoll to join a "planning unit," set up to study the needs of contemporary households and devise new "equipment for living" -- essentially furniture and appliances -- for his clients to manufacture. These were then to be placed in an ideal architectural environment.



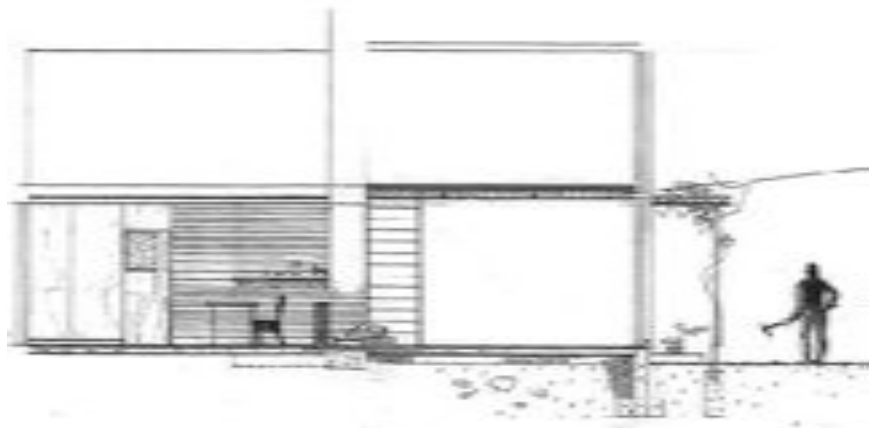
Model Men's Shoe Store, Pittsburgh Plate Glass Company, 1944 (Stonorov & Kahn)



Model Furniture Store, Pittsburgh Plate Glass Company, 1944 (Stonorov & Kahn)



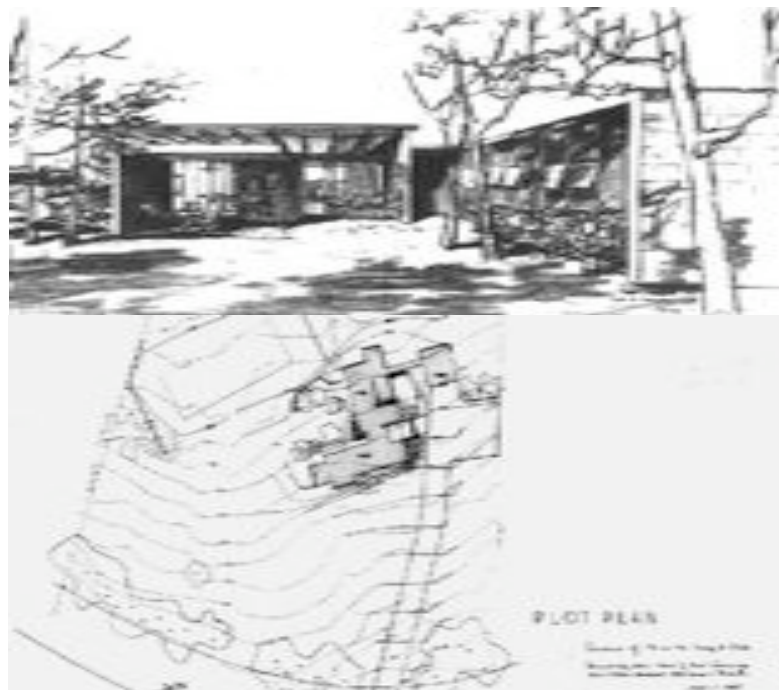
Pennsylvania Solar House, Libbey-Owens-Ford Glass Company, 1945-1947 (Stonorov & Kahn)





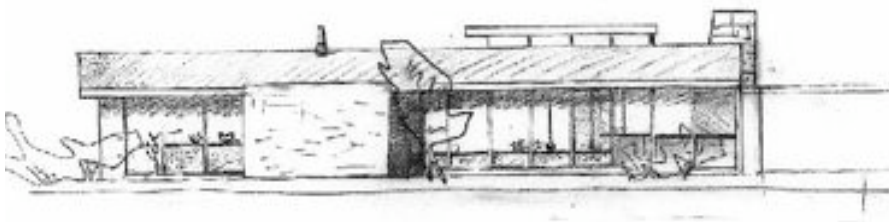
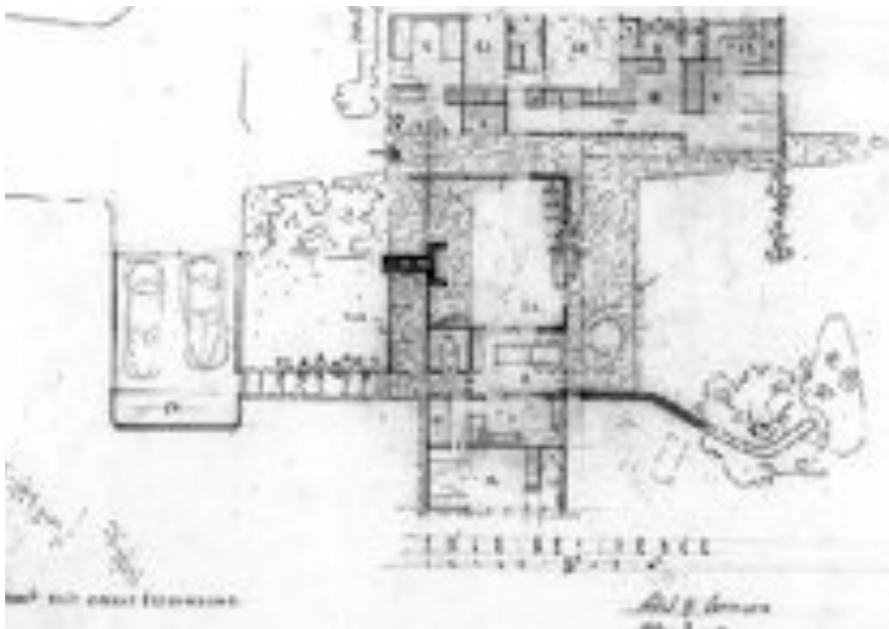
Drs. Lea and Arthur Finkelstein Residence,
addition, 1945-1948 (Stonorov & Kahn)

645 Overhill Rd
Ardmore, Lower Merion Township
Montgomery County, PA



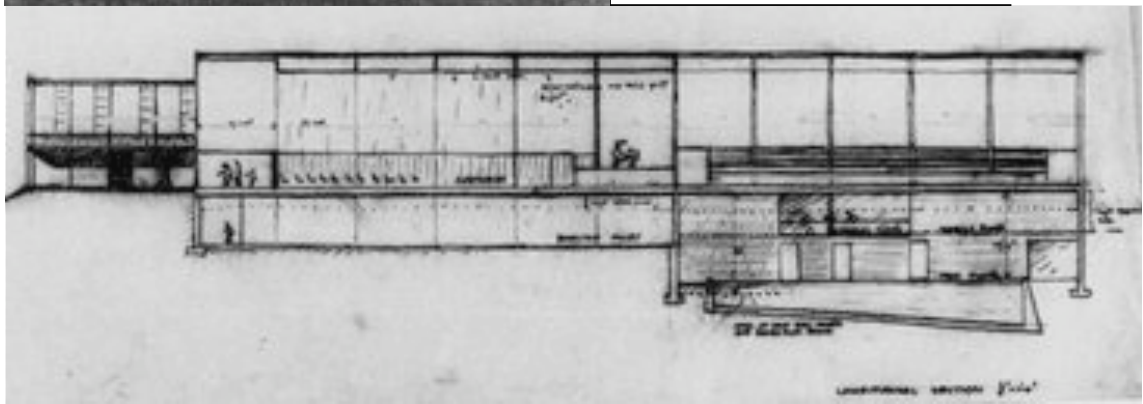
Harry A. and Emily L. Ehle Residence, 1947-1948 (Louis Isadore Kahn,
architect, Abel Sorensen, associated architect)

Mulberry Lane
Haverford, Lower Merion Township, Montgomery County, PA

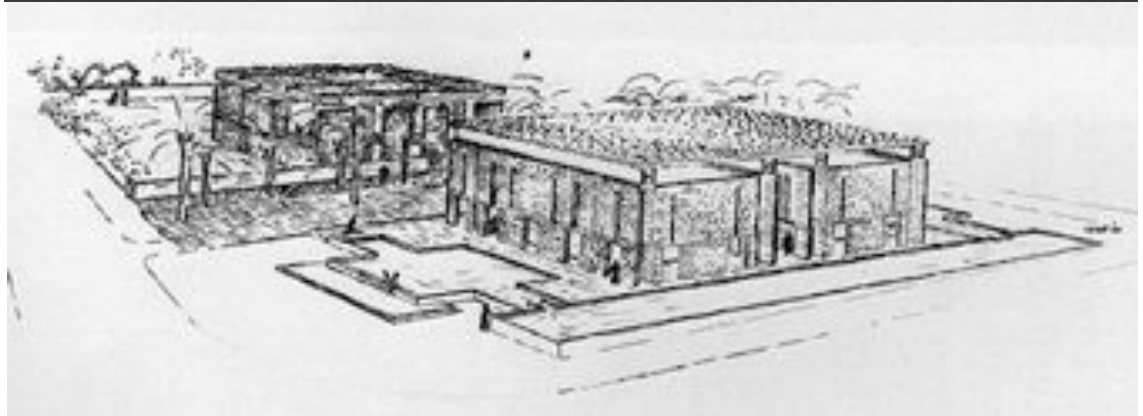




Day Camp Pavilion and Study Section for Community Center Building



United States Consulate Buildings Luanda, Angola: 1959-62 (Unbuilt)

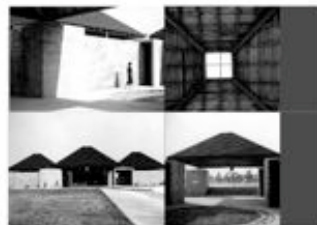
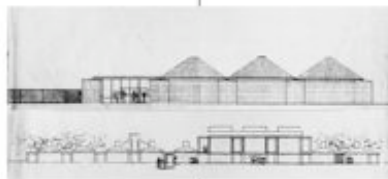


members.tripod.com



Top: Thomas Ball House (1877)

Editor: Thomas B. Edrington, PhD
Journal: *Colloquy*



The Lustron House





The Lustron House

THE COST: Tentatively priced at \$7500 to \$8000 depending on location. Price not guaranteed. No cellar or attic. Includes piping, connections and all bathroom and kitchen fixtures except stove and refrigerator; includes automatic combination clothes dishwasher and some built-in furniture. Total cost including lot, etc., about \$10,500.

CARRYING COST: About \$70 per month, including taxes, interest on mortgage, heating and amortization; repairs and maintenance would probably not run over \$50 per year.

THE LOT: At least 50 x 100 ft.; this leaves room for a garage.

DELIVERY: *Lustron* homes plans full production starting this summer; first deliveries promised for early summer.

ERECTION TIME: Three to five days.

BUILDING MATERIALS: Steel framing, factory welded into wall sections and interlocking porcelain enameled panels for inside and outside walls and roof. Concrete floor slab with waxed asphalt tile finish. Fireproof insulation 1 1/2" thick between porcelain enameled panels.

EXPANSION: Larger models are being planned; steel construction makes expansion practically impossible.

GENERAL DESIGN: Very well designed. About 1000 sq. ft. Living room serves as passage; dinette accommodates six; twin beds could be fitted in either bedroom. Washing machine comes with kitchen and there is space for ironing in utility room.

STORAGE SPACE: Sliding door closet 6 x 2 ft. in each bedroom. Additional closet space, cupboards and drawers (sufficient for two people) in built-in dressing table unit in master bedroom. Coat, broom and linen closets. Some storage space in utility room. Drawers and shelf space in dinette unit; cupboards to ceiling in kitchen.

HEATING SYSTEM: Radiant heat supplied by oil-burning boiler unit suspended from ceiling of utility room; warm-air heat distributed from ceilings. Should be efficient and economical. 275 gallon oil tank.

WATER HEATER: Gas or oil fired 30 gallon water heater, located in utility room.

UPKEEP: Choice of six pastel colors for interior. Porcelain enameled finish, advertised as "dull" is highly reflective. Can be cleaned with soap and water; chips can be retouched with paintbrush. May need repainting after 10 or 15 years.

ELECTRIC FIXTURES: Plenty of electric outlets, wall switches, etc.

WINDOWS: Excellent. Aluminum frames, weather tight, good hardware and provisions for putting on screens which are provided with house.

The Look House

\$7500 delivered and erected; price was guaranteed on orders received before June 1 but has not been raised. Includes unfinished attic; cellar extra. Also includes piping and connections to sewer system, water, gas and electricity up to 20 ft. from front of foundation line. Includes plumbing, heating, lighting, kitchen and bathroom equipment. Lot and grading would bring cost up to about \$10,000.

About \$75 per month, including taxes (figured at \$250 per year); interest (4 1/2% on \$5000); heating (\$100 per year); maintenance and repairs (\$120 per year); amortization.

At least 50 x 100 ft.; this leaves room for a garage.

Adirondack Homes guarantees shipment on first-come-first-served basis to any area served by one of their distributors within 30 days after approval of site and financing arrangements.

Two to three weeks; local finishing requires most of this time. Adirondack Homes guarantees erection within 30 days after delivery to site.

Conventional materials; prefabricated wood frame comes to site in large panels. Factory-assembled mechanical core utility unit contains heating equipment, plumbing, etc., or these can be made up of standardized units. Materials of interiors locally available: walls plywood or plasterboard, floors hardwood, usually oak. Fully insulated.

Sectional construction makes expansion relatively easy.

HOW DO THE COST COMPARE?

CARRYING COST

THE LOT

DELIVERY

ERECTION TIME

BUILDING MATERIALS

EXPANSION

The Lustron House

Tentatively priced at \$7500 to \$8000 depending on location. Price not guaranteed. No cellar or attic. Includes piping and connections as for Look house, and all bathroom and kitchen fixtures except stove and refrigerator; also includes automatic combination clothes and dishwasher and some built-in furniture. Total cost including lot, etc., about \$10,5000.

About \$70 per month, including taxes, interest on mortgage, heating and amortization as estimated for Look house; repairs and maintenance would probably not run over \$50 per year.

At least 50 x 100 ft.; this leaves room for a garage.

Lustron homes plans full production starting this summer; first deliveries promised for early summer.

Three to five days.

Steel framing, factory welded into wall sections and interlocking porcelain enameled panels for inside and outside walls and roof. Concrete floor slab with waxed asphalt tile finish. Fireproof insulation 1 1/2" thick between porcelain enameled panels.

Larger models are being planned; steel construction makes expansion practically impossible.

The Look House

Fairly well designed. 762 sq. ft. Location of front door means living room must serve as passage; dinette barely accommodates four; large bedroom would take twin beds but not easily; small bedroom has room for one bed only. Convenient kitchen but no space for washing machine or ironing board.

Closet in each bedroom approximately 3 x 2 1/2 ft.; coat closet 3 1/2 x 2 1/2 ft.; linen closet, broom closet in kitchen, storage space about 8 x 2 1/2 ft.; attic provides additional space, accessible only by ladder or disappearing stair. Cupboards to ceiling in kitchen.

Gas or oil burner, forced hot air. Heating system only fair.

A 20-gallon gas water heater, which is hardly adequate (see REPORTS, MAY). A 40- or 50-gallon electric water heater is available at extra cost.

Walls painted in colors of your own choosing; repainting inside and out probably necessary every few years.

Plenty of electric outlets; wall switches in each room; eleven lighting fixtures; overhead lights in kitchen, bathroom, etc.

Poor. Wood, far from weather tight, cheap hardware, hard to open and close. No provisions for weather stripping and apparently no provision for screens. Windows open from bottom out.

GENERAL DESIGN

STORAGE SPACE

HEATING SYSTEM

WATER HEATER

UPKEEP

ELECTRIC FIXTURES

WINDOWS

The Lustron House

Very well designed. About 1000 sq. ft. Living room serves as passage; dinette accommodates six; twin beds could be fitted in either bedroom. Washing machine comes with kitchen and there is space for ironing in utility room.

Sliding door closet 6 x 2 ft. in each bedroom. Additional closet space, cupboards and drawers (sufficient for two people) in built-in dressing table unit in master bedroom. Coat broom and linen closets. Some storage space in utility room. Drawers and shelf space in dinette unit; cupboards to ceiling in kitchen.

Radiant heat supplied by oil-burning boiler unit suspended from ceiling of utility room; warm-air heat distributed from ceilings. Should be efficient and economical. 275-gallon oil tank.

Gas or oil fired 30-gallon water heater, located in utility room.

Choice of six pastel colors for interior. Porcelain enameled finish, advertised as "dull" is highly reflective. Can be cleaned with soap and water; chips can be retouched with paintbrush. May need repainting after 10 or 15 years.

Plenty of electric outlets, wall switches, etc. Hardware superior to that in Look house.

Excellent. Aluminum frames, weather tight, good hardware, and provisions for putting on screens which are provided with house.

Suburbia and the Post War Years

(Source: *Life: Century of Change, America in Pictures 1900-2000*)



"The Forties were dominated by war machines and the by-products of war: the roar of jet engines, the portentous silence of electronic digital computers, the nuclear flash. The flash kept rerunning like an endless film loop through the world's nightmares.

The Fifties surprised us with reckless, touching confidence in the whole idea of *new*. (Fifties America loved pastel pinks and aquas – reckless, touching colors.) ...American cars of the Fifties had ridiculous chrome, ridiculous tail fins, ridiculous big engines, ridiculous colors – they were beautiful. Blessed is the nation that is wholly comfortable in its own skin..."

"Faster, Higher, Smarter, Smaller," by David Gelernter, p 70-71.

In 1945, with 12 million returning American servicemen and a post-war housing shortage, *Life* presented a story about expanding living space by creating wall storage units and room dividers.

- photographer Herbert Gehr p.329.

Life: Century of Change, America in Pictures 1900-2000.



"Cheap, tough, impervious to heat and stackable, Russel Wright's American Modern ceramics were the everyday dishes of a postwar generation. Wright, raised a Quaker, was the country's best-known designer in the Forties, admired for his ability to create simple, elegant objects that brought artfulness to the process of mass-production."

– photographer D.W. Pierce p.327.



In 1949 Charles and Ray Eames with architect Eero Saarinen created their home in Los Angeles with a style that was “as spare and elegant as the famous Eames furniture they were sitting on.”
– photographer Arnold Newman p. 315.



In 1952, a year before the development of polyester and with Dad in Dacron, the Margulies family of Scarsdale, New York, showed the plastic contents of the house.
– photographer Leslie Gill p. 340.

“[W]hen asked how much they relied on plastic, they emptied their house for the photo.”

The Medium Is The Message

(Source: *nextag.com* and *dowahdiddy.com*)

The Medium is the Message

(David Laundy, *Contemporary Media: The Construction of Culture*, 1994)



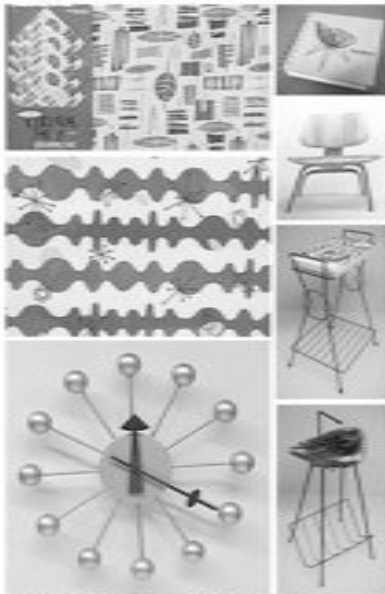
"The Original First Place (Swan) has grown to become the 12th place (1978)."
 (Source: *David Laundy*)



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Acknowledging Tradition: The Sukkah and The Mikvah

Sukkah

Source: *Friedman, Richard Elliott. The Bible with Sources Revealed (San Francisco: Harper One, 2003.) pp.228-29.*



(heartofwisdom.com/artman)

The word sukkot is the plural of the Hebrew word sukkah, meaning booth or hut. During this holiday, Jews are instructed to construct a temporary structure in which to eat their meals, entertain guests, relax, and even sleep. The sukkah is reminiscent of the type of huts in which the ancient Israelites dwelt during their 40 years of wandering in the desert after the Exodus from Egypt, and is intended to reflect God's benevolence in providing for all the Jews' needs in the desert.

Sukkot was agricultural in origin. This is evident from the name "The Feast of Ingathering," from the ceremonies accompanying it, and from the season and occasion of its celebration: "At the end of the year when you gather in your labors out of the field" (Ex. 23:16); "after you have gathered in from your threshing-floor and from your winepress" (Deut. 16:13). It was a thanksgiving for the fruit harvest (compare Judges 9:27). And in what may explain the festival's name, Isaiah reports that grape harvesters kept booths in their vineyards (Isa. 1:8). Coming as it did at the completion of the harvest, Sukkot was regarded as a general thanksgiving for the bounty of nature in the year that had passed.

Sukkot became one of the most important feasts in Judaism, as indicated by its designation as "the Feast of the Lord" (Lev. 23:39; Judges 21:19) or simply "the Feast" (1 Kings 8:2, 65; 12:32; 2 Chron. 5:3; 7:8). Perhaps because of its wide attendance, Sukkot became the appropriate time for important state ceremonies. Moses instructed the children of Israel to gather for a reading of the Law during Sukkot every seventh year (Deut. 31:10-11). King Solomon dedicated the Temple in Jerusalem on Sukkot (1 Kings 8; 2 Chron. 7). And Sukkot was the first sacred occasion observed after the resumption of sacrifices in Jerusalem after the Babylonian captivity (Ezra 3:2-4).

In the time of Nehemiah, after the Babylonian captivity, the Israelites celebrated Sukkot by making and dwelling in booths, a practice of which Nehemiah reports: "the Israelites had not done so from the days of Joshua" (Neh. 8:13-17). In a practice related to that of the Four Species, Nehemiah also reports that the Israelites found in the Law the commandment that they "go out to the mountains and bring leafy branches of olive trees, pine trees, myrtles, palms and [other] leafy trees to make booths" (Neh. 8:14-15). In Leviticus, God told Moses to command the people: "On the first day you shall take the

product of hadar trees, branches of palm trees, boughs of leafy trees, and willows of the brook” (Lev. 23:40), and “You shall live in booths seven days; all citizens in Israel shall live in booths, in order that future generations may know that I made the Israelite people live in booths when I brought them out of the land of Egypt” (Lev. 23:42-43). Numbers, however, indicates that while in the wilderness, the Israelites dwelt in tents (Num. 11:10; 16:27). Some secular scholars consider Leviticus 23:39-43 (the commandments regarding booths and the four species) to be an insertion by a late redactor. (wikipedia.org/wiki/Sukkot).

The sukkah is great fun for the children. Building the sukkah each year satisfies the common childhood fantasy of building a fort, and dwelling in the sukkah satisfies a child's desire to camp out in the backyard. The commandment to "dwell" in a sukkah can be fulfilled by simply eating all of one's meals there; however, if the weather, climate, and one's health permit, one should spend as much time in the sukkah as possible, including sleeping in it.

A sukkah must have at least two and a half walls covered with a material that will not blow away in the wind. Why two and a half walls? Look at the letters in the word "sukkah." One letter has four sides, one has three sides and one has two and a half sides. The "walls" of the sukkah do not have to be solid; canvas covering tied or nailed down is acceptable and quite common in the United States. A sukkah may be any size, so long as it is large enough for you to fulfill the commandment of dwelling in it. The roof of the sukkah must be made of material referred to as sekhakh (literally, covering). To fulfill the commandment, sekhakh must be something that grew from the ground and was cut off, such as tree branches, corn stalks, bamboo reeds, sticks, or two-by-fours. Sekhakh must be left loose, not tied together or tied down. Sekhakh must be placed sparsely enough that rain can get in, and preferably sparsely enough that the stars can be seen, but not so sparsely that more than ten inches is open at any point or that there is more light than shade. The sekhakh must be put on last. Note: You may put a water-proof cover over the top of the sukkah when it is raining to protect the contents of the sukkah, but you cannot use it as a sukkah while it is covered and you must remove the cover to fulfill the mitzvah of dwelling in a sukkah. (jewfaq.org/holiday)

Mikvah

Source: (en.wikipedia.org/wiki/Mikvah)

A mikvah is central to an Orthodox Jewish community. A Jewish community is traditionally required to build a mikvah (for women) before they build a synagogue, and to sell a Torah scroll to build one if need be. The rules regarding the construction of a mikvah are complicated. The immersion itself must take place in a pool which is a spring (ma'yan) or a well of naturally occurring water, containing a certain minimum quantity of water, or connected in a halakhically prescribed manner to one of the above.

Rainwater, certain springs, wells, rivers, lakes and oceans can therefore be used for the pool, as can snow and other naturally precipitated frozen water. There are also requirements for the manner in which the water can be stored and transported to a pool.

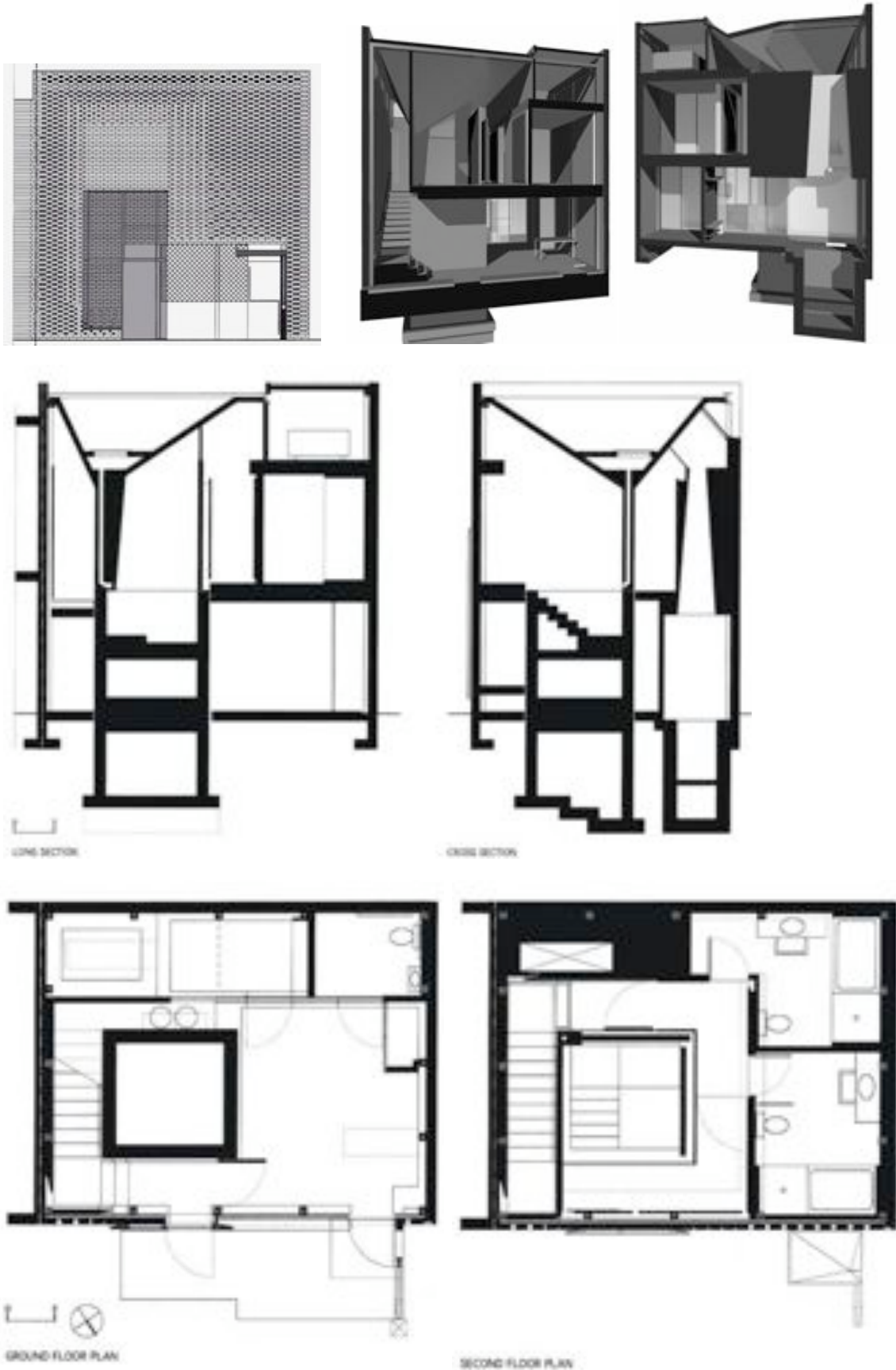


*Judenbad Mikvah in Speyer, first mentioned in the year 1128.
(commons.wikimedia.org/wiki/Image:Judenbad_Speyer)*



Judenbad Mikvah in Speyer, Germany (jewishjournal.com/images/photos/judenbad)

In general, water must flow naturally e.g. by gravity or pressure gradient (it cannot be pumped or carried). As a result, tap water cannot be used for the “natural water” component of a mikvah, and a special construction is required. Most contemporary mikvas are indoor constructions involving rain water collected in a cistern (“otsar”) from which it flows by gravity into a basin (bor) which is connected by a duct to a regular bathing pool. Once the minimum required amount of “natural water” is added, regular tap water can be used to augment the amount, as long as the mikvah has a connection to the pool of rain water. This latter formula is often used so that the water used for immersion can be frequently changed. The duct can be closed to empty and replace the regular water without having to replace the rain water. A mikvah must contain a minimum of forty seah of water, approximately 150 U.S. gallons or 575 liters.^[1] If certain precautions are observed, the water in a mikvah can be heated. The environment of a contemporary mikvah is often not unlike a spa — though some are much simpler.



Source: *Jason King, Architect* (kingjason.net/mikvah)

Project: Mei Menachem Mikvah

Location: Brooklyn, New York, USA

Description: Jewish Ritual Bath

The Mikvah is an orthodox Jewish ritual bath that is the contemporary incarnation of a ritual originally sited in nature. Halachah (Jewish law) dictates that a Mikvah must be built into the ground, or built as an essential part of a building. In the Park Slope Mikvah, the Mikvah vessel is not just structurally an essential part of the building, it is also an essential, or central part of the Mikvah experience.

The building is centered around the Mikvah. The Mikvah ritual entails step-by-step detailed preparation, and in this case, the movement through the building becomes part of the preparation and the ritual, and enhances the experience. As you enter the building you see the Mikvah, you wait alongside it, feel the heat radiating from it, and then move up and around it to the preparation rooms. As you go up the stairs there is a skylight above, which is reminiscent of the first 'mikvahs' beneath the stars and the moon. For a woman who follows family purity laws, the Mikvah experience is cyclical, and is part of the rhythm of daily life. The lunar cycle of the Jewish calendar also sets the rhythm of daily life, and on clear nights the moon is visible above. The skylight also differentiates between the nighttime use (for family purity purposes), and the daytime use of a bride or a convert.

The primary function of the roof as a rain capturing device is evident in the shape of the roof above the stairs and in the space of the Mikvah itself. When it is raining a person going up will hear rain on the skylight, feel the slope and shape of the roof, and hear and possibly see water coming down through the building. (kingjason.net/mikvah)

Source: "The Mikvah," Introduction by Rivkah Slonim (edited), *Total Immersion: A Mikvah Anthology*, 1996.

The world's natural bodies of water - its oceans, rivers, wells, and spring-fed lakes - are mikvahs in their most primal form. They contain waters of divine source and thus, tradition teaches, the power to purify. Created even before the earth took shape, these bodies of water offer a quintessential route to consecration. But they pose difficulties as well. These waters may be inaccessible or dangerous, not to mention the problems of inclement weather and lack of privacy. Jewish life therefore necessitates the construction of mikvahs ("pools"), and indeed this has been done by Jews in every age and circumstance.

A mikvah must be built into the ground or built as an essential part of a building. Portable receptacles, such as bathtubs, whirlpools, or Jacuzzis, can therefore never function as mikvahs. The mikvah must contain a minimum of two hundred gallons of rainwater that was gathered and siphoned into the mikvah pool in accordance with a highly specific set of regulations. In extreme cases where the acquisition of rainwater is impossible, ice or snow originating from a natural source may be used to fill the mikvah. As with the

rainwater, an intricate set of laws surrounds its transport and handling.

The casual observer will often see only one pool -- the one used for immersion. In reality, most mikvahs are comprised of two, sometimes three, adjoining pools. While the accumulated rainwater is kept in one pool, the adjacent immersion pool is drained and refilled regularly with tap water. The pools share a common wall that has a hole at least two inches in diameter. The free flow, or "kissing," of waters between the two pools makes the waters of the immersion pool an extension of the natural rainwater, thus conferring upon the immersion pool the Halachah stipulates that one must be scrupulously clean before immersing legal status of a mikvah. (The above description is one of two methods sanctioned by Halachah to achieve this goal.) Modern-day mikvah pools are equipped with filtration and water-purification systems. The mikvah waters are commonly chest high and kept at a comfortable temperature. Access to the pool is achieved via stairs.

Immersion in the mikvah has offered a gateway to purity ever since the creation of man. The Midrash relates that after being banished from Eden, Adam sat in a river that flowed from the garden. This was an integral part of his teshuvah (repentance) process, of his attempt at return to his original perfection. Before the revelation at Sinai, all Jews were commanded to immerse themselves in preparation for coming face to face with G-d. In the desert, the famed "well of Miriam" served as a mikvah. And Aaron and his sons' induction into the priesthood were marked by immersion in the mikvah. In Temple times, the priests as well as each Jew who wished entry into the House of G-d had first to immerse in a mikvah. On Yom Kippur, the holiest of all days, the High Priest was allowed entrance into the Holy of Holies, the innermost chamber of the Temple, into which no other mortal could enter. This was the zenith of a day that involved an ascending order of services, each of which was preceded by immersion in the mikvah.

The primary uses of mikvah today are delineated in Jewish Law and date back to the dawn of Jewish history. They cover many elements of Jewish life. Mikvah is an integral part of conversion to Judaism. Mikvah is used, though less widely known, for the immersion of new pots, dishes, and utensils before they are used by a Jew. The mikvah concept is also the focal point of the taharah, the purification rite of a Jew before the person is laid to rest and the soul ascends on high. The manual pouring of water in a highly specific manner over the entire body of the deceased serves this purpose.

Mikvah is also used by men on various occasions; with the exception of conversion, they are all customary. The most widely practiced are immersion by a groom on his wedding day and by every man before Yom Kippur. Many Chassidic men use the mikvah before each Shabbat and holiday, some even making use of mikvah each day before morning prayer (in cities with large populations of observant Jews, special mikvahs for men facilitate these customs). But the most important and general usage of mikvah is for purification by the menstruant woman.

The mikvah's unparalleled function lies in its power of transformation, its ability to effect metamorphosis. Most Jews see the synagogue as the central institution in Jewish life. But

Jewish Law states that constructing a mikvah takes precedence even over building a house of worship. Both a synagogue and a Torah Scroll, Judaism's most venerated treasure, may be sold to raise funds for the building of a mikvah. In fact, in the eyes of Jewish law, a group of Jewish families living together do not attain the status of a community if they do not have a communal mikvah.

This is so for a simple reason: private and even communal prayer can be held in virtually any location, and venues for the social functions of the synagogue can be found elsewhere. But Jewish married life, and therefore the birth of future generations in accordance with Halachah, is possible only where there is accessibility to a mikvah. It is no exaggeration to state that the mikvah is the touchstone of Jewish life and the portal to a Jewish future. We have already determined that the function of mikvah is not to enhance physical hygiene. The concept of mikvah is rooted in the spiritual.

Jewish life is marked by the notion of Havdalah - separation and distinction. On Saturday night, as the Shabbat departs and the new week begins, Jews are reminded of the borders that delineate every aspect of life. Over a cup of sanctified wine, the Jew blesses G-d who "separates between the holy and the mundane, between light and darkness, between Israel and the nations, between the seventh day and six days of labor...."

In many ways mikvah is the threshold separating the unholy from the holy, but it is even more. Simply put, immersion in a mikvah signals a change in status -- more correctly, an elevation in status. Its unparalleled function lies in its power of transformation, its ability to effect metamorphosis.

Utensils that could heretofore not be used can, after immersion, be utilized in the holy act of eating as a Jew. A woman, who from the onset of her menses was in a state of niddut, separated from her husband, may after immersion be reunited with him in the ultimate holiness of married intimacy. Men or women in Temple times, who were precluded from services because of ritual defilement, could, after immersion, alight the Temple Mount, enter the House of G-d and involve themselves in sacrificial offerings and the like. The case of the convert is most dramatic. The individual who descends into the mikvah as a gentile emerges from beneath its waters as a Jew.

The mikvah personifies both the womb and the grave; the portals to life and afterlife. In both, the person is stripped of all power and prowess. In both there is a mode of total reliance, complete abdication of control. Immersion in the mikvah can be understood as a symbolic act of self-abnegation, the conscious suspension of the self as an autonomous force. In so doing, the immersing Jew signals a desire to achieve oneness with the source of all life, to return to a primeval unity with G-d. Immersion indicates the abandonment of one form of existence to embrace one infinitely higher. In keeping with this theme, immersion in the mikvah is described not only in terms of purification, revitalization, and rejuvenation but also - and perhaps primarily - as rebirth.

At first glance, the mikvah system speaks of limitations and constraints - a loss of freedom. In truth, emancipation is born of restriction. Secure, confident, well-adjusted

children (and adults) are disciplined children; they understand restraint and ultimately learn self-control. Safe, stable countries are those pieces of land surrounded by definite, well-guarded borders. The drawing of parameters creates terra firma amid chaos and confusion and allows for traversing of the plain we call "life" in a progressive and productive manner. And in no area of life is this more necessary than in our most intimate relationships.

"From every tree of the garden you may indeed eat but from the Tree of Knowledge of Good and Evil you must not eat...." So G-d commanded Adam and Eve on the day of their creation. But they indulged on that fateful Friday afternoon, and the history of mankind was altered forever.

The complicated nature of human sexuality has its genesis in this tale. For the Tree of Knowledge contained a mixture of good and bad, and indulgence of this "knowledge" by primeval man introduced a new world order: a world where good and bad intermingled, a world of confusion and challenge, multiple choices, and endless potential.

No longer would intimate relations -- one among many human biological functions -- be as natural and uncomplicated as the others. Banishment from the Garden of Eden meant the introduction of a new sexuality: one pregnant with possibility and fraught with tension. It would hold the key to great ecstasy and excruciating pain, the most tantalizing fulfillment and most devastating sensation of void. A meaningful union would necessitate unequivocal commitment and constant nurturing by man and woman. But even the maximum effort put forth by man would need to be augmented by help from above. The blessing would flow from a reservoir called mikvah, and Eden as it was before the sin would be attainable.

The single greatest gift granted by G-d to humankind is teshuvah - the possibility of return-to start anew and wash away the past. Teshuvah allows man to rise above the limitations imposed by time and makes it possible to affect our life retroactively. A single immersion in the mikvah late in life may appear insignificant to some, a quick and puny act. Yet coupled with dedication and awe, it is a monumental feat; it brings purity and its regenerative power not only to the present and future but even to one's past.

In this way, each woman can link herself to an ongoing tradition that has spanned the generations. Through mikvah she brings herself in immediate contact with the source of life, purity, and holiness - with the G-d who surrounds her and is within her always.

Slonim, Rivkah and Liz Rosenberg (Editors). *Total Immersion: A Mikvah Anthology* (New York: Jason Aronson, 1996).



Ritual bath near the Temple Mount (totheends.com)



Mikvah in Jerusalem (jerusalem.muni.il)

Source: (*mikvah.org*).

A link to the past, a promise for the future

A mikvah is a ritual bath, constructed according to intricate laws and specifications, for particular mitzvot commandments. The mikvah has the power to transform the everyday world into the realm of the holy and spiritual. The most important and general use of the mikvah is by brides and married women. For thousands of years, Jewish marriages and families have been strengthened through the sanctity and holiness inherent in Taharas Hamishpacha - the laws of family purity which require a woman to immerse in the mikvah after her menstrual period and prior to resuming physical intimacy with her husband. Generations of Jewish women have found that the mitzvah of mikvah brings them closer to G-d - the source of life, purity, and holiness.



(*sulinet.hu/cgi-bi*)



*Mikvah from the Second Temple period
at the Ophel Archeological Garden*

(*israelimages.com*)

A new beginning

Entering menopause: A time of transformation. A new phase of life begins. Invigoration. Inspiration. It is a time for a woman to explore her spirituality and increase her focus on herself, her marriage, and her family. Judaism offers a unique and incredibly special way to celebrate this transition and expand the spirit through the ritual of mikvah.

My Architect – The Movie



And... How can I wonder, often with grief, what will I then accomplish, in carrying the how much would I need the only father in the "How much would I need" house there in buildings, but how much wonder? How much would I need? And then, what would I need to be a few more people are still deeply engaged in relationship with me... that's very heartening. - Nathaniel Kahn



Robert A. M. Stern, Architect



Robert C. Davis, University of Tennessee, 2002



University of Houston at Clear Lake, Texas, 1969-72



Asian Institute of Management (Singapore), 1962-74



National Capitol of Bangladesh Dhaka, Bangladesh, 1962-63



Atrium Community Center (Tennis & Racquet), Irving, New Jersey, 1964

Number Theory – Anne Tyng

Number is Form and Form is Number

An Interview with Dr. Anne G. Tyng, November 11 and 13, 2003 by Robert Kirkbride
(Source: Anne Tyng, "Number is Form and Form is Number". Interview by Robert Kirkbride, *Nexus Network Journal*, vol. 7 no. 1 (Spring 2005), <http://www.nexusjournal.com/Kirk-Tyng.html>)



Robert Kirkbride with Anne Tyng

A Fellow of the American Institute of Architects and elected Academician of the National Academy of the Arts, Dr. Anne G. Tyng has explored the potentials of geometry through her architectural practice and 27 years of teaching at the University of Pennsylvania and Pratt University, following 29 years of collaboration with Louis I. Kahn. Dr. Tyng received a Master in Architecture from the Harvard Graduate School of Design, and later completed her Ph.D. with the guidance of Buckminster Fuller at the University of Pennsylvania.

Through such examples as Pascal's Triangle and her "Super Pythagorean Theorem," Dr. Tyng asserts that geometry is not only a metaphor for thought and the creative process, it is a spatial demonstration of how the mind generates associations by the combination, or layering, of pattern and chance.

Robert Kirkbride: Through a long career of building, teaching and writing you've proposed remarkable relationships among geometry, historical architectural forms, the creative process and cycles of psychological individuation. What are basic principles you've discovered between geometry and architectural form?

Anne Tyng: In thinking about form, there are so many layers that you can deal with - from, let's say, points to linearity, to planes, and then to three-dimensional forms. It's endless. You realize that number is a tremendously important tool, and you can almost say that number is form and form is number. The clustering of number gives scale, and also the sequences of number is a process. There is an endless array of possibilities in relating numbers to form. It is a language that people have to know in order to be an architect.

RK: What do you mean by that?

AT: We use letters to make words and words to make sentences and sentences to make some sort of story. We can do the same thing with number: one example is the Fibonacci sequence. In another example, what fascinated me about Pythagorean notions [is] that number is really shape - they saw it as shape. By using corresponding groups of dots rather than representative images, you get the sense that number has shape of its own - its triangular, its oblong, its square...



Fig. 1. Triangular, oblong and square Pythagorean numbers. For the Pythagoreans, number was not represented by such symbolic forms as Arabic numerals (the number "3" for example) but rather as clusters of points. "Certain numbers were triangular," notes Dr. Tyng, "such as 1, 3 and 6. Oblong numbers were even, being generated by the summation of even numbers as the areas of rectangles, such as 2, 6, 12, 20... Some numbers, like 6, were both triangular and oblong, making them magical in the eyes of the Pythagoreans." As such, numbers evoked qualitative as well as quantitative associations. Drawing Robert Kirkbride.

R K: And because it has a grammar of shape, number lends itself to a grammar of space, architecturally?

AT: Exactly. It enables one to think proportionally in very simple terms. Three dots by five dots can signify a room that is thirty feet by fifty feet, or sixty by one hundred. Many architects don't understand scale at all. Sometimes they're lucky and get something really good, but intuition needs that information [provided by geometry]. Very often students have said that they didn't want to learn too much about geometry because [they feel] it might upset their creativity.

R K: Here, then, is a question that vexes me. If such numerical ratios as the divine proportion may be traced within us as well as around us - found within human physiology as well as in the spirals of a pine cone - then why would one person be "intuitively better" at determining scale and proportion than another?

AT: That's a huge question - I don't know that I can answer that one! [Laughs] Some people simply have developed that sense from a very young age because of interest or a tendency that they inherit...it's hard to say what's behind it, but I think you can certainly become more aware of scale. I can remember one student who did a project where the windows were so out of scale with people - without realizing it. And she also didn't differentiate between a space that was supposed to be intimate and another that was supposed to be more monumental...

R K: Did a desire to sharpen facility with scale and proportion inform ideas behind your course *Forming Principles*?

AT: Yes. For example, while a cathedral evokes immensity, it's never too big of a mouthful. You can eat it in increments without swallowing the whole thing. This is very different from today's buildings, which typically employ repetition.

R K: And your idea that students design and build a set of children's building blocks...

AT: A set of building blocks governed by the permutations of the golden section and the five platonic solids...



Fig. 2. Image of measuring instruments depicted in the Gubbio studiolo. In the Gubbio studiolo (1476-83), one of two small meditation chambers created for the Duke of Urbino and his son, there are several emblems that point to the significance of architecture and geometry for education. The set-square/level and divider, instruments of the architect and geometer, were believed to conduct natural talent toward well-tempered, ethical action. The term "Ingenioq," located above, represented innate genius or ability, as compared with experience and training. Likewise, the musical proportions embodied in the cittern, an instrument strung with metal wire to better sustain pitch for impromptu performances, assist the grace of the body through dance, as recommended by Plato. Photo Robert Kirkbride.

RK: ...was it your desire to have young architects make these forms to gain tangible experience with proportion and universal forms, by breaking them down into component building block units?

AT: They would have to think in a three-dimensional way, using a three-dimensional sense. In other words, fitting stuff together... Some people have a great gift for that and they figure out puzzles very quickly. You have to exercise that skill if you don't have it and even if you do have it the whole point is that you may not know that these forms exist. It is an enlargement of your building vocabulary. If you know of these forms, then you're not going to build a pentagon the way the Pentagon is built in Washington.

RK: And why would you not want to do that?

AT: It's simplistic. It's a two-dimensional pentagon, extruded from plan. If you knew about a pentagon three-dimensionally, you would then have more thoughts about seeing it that way. If you have a big building, you have to have things within things within things within things... And the room shapes, what do you do about the room shapes? They all have to have acute or obtuse angles? You need to think in terms of the form as an asset to your solution - how you can fit things within things...

RK: And how does geometry assist in that process?

AT: In going from point to linearity, to planes and three-dimensional form, there are certain possibilities in three-dimensional space. This leads one to the five platonic solids, the only regular forms possible in three-dimensional space, in which all faces are the same and the angles at which the faces meet are the same. If tossed, a cube or any of these forms would have an equal chance of landing on any one of its faces. If you played with dice on Mars, they'd have to be one of those shapes. Over time, humans have tried to connect these solids to one other, from the Pythagoreans, ancient Egyptians and Greeks up through Luca Pacioli and [Johannes] Kepler, who considered [and later rejected] their nesting to demonstrate the calculable orbits of the planets. In *Timaeus*, Plato talks about how "only three may thus be compounded," referring to the simple solids of cube, tetrahedron and octahedron. The simple solids fill space by

themselves: you can nest an octahedron at the center of a tetrahedron that is nested, in turn, within a cube. All of these forms are related by the square root of 2. But one can go further. Using the divine proportion, the complex solids (the twelve-sided dodecahedron and twenty-sided icosahedron) may be generated from the simple solids. An icosahedron may be nested within the octahedron, and the dodecahedron may be built-out from a cube. It's a very elegant family of forms that expresses probability. It's a three-dimensional probability matrix...

R K: Can you explain some of the relationships you've discerned among geometry, probability and the creative process?

A T: To most people, probability is a statistical method of determining whether something is more or less probable, but they're not interested in it in terms of the creative process, let's say, or in terms of the evolution of form, which are similar - I think - in terms of the principles behind them. If you take Pascal's triangle you have what people have thought of as an oddity - the fact that you can create the Fibonacci sequence... Each diagonal in that triangle, whether from right to left or left to right, will add up to the Fibonacci sequence. So the further you go [down into] the Pascal Triangle, the closer you get to the Divine Proportion...

R K: Is this the interdependence you've often described [in your writing and teaching] between randomness and order, creativity and entropy? As more probabilities are created through Pascal's Triangle, more permutations are generated...

A T: ...in other words, you're being opened to more and more possibilities of time and space...

R K: ...and yet, the underlying continuity or structures become increasingly precise...

A T: If you take Pascal's Triangle as a creative process, what you're doing is tossing a coin for head or tails. And if that event has two possible outcomes, it's a very basic mathematical thing. It's binary... You keep repeating this binary toss, and as you do you accumulate [data]... And the key word is accumulating. You don't just get the bright idea without going through the process of accumulating random possibilities. So the accumulation of that repeated event of either/or finally builds up to all these different possibilities, and if you take the sums of those... In other words, each toss is a moment in time. Space is the horizontal component [in Pascal's Triangle]. Because you're adding up all of your tosses with each line, you then are open to more and more possibilities in time and space. That's one aspect of creativity, I think, that a computer does not offer - the idea that you plow through all the possibilities before you are able to have that synthesis occur. You can't make it happen like turning on a faucet; it occurs spontaneously, with some sort of solution to whatever the problem is. The brain is instantaneous and can go as fast as a computer if not quicker, because the computer needs to have stuff put into it in order to get to this business [of decision making], whereas you're not consciously aware of feeding stuff into the brain. The brain takes what it wants. It selects. It's always either/or - I'm choosing this, I'm choosing that - and

process of what happens. Probability is a process in itself. [In a design project] you start with the challenge of a problem and then you look to precedents and history, and then you give up attachment to any specific forms or spaces. You have to give up ego, some control. Out of that, what the Pascal Triangle shows you is that there is a mathematical proof of synthesis out of randomness. So it's more than a metaphor, it's a proof.

R K: Part of the complexity of the design process is, of course, that it engages the skills and limitations of others who are often beyond one's control. For example, despite receiving glowing press in recent years, ecologically sound design often encounters inertia on the local, municipal level - precisely where approvals are ultimately determined. Too often it's easier for official agencies to follow established habits - even if they are bad habits - than it is to entertain that there might be another simpler and better solution. Although sustainable design applies common sense, its advocates must overcome protracted, counterintuitive decision-making habits...

A T: The problem is that we see things as independent facts. If you take the Pythagorean Theorem, the sum of the squares of two sides equaling the square of the hypotenuse, that is remarkable in and of itself. But the idea that you can have a progression of overlapping triangles, related by the Fibonacci sequence, you see a totality to the individual facts that you are learning. It becomes less overwhelming. That's why having the students build a set of blocks covers a broad range potential forms. Then you're containing it within a small, simple container... To achieve that in built form enables students to understand these relationships in a way that they would not have otherwise. If number has shape the appreciation of geometry and proportion becomes architectonically palpable.

R K: What are the worst misuses or abuses of geometry that you've encountered - or misconceptions about geometry and architecture?

A T: I think is very important to maintain the idea of abstraction in terms of number. In other words, not to get hung up on something being a magic number. People do that a lot and then they don't go any further with it, they don't explain it or explore it... There was a man who was totally enraptured with the divine proportion. He *designed* in the divine proportion. And *that* is a mistake. His work was absolutely static, it was very boring. It didn't have the vitality you would get if you didn't start with the divine proportion. It's as if he was trying to take the end of the creative process as the beginning of his design. And that was a mistake, because you eliminate all of the rich possibilities along the way. You can see this sequence in the growth of a plant from bilateral to rotational to helical to spiral, you can see it in the human fetus... Many, many species have similar forms at those stages of development...

R K: You've disagreed with certain aspects of D'Arcy Thompson's writings on the role of the golden section in biological growth and form. Can you explain why?

A T: I believe he had a fear of the fuzzy mysticism surrounding numbers like the divine proportion, leading him to downplay relationships [such as the Fibonacci series in the

fir-cone] which, in his own words, "stare us in the face." He was right to be cautious, though, because many people *do* lose an objective handle on their [the numbers'] numinous qualities.

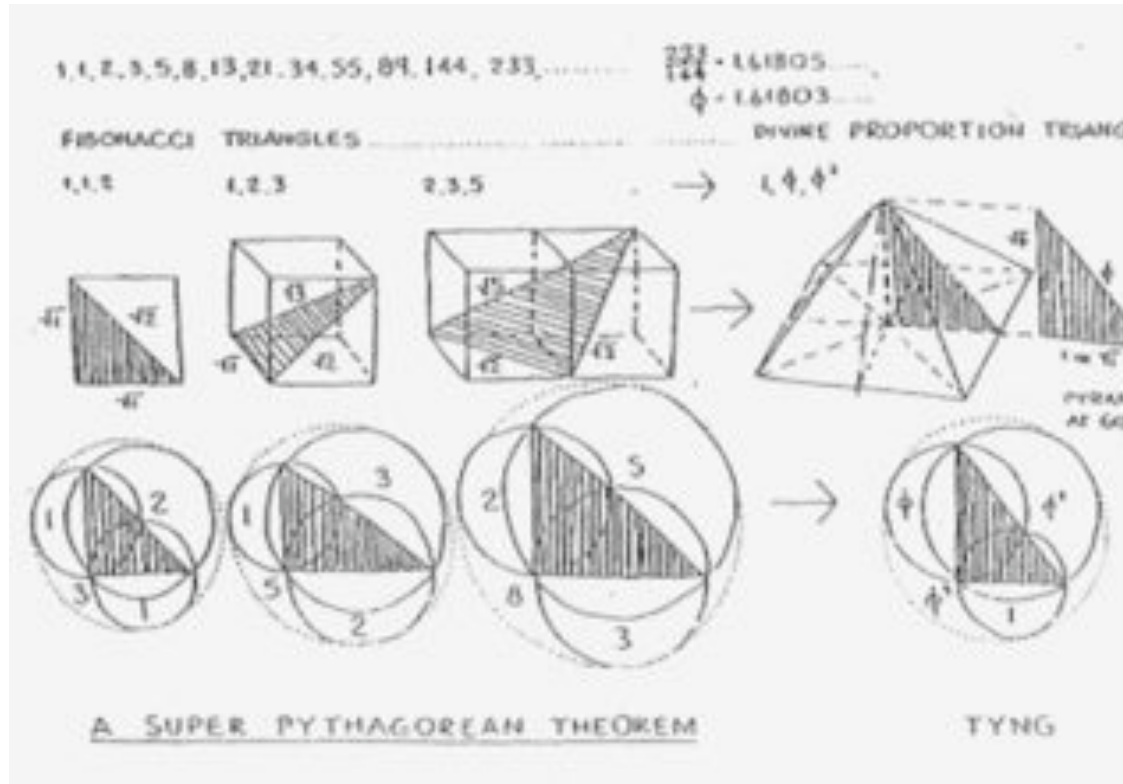


Fig. 4. The Super Pythagorean Theorem. "A 'Super Pythagorean Theorem' is found in a Fibonacci-divine proportion overlapping additive sequence of circled sides of right-angled triangles. Circled sides have the same relative areas to each other as squared sides. As in numbers or quantity, the right-angled triangle's Pythagorean theorem is seen as a two- and three-dimensional overlapping containment of process when sides are circled (or sphered) in a 'Super Pythagorean Theorem,' rather than the traditional squaring of sides. The first Fibonacci triangle -- half a square cut on its diagonal -- the '1,1,2' triangle with sides circled can all be encompassed by a '3' circle that also encompasses the hypotenuse of the '1,2,3' Fibonacci triangle, which, in turn, with all its circled sides is encompassed by a '5' circle. Again the '5' circle encompasses the hypotenuse of the '2,3,5' triangle, which, with its circled sides, is encompassed by an '8' circle -- an overlapping sequence of Fibonacci triangles toward the precise divine proportioned '1, φ, φ²' triangle with sides encompassed by a 'φ³' circle. The two-dimensional overlapping triangulated Fibonacci relationships also define three-dimensional close-packed spheres within spheres, with Fibonacci to divine proportion fit of spherical surfaces within spherical surfaces. The Super Pythagorean Theorem of circled or sphered sides plays a significant role in atomic and molecular structures, offering variations of size and quantity of bonded and non-bonded contact radii of atoms for molecular building blocks" (A. Tyng, "The Universe Plays Dice..." unpublished manuscript). Drawing Anne Tyng

RK: It seems that we are constantly seeking ways to connect complex geometries to human habits, but elegant entrances to geodesic domes are few and far between. Meanwhile, Greg Lynn, while employing tenets of "blob architecture" in his church in Queens, discovered that no matter how "randomly" he attempted to place the

processional aisle, the computer program kept centralizing it. Where is the edge between objectively appreciating and subjectively literalizing such captivating geometries as the golden section and the shape-shifting prowess of computer software? Le Corbusier explored the divine proportion through his "modulor"...

AT: Except that he based it on a six-foot British policeman instead of asking "well, what size opening can people walk through, including very pregnant women and very tall basketball players." That's a problem, because there are people taller than six feet, and there are people fatter than other people... So he was doing exactly what someone does when [he/she] uses the divine proportion too literally in designing. He was doing it in a different way, he was using the Fibonacci series and applying it - establishing his own Fibonacci series. And of course when you do that, you're taking a very profound and universal principle and you limit it.

RK: Which is possibly part of the reason why he eventually abandoned it and banished its use from his atelier.

AT: Well, he should have...

RK: Reflecting on your article in *Zodiac 19*, published in 1969, one notes the remarkable collection of people in that single issue (yourself, Safdie, Neumann, Kiesler, Fuller). The works presented spanned the globe and cultures. Why has that approach [to architectonic geometry] not sustained a hold in popular consciousness? Were the geometric forms too raw? Was it an early, perhaps too literal stage of experimentation with technology and geometric formalism?

AT: I think you're hitting the nail on the head there: it was what you might call raw geometry. It was not really integrated yet. For many years, architects did not consider Bucky Fuller to be related to architecture, though he was keen to be considered an architect. But also I feel it is due to over-specialization, something that is currently happening in schools. What's enjoyable about architecture is that you do have to draw upon a number of different disciplines. Urban planning, which appears to be everything to everybody, is now broken into many parts and pieces that aren't rigorously investigated in its pieces and parts... In a recent piece I wrote on the Philadelphia School, I was trying to show how in the 1950s there was a great synthesis - we didn't think of traffic plans of the city as not being related to architecture. And we worked at various scales - large areas of the city, individual houses... There was not the differentiation [in architectural engagement] at the time; there was a broad and exciting atmosphere... But architecture has changed and become quite fragmented. It's the way the schools teach it - they invent new disciplines and degrees. So there's a question of what to do with all of these branches that have gotten out of hand... I think we're at a point - I keep saying this - that we *must* be at a point, of rebirth or renaissance, at which things are synthesized and not even further differentiated and specialized...

RK: Is it possible that the rebirth is occurring or has occurred somewhere else in the world?

AT: I suppose it's quite possible.

RK: Many firms, not only larger firms, now send their design files overseas electronically - to Hong Kong, Singapore - maintaining a twenty-four hour studio with a work force at a fraction of the cost...

AT: But you lose something.

RK: What do you lose?

AT: Well, for example, my recent experience of trying to get service for my computer: I'm put on a telephone to India. Now, how are they going to help me? It's just another sort of process, like the menus that you're fed on the telephone... It's such an imposition. You don't have the direct person-to-person - we've lost something there. Although we have the technology to do this stuff, the instant connection to someone isn't there.

RK: Do you think that directly influences our ability to think, communicate and, as you were saying about the brain, to form unlikely connections? If you reduce the number of interactions with [others], how can that help the brain?

AT: It doesn't. It compartmentalizes your choices. You're fed the choices. The [Pascal] probability triangle is *you*, choosing to throw the dice.

RK: Whereas with phone interface, the menu of choices never *quite* fits your needs...

AT: Never!

RK: So let's return to your notion of an individual's cycle of creativity and her/his relationship with the collective as the unpredictable with the predictable... I'm reminded of Lucretius's argument in "On the Nature of Things"; without a "clinamen" (a swerve) to the structure of the universe, he asserts, nature would not have made a thing. It's the exception, veering off the laminar flow of atomic particles, that makes things live, generating possibilities. Samuel Coleridge associated the clinamen with free will, and Alfred Jarry [father of pataphysics, godfather of surrealism] followed suit. There's a fine line, it seems, between personal choice and impersonal chance. To what degree does each of us exert this unpredictable swerve? If neural associations cut across space and time in unpredictable and unique ways, absolutely personal and original, can we reconcile this with a universe formed, in your words, as a toss of the dice? Do we really have free will?

AT: You can use the tossing of the dice as an example of your selective view of the world. If you see something, and someone else sees the same thing, but you choose to observe one thing about it and another person chooses something else about it to remember, you're each processing a different choice... The living form is a product of going through this cycle from individual elements, predictable either/or choices, to something that is less and less predictable and more and more random. The order is

inherent in collective relationships, in [which] you have that possibility of linking up all of that information into a matrix... Recently there was a lecture where someone was working with "layering" computers. They had three computers whose maximum efficiency was .62. Well now, the divine proportion is .618, so I said "well, instead of trying to aim for 100% efficiency, maybe this [the divine proportion] *is* the optimal efficiency." I'm not sure I successfully conveyed my point, but what's important is that we have this potential for input of the unpredictable, which is a precious thing...

R K: When you approach a construction site, how do you reconcile the elegant phenomena of the golden section with the messiness of human relationships and the building site? How does the Fibonacci series fit into an economy built on 2 x 4's, 4 x 4's and 4 x 8's?

A T: I said before that designing in the divine proportion is not the answer, or even designing with the conscious purpose of reaching it, is not really what you need to do. Like everything you do in your life, you don't necessarily consciously determine the direction of your life. But somehow there's always a consistency that crops up and follows on what you've done before, even if there was no plan to do it that way.

R K: If it were possible to identify a common thread in your work, what would it be?

A T: Well, I've always been interested in why we have changes in stylistic preference, historically. What lay behind that? In *Forming Principles* I wanted to expand the concept of the creative process by drawing comparisons between recurring cycles of stylistic empathy and cycles of psychological individuation.

R K: How is this manifested, architecturally?

A T: There seem to be correlations among cycles in the history of architectural styles, phases in personal creativity and individual projects - a cycle that moves between public and private, extroversion and introversion, simplicity and complexity. Beyond formalistic parallels I've previously drawn [in the *Zodiac 19* article], it relates to architecture in the sense that you are identifying levels of scale within yourself, [as well as to] your family, your schoolmates, professional associates... Architecturally, you can say, there is the individual house, within a row, that is part of a square - Wellington Square in London, for example. Those squares have an identity in themselves, and if you live there you tend to identify yourself with them... In London, you have the Roman city within the larger city; you find a sequence of villages and parks with architectural features such as Nash's apse-like Crescent... From a city, you compile different scales of association within yourself and, as your experiences broaden, you connect [these architectural features] to deepen levels of your consciousness.

R K: It's interesting how the Arts and Crafts movement was absorbed by and tuned to various cultures - England, the Netherlands, Finland. In Eliel Saarinen's Helsinki, for example, such architectural ornament as Juniper branches, snails and owls served as cultural and civic reminders of Finnish flora and fauna. Around 1900, the recasting of

national identities across Europe was infectious, as demonstrated through architectural ornament and international expositions. Following the World Wars, however, this enthusiasm for architectonic figuration appears to wane. Do you recall Lisa Ronchi [an Italian architect and program coordinator for Fulbright Scholars at the American Academy in Rome]?

AT: Yes, of course!

RK: She's among several European architects I've known who, in reflecting on their training during and immediately following World War II, were thrilled with the emergence of Le Corbusier and the International Style, primarily because it allowed them to throw away the templates and French curves they had been using for tired ornamental flourishes... The arrival of "Pere Corbu" and his compatriots enabled young designers to cast off stylistic trappings that represented [for that generation] centuries of war and nationalistic agendas...

AT: At Harvard, after the coming of Gropius and Breuer, they threw out all of the exemplary ornamental plaster casts.

RK: Literally?

AT: Literally. In main hall coming into the architectural school.

RK: That's certainly throwing the baby out with the bathwater, especially in light of the recent work of such scholars as [Mary] Carruthers and [Lina] Bolzoni, who have pointed up the tremendously ancient and rich tradition of architectural mnemonics, in which physical ornament furnished commonplace practices of education and memory training. From their research one might speculate that the failures of the architectural profession in the second half of the twentieth century - at least in the popular mind - were not stylistic, per se, but rather due to the trivialization, if not erasure, of the physical equipment for that well-established tradition. Historically speaking, ornament [*ornare* - to prepare] was not merely subjective appliqué, it was equipment for making thoughts. How do you feel that geometry might equip our buildings to equip our thoughts?

AT: Well, there are some things, such as triangles in pitched roofs, which are less self-consciously there that tie a building to the site. The greatest architecture is somehow in touch with those universals without consciously intending to be, and without being literal...

RK: Are there other notions that you consider essential for an architectural education in geometry?

AT: I believe that integration is a very exciting idea. That's what creativity is, of course. We are integrating stuff that hasn't been seen quite that way before... I believe it was Newton who said "I stand on the shoulders of others." In a way, creativity can be

overinflated in terms of what the individual does. You're lucky if you have insights and form connections...but they don't belong to you. It's something that can enlarge you - that there are things out there that are bigger than you - but they don't belong to you. The elegance of probability is that it can be a safety net to catch chaos. It is really a process that builds up randomness, and out of that randomness you have a spontaneous simple order again. You can see it at minute scale in the deoxyhemoglobin molecule, and at much larger scale in the Dumbbell nebula.

R K: There are those, possibly, who might be a bit overwhelmed with the scale and nature of intersections you've drawn in your research. Do you ever doubt the elegant interconnectedness of your theories?

A T: Well, it's all there. I think there's an integrative thing within you that wants to find connections... connecting all the things you're interested in, in a way that makes sense.

R K: It seems you're implying that as one navigate[s] everyday life - forming associations among geometry, psychology, architecture - you're generating a mathesis of your own, by the steady accumulation of decisions made all day, every day. It recalls your description of Pascal's Triangle. Do you believe that this occurs on the scale of an individual's life? Would you suggest that as one forms associations among seemingly random topics, events and personal experiences, that one approximates a more well-rounded image of self?

A T: Creativity has to do with resilience, maybe, discovering how to turn suffering into a creative source. What pulls you through catastrophe is a creative project of some kind. You have to get to a depth of resources within yourself; doing that brings up creative potentials. In going to deeper and deeper levels of the unconscious, you can be overwhelmed by the possibilities and never arrive at self-understanding. Fearfulness is a perfectly valid feeling as you go to deeper levels of the unconscious in your design process... However, knowing that the more randomness you encounter will bring you closer to possible synthesis is a comforting thought. The interesting thing about the psychic cycle and the creative process, and evolution even, is that if you have built up understanding of the different forms of nature, you discover there are so many possibilities you never considered before. It only comes about because you're there to look into the unconscious and you're absorbing negative things into yourself and addressing them, not ignoring them. One admits, for example, that one has the capacity for evil, but may choose not to do it, rather than to deny it altogether. Ultimately, the levels of the unconscious that you encounter and identify can strengthen because you aren't intimidated by them. In the creative process you're doing this as well by trying different schemes as you open yourself to more and more possibilities. By identifying those possibilities and bringing them into consciousness, you develop your creativity enormously.

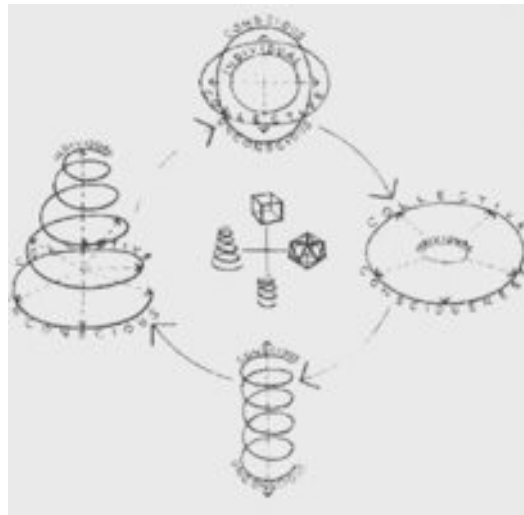
Geometric Extensions of Consciousness

By Anne Griswold Tyng

Zodiac 19 - A Review of Contemporary Architecture (Channel 26: Meta-Science, Growth, Form and Structure)

The evolution of man's consciousness was built, atom by atom, into the configurations of matter and mind. Both for our understanding of its evolution and for its own extensions of consciousness, the form of mind-matter finds clues in geometry.

The difficulty of tracing the history of man's consciousness of space in a continuous sequence lies in the cyclic nature of the evolution of total spatial awareness—a repeating cycle in which man's perception and understanding have been stretched asymmetrically in different shapes of tension between the individual and the collective, and between consciousness and unconsciousness. Thus the more introverted phases of the cycle tend to appear as a regression (a "return to the unconscious" when vitality is renewed through a reunion with primitive natural sources) instead of being seen as part of a continuous process of expanding spatial awareness.



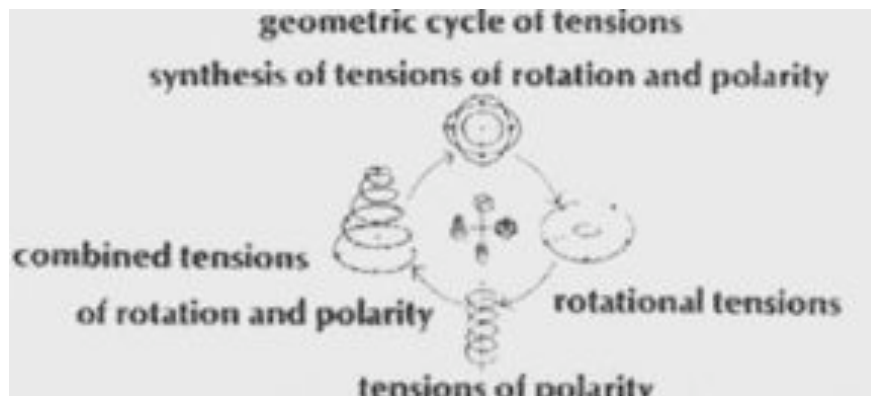
The cycle itself proceeds from simplicity to complexity and from a balanced axial bilateral order to the movement of rotation to the serpentine flow of the helix to the animated form synthesis of bi-lateral symmetry, a new simplicity of order which includes and integrates the previous complexity, begins a new cycle of spatial awareness from bilateral (synthesis) to rotational (space) to helical (time) to spiral (space-time). As "generative molecular elements" inherent in man's own evolution, these principles may provide geometric links in the extension of man's consciousness.

In 450 B.C., in his search for an 'atomic' order of spatial concepts, Empedocles proposed as the building blocks of everything fire, air, earth and water. On mathematical grounds Plato, in his *Timaeus*, determined the 'exact' forms of the smallest parts of these elements as the five shapes we now call the Platonic Solids ; fire the tetrahedron, earth the cube, air the octahedron, water the icosahedron, and as the symbol of the cosmos, the

dodecahedron. This intuitive concept is given a measure of validity today when we know that the relationships of form expressed in these five Platonic Solids are involved in the way in which 'fundamental' particles-protons and neutrons-are built up into atoms of about a hundred different elements (according to Pauling's Close-Packed Spheron Theory and Fuller's proposals of atomic close-packing)' and are involved in the way in which different arrangements of these atoms form the building blocks of a million or so different forms of matter, both natural and synthetic.



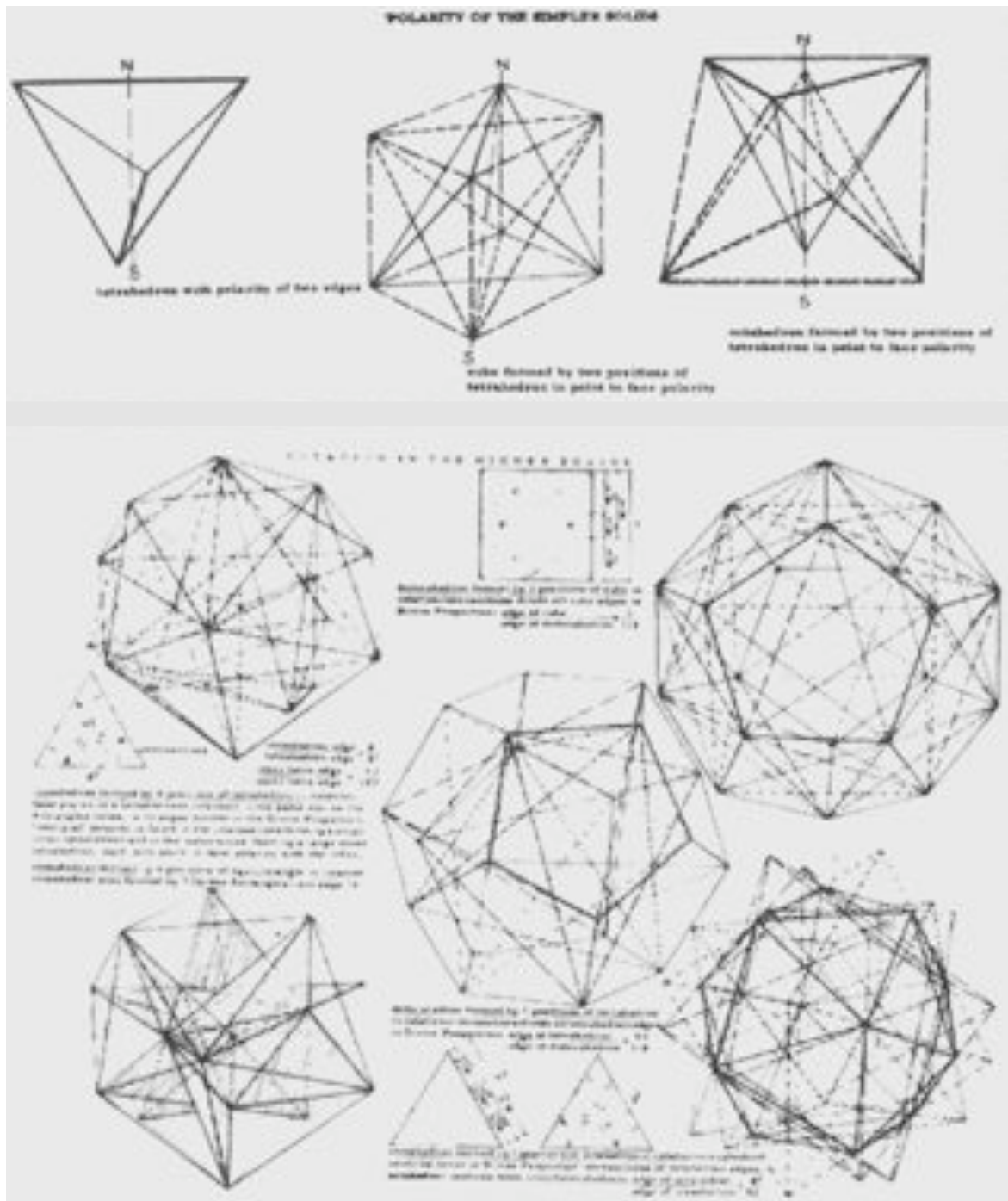
These five Platonic Solids-the only regular forms possible in three dimensional space, each with all of its faces the same and with the angles at which the faces meet each other the same are involved, not only in the spatial organization of forms at the level of nuclei of atoms and molecules, but also in cells, organs, plants, animals, the human embryo, the psychic structure of man, the works of man and in the astronomical forms of the universe which pre-existed man. Previously invisible ordering of the primordial atoms within us, revealed by the electron microscope, gives proof of internal geometry in natural forms.



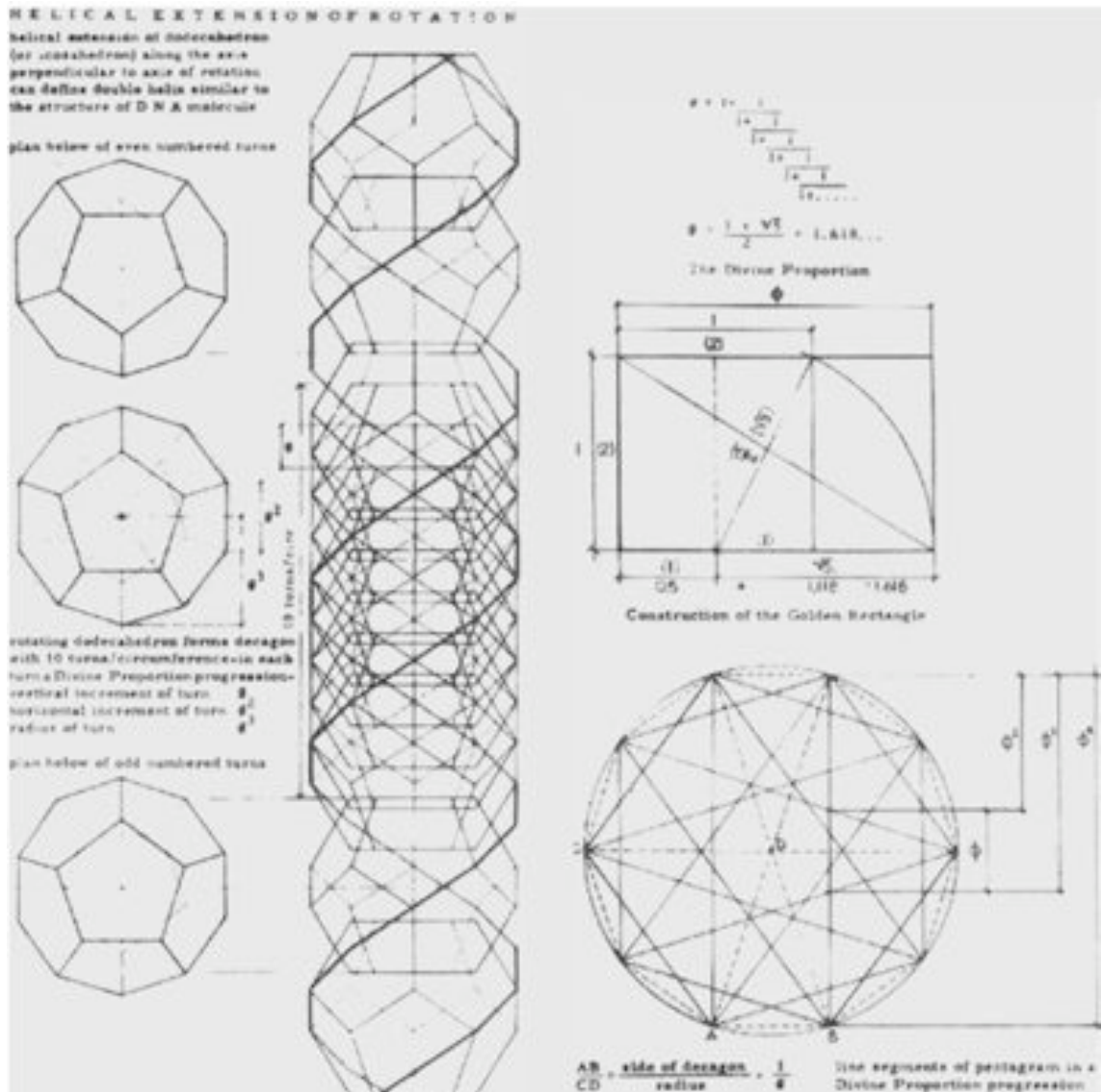
The four stages of symmetric form in this geometric progression, as in the cyclic extensions of human consciousness, I have called bilateral, rotational, helical, and spiral, with each stage seen as the motion of simpler forms defining the outline of more complex shapes.

The polarity of a tetrahedron can be expressed in the polarization of two of its four edges (as Fuller has suggested). One tetrahedron in two positions, which have a point to face polarity, can establish the corners of a cube. Two other positions of a tetrahedron, also in polarity, define the corners of an octahedron. These three simpler Platonic Solids - the tetrahedron, the cube, and octahedron - represent the bilateral forms of the geometric progression. The cube in five positions, in rotation, defines the twenty corners of the dodecahedron, and five positions of the octahedron, again in rotation, establish the twelve

corners of the icosahedron. The tetrahedron in four positions, with rotational ordering, also defines the twelve corners of the icosahedron and, in addition, one corner of each of the four positions extend beyond the icosahedron to form the corners of a larger tetrahedron, disclosing a 'vestigial' polarity in this arrangement. These more complex of the Platonic Solids, the dodecahedron and icosahedron, represent the stage of rotational forms in the geometric progression and, in the way they are formed, express Divine Proportion ratios (1:1.618) in their relation to the simpler solids, the dodecahedron to the cube and the icosahedron to the octahedron.



The 'fourth dimensional' extension of these rotational forms along an axis perpendicular to the radius of rotation, expressing again the tension of polarity, defines the helical forms of the geometric progression. Since both of the rotational forms have pentagonal symmetry around a center, the plan of their helical extensions is based on the decagon with its side in Divine Proportion to its 'radius'(of the circumscribed circle). The vertical extension of each turn is in Divine Proportion ratio to the side of the decagon, making a Divine Proportion-vertical turn = ϕ , horizontal turn = ϕ^2 , and radius of turn = ϕ^3 .



A proportional increase in the radius of rotation of the helical forms, expressing *rotational tensions*, results in spiral forms, the fourth stage of complexity in the cycle. The only ratio which satisfies the condition of a logarithmic spiral in which width of turn increases at a fixed ratio to length is again the ratio of the Divine Proportion. The shifting order of these forms between polarity and rotation includes the previous order within the new order, so that rotational includes the polarity of bilateral, helical with its own polarity

includes rotation plus polarity, and spiral with its own dominance of rotation includes polarity plus rotation plus polarity, with the new bilateral phase including all the ordering of form of the previous cycle.

While it clearly appears to be a special achievement of living forms, the repeating cycle of bilateral, rotational, helical and spiral apparently is not valid for non-living or 'inorganic' forms. The energies and configurations progressively built up in the rhythmic interplay of rotation and polarity result in the gradual intensification of structure and the flexible vitality which is a special achievement of 'higher' living forms. 'Inorganic' form is based on a generally more rigid bilateral symmetry, as in such atomic structures as graphite, salt, peronskite, copper, diamond, carbon dioxide, and cristaballite.

An example which does indicate evolution of form through a complete cycle is the *structure* of hemoglobin, which took the 22 years work of Perutz and his associates to uncover. This extraordinary configuration of 10,000 atoms includes the bilateral tetrahedral bonding of carbon atoms in the glycine molecules, the rotational clustering in the heme molecules, the intricately helical alpha and beta chains which in turn are folded into irregular spirals, and finally, each of the four spiraling myoglobin-type parts nestled and interlocked in a symmetrical tetrahedral arrangement to form an overall bilateral symmetry. This bilateral symmetry reaffirms a basic simplicity of organization over the complexity of differentiated parts to start a new cycle - a hierarchy of form. With all the internal complexity of this *structure*, we can barely conceive of the fantastic number of hierarchies within hierarchies which include and give meaningful organization to the 280 million such hemoglobin molecules contained in a single red blood cell - which in itself takes the rotational form of a disc. Not only does there appear to be a progress in the life forms corresponding to the geometric progression toward complexity and increase in scale, but this progression can be seen as a repeating one with each new cycle building hierarchy upon hierarchy which indicate at each stage of development the record of its earlier evolution, the hierarchies of form and the hierarchies of energy evolving from the interplay of polarity and rotation.

Form thus finds its own form, extending feelers, gills and tentacles to the world around it, in its rotational tensioning, expanding its magic circle to new concepts of space - from the first articulation of fin or finger to the spiritual dimensions of human creativity.

Form finds new helical dimensions, elongating to differentiate intake and output, strengthening backbone between tusk and tail, head and anal poles, articulating the tensions between spirituality and sexuality, stretching to new concepts of time between awareness of darkest origin and highest aspiration, between the depths of the unconscious mind and conscious thought.

Form stretches to elaborate both length and breadth in spiraling shells and branches, antennae and antlers, dividing and subdividing into the intricate filigree of blood vessels and delicate nerve ends, tensioning in space and time toward infinity of matter.

In the fleeting moments of balance between the tension of rotation and polarity, the tensions of space and time are resolved in bilateral living form, the transformation of the

end of complexity to a new beginning of simplicity – a higher order-the discovery of the cycle .

The life cycle of the butterfly is clearly defined in four phases: the rotational symmetry of its eggs, the helical symmetry in its form as a caterpillar or larva, the spiral symmetry of the pupa of chrysalis form and its dramatic rebirth in a magnificent form of bilateral symmetry. The frog follows a cycle from the rotational symmetry of the zygote, to helical embryonic bodystalk, to spiral form of the tapering tadpole to bilateral symmetry of the mature frog. The bilateral human being evolved from numberless hierarchies of cycles of form, from the primordial ordering of atoms and molecules, goes through the cycle again in the early stages of embryonic development from the bi-lateral, then rotational cleavages of the ovum, to the helical bodystalk of 18 or 19 days, to the spiral embryo of about 4 weeks to the miniature complexity integrated into ultimate bilateral form as a 10 week 2 inch embryo of potential human being.

The psychic synthesis of 'rebirth' is far removed from the *structure* of hemoglobin, but in each case the simplified relationship of complex internal *structure* creates a new unity, and, in the process of psychic individuation, anew involution of *structure* creates from all the complexity of a collective and primitive origin an uniquely individual form. So a relationship to the principles of space, time, causality and synchronicity is valid for the psychic cycle, space expressing the tension of individual man with collective consciousness of external environment, time the tension between conscious thought and unconscious memory, causality the interrelated and combined tensions of both space and time, between the individuating conscious psyche and the vast reaches of primordial memory in the collective unconscious, and synchronicity the balancing of tensions, the synthesis of space and time in concepts such as immortality. Jung wrote "...The feeling of immortality, it seems to me, has its origin in a peculiar feeling of extension in space and time."

Generally in cycles of human creativity the periods of rotational tension relate to periods of external ordering of the psyche, periods of expansion, of materialism and practicality, of openness, space, of concern with life, light, sun, of physical comfort and pleasure, of rationalism, of belief in the essential goodness and creativity of man; the phases of helical tension relate to periods of internal ordering of the psyche, of subjectivity and instinct, of containment and verticality (polarity), of concern with origins, with past and future and the element of time, with death and the principle of evil, of darkness, of emphasis on irrationality, emotion and inner spirit; the phases of spiral tension relate to periods of increased tension and containment of opposites, of complexity, of bizarre and exotic styles, of fascination with the occult, of exaggerated motion and energizing of form, forms with complex curves, pointed arches, ovals, winding processions and labyrinths, tapering towers and spires, forms dematerialized by light, forms with weightlessness, with progressively diminishing horizontal and vertical dimensions, of the combined tensions of space and time; and the phases of bilateral synthesis of tensions relate to periods of serenity and balance, of unity, of cubic forms with emphasis on horizontality and planar surfaces, forms with rectilinearity, simplicity, axuality and solidity, forms

expressing the integration of tensions in equilibrium, forms embodying the principle of abstraction free of space and time.

From countless levels of such hierarchies the brain of man was formed, the evolution of human consciousness and the psychic potentials of 'individuation' and rebirth, man's search for the secret of creation, for concepts of immortality free of time, space, causality - for synchronicity for the immortal 'static' synthesis of mortal 'kinetic' concepts.

Notes:

1. Buckminster Fuller lectured on and illustrated relationships of close-packed spheres as proposals of atomic configurations in 1949, printed as "Item 0" prepared by North Carolina State School of Design students in 1955. Linus Pauling's Close-Packed Spheron Theory of the Nucleus appeared in *Science* October 1965.

2. p.142, C. G. Jung, *The Archetypes and the Collective Unconscious*.

3. See C. G. Jung, "Synchronicity - An Acausal Collection Principle," in *The Interpretation of Nature and the Psyche*, with W. Pauli, Bollingen 1955 Pantheon.

Anne Tyng was one of the first women to receive an architectural degree (M. Arch.) from the Harvard Graduate School of Design. She has worked for a number of years for and with the architect Louis Kahn, associating with him on the "Project for a City Tower," featured in the Museum of Modern Art exhibit "Visionary Architecture". Based on a triangulated three dimensional system which had been used previously only as structure separate from usable space, as in Bucky Fuller's "octet truss", the undulating geometry of this tower, which appears to have a life of its own, is probably the first to be conceived as occupiable space as in a bee's honeycomb. Her independent research in forming principles, for which she received a Graham foundation grant in '65, has been oriented primarily toward principles of asymmetry, proportion, and hierarchical ordering of form. As Maria Bottero, editor of *Zodiac*, states, "It is geometry, with its oscillations between symmetry and asymmetry, which, according to Anne Tyng, offers the key to the reading of the processes and phases of organic and cognitive becoming." Inspired by Louis Kahn, Bucky Fuller, Lancelot Law Whyte (*Accent on Form & Aspects of Form*), the zoologist Adolf Portmann (*Animal Forms and Patterns*), and the work of the psychologist Carl G. Jung (*Man and His Symbols & Memories, Dreams and Reflections*), as well as by recent developments in molecular biology, her work is one of synthesis. In her articles, *Urban Space Systems as Living Form* (published in the R.A.I.C. *Journal Architecture Canada*) and *Geometric Extensions of Consciousness* (in *Zodiac* 19), she has found links between basic geometric principles (which Bucky Fuller has called "her discovery of Golden Mean relationships between the whole family of Platonic Solids not previously known by man.") and atomic structure, molecular configurations, biological forms, psychic, structure and human creativity.

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Notes

Chapter 1

- ¹ Alcott, Bronson. *Journals* (Boston: Little, Brown, 1938).
- ² Ward, Carolyn J. and Alan E. Wilkinson. *Basic Interpretation Learning System, Making connections: the essence of interpretation*; (Sacramento: California State Parks, 2003).
- ³ "Interpretation is an artful form of communication that stresses ideas and relationships, not simply isolated facts and figures. To interpret is to translate the language of the scientist, the voices of the past, and the significance of the places to create meanings and connections with the people of the present." "Introduction," *Basic Interpretation Handbook*, pp.1-11.
- ⁴ Walker, Tom (Assistant Director, Renewable Resources and Planning). "Instruction Memorandum No. 98-139" (8362 - 910, 912, 930 P)," United States Department of the Interior, Bureau of Land Management, July 10, 1998.
- ⁵ Tilden, Freeman. *Interpreting Our Heritage*, third edition (Chapel Hill: University of North Carolina Press, 1977) p.8.
- ⁶ Ibid.
- ⁷ Ibid.
- ⁸ Veverka, John. *Interpretive Master Planning* (Helena, MT: Falcon Press, 1995).
- ⁹ Solomon, Alan. "The Magic of Williamsburg: Famous figures from our past take visitors back to the 18th Century," *The Chicago Tribune*, May 6, 2007.
- ¹⁰ Jamestown was the original location of the government of the Virginia colony. When the House of Burgesses at Jamestown was destroyed by fire in 1670, Middle Plantation (Williamsburg) was designated as the site for a new government center. In 1779, Virginia governor Thomas Jefferson authorized the relocation of the capital of Virginia to Richmond to provide greater safety from possible attack by the British navy during the Revolutionary War. The buildings seen at Colonial Williamsburg represent the years of settlement from 1698-1790.
- ¹¹ "In a front-page article in *The New York Times* on 31st December, 2006 [Tracie Rozhon, "Homes Sell, and History Goes Private," *The New York Times*, Sunday, December 31, 2006, Section 1, page 1.], it was reported that the Colonial Williamsburg Foundation, struggling because of dwindling attendance and lack of sufficient endowment funds for upkeep, will offer the Carter's Grove mansion and grounds for sale to a private purchaser, possibly as soon as January 2007. The article stated that the

dilemma of historic museums and houses is that there are too many of them, upkeep is too expensive and fewer people are visiting them.

On March 31, 2007 Colonial Williamsburg announced that it would be listing Carter's Grove on 400 acres with a real estate company out of Charlottesville, Virginia, for the amount of \$19 million. The property is being offered under specific preservation covenants." - *en.wikipedia.org/wiki/Colonial_Williamsburg*.

¹² Wilburn, Robert C. "Interpreting and Conserving Colonial Williamsburg," Colonial Williamsburg Foundation, US/ICOMOS 1998 International Symposium: "Questions of Interpretation" (*icomos.org/iusicomos/Symposium/SYMP98*).

¹³ Ibid.

¹⁴ "[Umberto] Eco refers to a full-scale model of the Presidential Oval Office and states that using the same materials, the same colors, but with everything obviously more polished, shinier, protected against deterioration, the result is that:

The completely real becomes identified with the completely fake. Absolute reality is offered as real presence. The aim of the reconstructed Oval Office is to supply a sign that will then be forgotten as such: the sign aims to be the thing, to abolish the distinction of the reference, the mechanism of replacement. Not the image of the thing, but its plaster cast, its double, in other words. - Umberto Eco, *Faith in Fakes* (London: Martin Secker & Warburg Ltd., 1986) p.7.

Boniface and Fowler [Boniface, P. and P.J Fowler. *Heritage & Tourism in 'the Global Village'* (London: Routledge, 1993)] explain that for many people the crucial element in a tourist's experience is that it should not threaten or allow them to feel uncomfortably deprived of the comforts of home. They believe we want extra-authenticity, that which is better than reality. We want a souped-up, fantastic experience and stimulation. We want a state of what Jean Baudrillard and Umberto Eco have called hyper-reality.

Fowler fears that what purports to be heritage has been antiqued, not only in appearance, but is being presented as if it were significant historically. He questions whether the heritage industry's priorities are to focus on significance or to get more tourists through turnstiles to satisfy management requirements, or, quite simply, to survive." - Priddle, Jacqueline. "Post-Modern Views of interpretation," Second World Congress on Heritage Presentation, "Preparing for the 90s," University of Warwick, Coventry, England, 1988. (*arasite.org*).

¹⁵ Huxtable, Ada Louise. *The Unreal America: Architecture and illusion* (New York: The New Press, 1997).

¹⁶ Wilson, Richard Guy. *The Colonial Revival House* (New York: Harry N. Abrams, 2004).

¹⁷ Veverka, John A. "Planning truly 'Interpretive' Panels," *Interpretation, Journal for the Society of the Interpretation of Britain's Heritage*, February, 1998.

¹⁸ Ham, Sam H., Professor of Communication Psychology, Department of Conservation Social Sciences College of Natural Resources, University of Idaho. Author: *Environmental Interpretation: A Practical Guide for People with Big Ideas and Small Budgets* (Golden, Colorado: Fulcrum/North American Press 1998).

Chapter 2

¹⁹ Susan Solomon observes that Kahn was unable "to convey effectively his personal conclusions to his clients. He failed to explain why his work looked so different from what they saw in contemporary magazine advertisements or in nearby homes and offices." (Solomon, *Louis I. Kahn's Trenton Jewish Community Center*, p.4). She further suggests that the position of the leadership of the Jewish community (the National Jewish Welfare Board – NJWB) strongly supported the development of a suburban facility as "essential to the self-respect of its upwardly mobile members. The NJWB was quite aware of how a suburban facility enhanced the status of a JCC in the larger community by severing ties with its urban past and constructing an impressive new home." (Solomon, p.56).

Solomon describes with powerful clarity the conflict of core values that existed between the client and the architect when she concludes, "The TJCC commission offered Kahn a chance to construct what he had thought about for more than a decade but had not been able to implement before this. (Solomon, p.69). It was Kahn's belief that "the TJCC seemed poised to accommodate a new solution for previously unexplored building types. He did not see, or did not want to see, warning signs that this was not going to be the place to propose an innovation." (Solomon, p.64).

²⁰ "Of all things, I honor beginnings. I believe, though, that what was has always been, and what is has always been, and what will be has always been." (Source: Twombly, Robert. *Louis Kahn Essential Texts* (New York: W.W. Norton, 2003) p.278. Originally, "Between Silence and Light," a lecture Louis Kahn gave at the School of Architecture, Pratt Institute, Brooklyn, New York, 1973.

"[I]t is good for the mind to go back to the beginning because the beginning of any established activity of man is its most wonderful moment. For in it lies all its spirit and resourcefulness from which we must constantly draw our inspirations of present needs. We can make our institutions great by giving them our sense of this inspiration in the architecture we offer them." (Source: Twombly, Robert. *Louis Kahn Essential Texts* (New York: W.W. Norton, 2003) p.64. Originally, "Form and Design," *Voice of America*, November 19, 1960.

From the middle Latin *quinta essential*. "In ancient philosophy, the fifth essence, or ultimate substance, of which the heavenly bodies were thought to be composed:

distinguished from the four elements: air, fire, water, and earth...[T]he most perfect manifestation of a quality or thing.” - Guralnik, David B. (Editor in Chief). *Webster's New World Dictionary of the American Language, Second Edition* (New York: Simon & Schuster, 1982).

²¹ Twombly, Robert. *Louis Kahn Essential Texts* (New York: W.W. Norton, 2003) p.221.

²² Ibid: p.166.

²³ Ibid: p.225.

²⁴ Ibid: pp.167-167.

²⁵ Ibid: p.268.

²⁶ Ibid: p.197.

²⁷ Solomon, Susan G. *Louis I. Kahn's Trenton Jewish Community Center* (New York: Princeton Architectural Press, 2000) p.1.

²⁸ Ibid: p.16.

²⁹ Ibid: pp.18-19.

³⁰ *Louis Kahn: Essential Texts* by Robert Twombly (2003). p.137.

³¹ Ibid: p.11.

³² *Louis Kahn: Essential Texts* by Robert Twombly, 2003. p.161.

³³ Quotation marks added for emphasis.

³⁴ Ibid: p.139.

³⁵ Ibid: p.141.

³⁶ Following the firing of Louis Kahn as architect for the project because of irreconcilable differences between the building committee and the architect, the Newark architectural firm of Kelly & Gruzen was hired to complete the project. The new Community Center Building was designed and constructed in 1961. The building incorporates none of the concepts Louis Kahn proposed and only superficially acknowledges the specified location indicated on the site plan of July 1957.

³⁷ "I was determined to help Lou in every way possible to realize his full potential, but at the same time I also felt concern about my own future. I was then thirty two [1952],

and had worked and been in a relationship with him for seven years. It was challenging to play the role of muse to Lou, but the muse is a shadow figure, an empty vessel only existing to gestate and bring forth visible form identified as the man's creation. Such a limited relationship satisfied only a part of me. Another part - my own identity - was struggling for existence and growth. Growth could have been the challenging reality of marriage or forging my own identity outside our relationship." - Anne Tyng

Kahn, Louis I. *Louis Kahn to Anne Tyng: the Rome Letters 1953-1954*. Edited with commentary by Anne Griswold Tyng (New York: Rizzoli International Publications, Inc., 1997) p.55.

³⁸ *Louis Kahn to Anne Tyng: the Rome Letters 1953-1954*.

³⁹ Material publicized by the film's producer, Louis Kahn Project, Inc. (myarchitectfilm.com).

⁴⁰ Tyng's Ph.D. thesis, completed at the Graduate School of Fine Arts at the University of Pennsylvania, "Simultaneousness, Randomness and Order." *Louis Kahn to Anne Tyng: the Rome Letters 1953-1954*, p.213.

⁴¹ Ibid: pp.192-194.

⁴² Goldhagen suggests that Louis Kahn may have destroyed records that showed Anne Tyng as the originator of the design for the Bathhouse. It is also possible that the Rome letters Tyng sent to Kahn were destroyed to eliminate the connection between her contributions and Kahn's designs created during their partnership.

"The original drawings for the Bathhouse have been lost. Tyng went so far as to intimate that Kahn had destroyed them in order to obscure the importance of her contribution...However unpalatable the idea, it is plausible...[A]lthough Kahn saved virtually every piece of paper that crossed the transom of his office entrance...it seems likely that he did also destroy documents selectively." - Sarah Goldhagen

Goldhagen, Sarah Williams. *Louis Kahn's Situated Modernism* (New Haven: Yale University Press, 2001) p.244.

⁴³ "Anne, Lou, and I were working late in the office one night, and it was around midnight. Lou was over with me, working on my [square] scheme for the Bathhouse, which he just hated. Suddenly, Anne said, 'Lou, come here.' We went over to her drawing board and there on it was the plan for the Trenton Bathhouse, the scheme that subsequently dictated the ideas for the Community Center as a whole." - Tim Vreeland

Goldhagen, Sarah Williams. *Louis Kahn's Situated Modernism* (New Haven: Yale University Press, 2001) p.106.

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- ⁴⁴ Material available in the Kahn Archives at the University of Pennsylvania and referenced herein was reviewed by the author over the two-day period, January 11-12, 2007.
- ⁴⁵ Procedures broadly defining Kahn's working relationship with Tyng, which Kahn subtly and skillfully orchestrated, became significantly more structured on subsequent projects. For the design of the Bathhouse, however, their individual methodologies were less specifically differentiated than in subsequent work. By 1960, when Kahn received the commission for the Erdman Hall Dormitories at Bryn Mawr College, in the western suburbs of Philadelphia (1960-1965), two distinctly different architectural design schemes were simultaneously developed for the project and were individually presented for the client's consideration as the project progressed.
- ⁴⁶ *Webster's New World Dictionary of the American Language*, Second College Edition, David B. Guralnik, Editor-in-Chief (New York: Simon & Schuster, 1982) p.96.
- ⁴⁷ Goldhagen, Sarah Williams. *Louis Kahn's Situated Modernism*, pp.109-110.
- ⁴⁸ Solomon, Susan G. *Louis I. Kahn's Trenton Jewish Community Center* (New York: Princeton Architectural Press, 2000) p.99.
- ⁴⁹ Kahn, Louis I. *Louis Kahn to Anne Tyng: the Rome Letters 1953-1954*. Edited with commentary by Anne Griswold Tyng (New York: Rizzoli International Publications, Inc., 1997) p.212.

Chapter 3

- ⁵⁰ Solomon, Susan G. *Louis I. Kahn's Trenton Jewish Community Center* (New York: Princeton Architectural Press, 2000), p.128.

Chapter 4

- ⁵¹ Wood, C.S. (translator). *The Vienna School Reader: Politics and Art Historical Method in the 1930s* (New York, 2000), pp.94-95.
- ⁵² Riegl, Alois (1858-1905), Curator, director of the textile department at the Museum für angewandte Kunst (Austrian Museum of Art and Industry) in Vienna, art historian and lecturer at the University of Vienna. Author of several books on art history including *Der moderne Denkmalkultus. Sein Wesen und seine Entstehung* (Vienna, 1903) reprinted in George Dehio, A. Riegl, *Konservieren, nicht restaurieren: Streitschriften zur Denkmalpflege um 1900*, Braunschweig-Wiesbaden 1988. English translation: "The Modern Cult of Monuments: Its Character and Origin," translation by Forster and Ghirardo, *Oppositions* 25 (Fall 1982): v.21, French translation: "Le Culte moderne des monuments, Son essence et sa genèse," *Edition du Seuil*, 1984.

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- ⁵³ Riegl, Alois. "The Modern Cult of Monuments: Its Character and Its Origin." *Oppositions 25: Monument/Monumentality*, edited by Kurt Forster (New York: Rizzoli, Fall 1982).
- ⁵⁴ Riegl, Alois. "The Modern Cult of Monuments: Its Essence and Its Development," *Historical and Philosophical Issues in the Conservation of Cultural Heritage*, p.72.
- ⁵⁵ Brady, Susan. "The Architectural Metaphysic of Louis Kahn," *The New York Times Magazine*, 15 November 1970, p.86.
- ⁵⁶ McCarter, Robert. *Louis L Kahn* (New York: Phaidon Press Inc., 2005) p.455.
- "Monumentality," originally published in Paul Zucker (ed.), *New Architecture and City Planning: A Symposium* (New York: Philosophical Library, 1944).
- ⁵⁷ Ibid: p.461.
- ⁵⁸ Boullée, E. L. *Architecture: Essay on Art*, ed. Helen Rosenau (London, 1955) p.89.
- ⁵⁹ Riegl, Alois. "The Modern Cult of Monuments: Its Character and Its Origin." *Oppositions 25: Monument/Monumentality*, edited by Kurt Forster (New York: Rizzoli, Fall 1982).
- ⁶⁰ Twombly, Robert. *Louis Kahn Essential Texts* (New York: W.W. Norton, 2003) p.97.
- "I thought of the beauty of ruins...the absence of frames...of things which nothing lives behind." – Louis Kahn, Ibid: p.98.
- ⁶¹ Ibid; p.258.
- ⁶² Ibid: p.229. "Silence and Light" was originally a lecture given by Louis Kahn at the Solomon R.Guggenheim Museum in New York, 1968.
- ⁶³ Sarah Williams Ksiazek. "Drawn from the Source: The Travel Sketches of Louis I. Kahn," *Journal of the Society of Architectural Historians*, Vol. 56, No.1 (March 1997). pp.93-95.
- ⁶⁴ Riegl, Alois. "The Modern Cult of Monuments: Its Essence and Its Development," *Historical and Philosophical Issues in the Conservation of Cultural Heritage*. Edited by Nicholas Stanley Price, M. Kirby Talley, Jr., and Alessandra Melucco Vaccaro (Los Angeles: The Getty Conservation Institute, 1996) pp.77-78.
- ⁶⁵ Whitehead, Kenneth D. (trans.). *The Foundations of Architecture: Selections from the Dictionnaire Raisonné*, (New York: George Braziller, Inc., 1990).
- ⁶⁶ Solomon, Susan G. *Louis I. Kahn's Trenton Jewish Community Center*, pp.125-126.

⁶⁷ Ibid: p.128.

⁶⁸ Eisenstein, Sergei M., Yve-Alain Bois and Michael Glenny. "Montage and Architecture," *Assemblage*, No. 10, December 1989, p.119.

Chapter 5

Chapter 6

⁶⁹ Twombly, Robert. *Louis Kahn Essential Texts* (New York; W.W. Norton & Company, 2003), p.220.

⁷⁰ Ibid; p.242. "Silence and Light," lecture given at Eidgenossische Technische Hochschule, Zurich, February 12, 1969.

⁷¹ Twombly, Robert. *Louis Kahn Essential Texts* (New York; W.W. Norton & Company, 2003), pp.192-93.

⁷² Solomon, Susan G. *Louis I. Kahn's Trenton Jewish Community Center* (New York: Princeton Architectural Press, 2000), p.125.

⁷³ "The Woodland Cemetery," Caroline Constant, Associate Professor of Architecture, University of Florida (*kyf.stockholm.se.Skogskyrkogården*).

At Stockholm's Woodland Cemetery the fusion of symbolic intensions in landscape and architecture is a summit of twentieth-century funerary design. It was created by Erik Gunnar Asplund and Sigurd Lewerentz, two of Sweden's best-known architects.

In an effort to confront the psychological aspects of bereavement, they sought to capitalize on the particular qualities of the site, a 75 hectare pine forest immediately south of the city. Asplund and Lewerentz rejected traditional European prototypes for the cemetery, the city of the dead or the paradise garden, and turned instead to forms embodying more primitive Nordic associations to renew and revitalize landscape traditions. Their starting point was the site itself.

Transcending any dependence on traditional Christian iconography, they relied primarily on attributes of the landscape - hill and valley, earth and sky, forest and clearing, meadow and marsh - to invoke associations of death and rebirth in a landscape of psychic dimensions.

In a minimal intervention they threaded paths lined with graves through the pine forest, with its primitive, romantic associations. They molded the existing gravel pits into terraces lined with graves and built up earthen mounds to reaffirm the essential qualities of the natural terrain.

At the entry a monumental semi-circular forecourt leads to an open lawn, free of burial markers, that imparts a sense of serenity to the landscape. From here a large granite cross is the only object to break the horizon. It provides a threshold to the three chapels perched at the end of the clearing, endowing visual and symbolic dominance to the landscape.

At the crest of the hill a lily pond symbolizes the eternal cycles of life and death and serves as the backdrop to an outdoor setting for funeral rites. Opposite is a long, segmented flight of steps that ascends a large earthen mound to a walled precinct, bounded by weeping elms dramatically profiled against the sky. A birch grove at the top of the ridge marks the forest edge, providing a colonnade to the burial grounds that lie within the pine forest beyond.

The primary impression of the forest's uninterrupted expanse is reinforced by its uniform carpet of grass, dotted with modest memorials that are oriented, like the chapels, to the path of the sun. This idea of a unified aesthetic contributes to the cemetery's symbolic essence.

⁷⁴ Ford, Farewell, Mills & Gatsch, Architects. *Historic Structures Report 2003* (Princeton, NJ, 2003).

⁷⁵ “Specifications for Construction of Buildings and Pavilions for Day Camp, Trenton Jewish Community Center, Lower Ferry Road West of Parkway Ave. , Ewing Township, Mercer County, New Jersey.” For The Trenton Jewish Community Center Association, 18 South Stockton Street, Trenton, New Jersey. Louis I. Kahn, Architect and John M. Hirsch & Stanley R. Dube, Associated Supervising Architects, April 16, 1957; Section 6: Painting, Item “a.” Louis I. Kahn Archives, University of Pennsylvania.

⁷⁶ Sitte, Camillo. *City Planning According to Artistic Principles* (New York: Random House, 1965).

⁷⁷ *Louis Kahn: Essential Texts*, Edited by Robert Twombly (New York: Norton & Company, 2003) p.152.

Chapter 7

⁷⁸ Star, Jonathan. *Rumi: In the Arms of the Beloved* (New York: Penguin Putnam Inc., 1997).

See also: Nasr, Seyyed Hossein. *Jalalaldin Rumi, Supreme Persian Poet and Sage* (Tehran: The High Council of Culture and the Arts, 1974.)

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- ⁷⁹ Solomon, Susan G. *Louis I. Kahn's Trenton Jewish Community Center* (New York: Princeton Architectural Press, 2000), p.1.
- ⁸⁰ Twombly, Robert. *Louis Kahn Essential Texts* (New York; W.W. Norton & Company, 2003), p.167.
- ⁸¹ Ibid: p. 154. Lecture given at the International Design Conference in Aspen, Colorado, 1962.
- ⁸² Ibid.
- ⁸³ Ibid: pp.224-225. Lecture given at the New England Conservatory of Music in Boston, 1967.
- ⁸⁴ Solomon relates that Louis Kahn's plan for the Bathhouse was a development of ideas he was investigating at the time in his residential projects. "In his work on the Weiss house and the Leonard Fruchter house (1951-54), Kahn had explored the functional differentiation of space. He had expanded those concerns in proposals for the Francis Adler (1954-55) and Weber DeVore (1954-55) houses, where he began to investigate how articulated space could represent the hierarchical distinctions between primary and secondary uses. The Adler drawings showed a tendency to think of a square broken into smaller individual pavilions. That separation was more apparent in the DeVore house drawings." Solomon, p.97.
- ⁸⁵ 29 September 1954, *The Rome Letters*, p.178.
- ⁸⁶ Ibid: pp.193-194.
- ⁸⁷ "Outdoor Pool & Plot Plans: Trenton Jewish Community Center Association," Louis I. Kahn Architect, Louis Kaplan Associated Architect; February 15, 1955, Louis I. Kahn Archives, University of Pennsylvania.
- ⁸⁸ Goldhagen, Sarah Williams. *Louis Kahn's Situated Modernism* (New Haven: Yale University Press, 2001) p.106.
- ⁸⁹ No documents survive showing the origin of the final roof design or reasons for the change. It is probable that the metal roof, detailed in construction drawings issued at the end of May and represented in a model photographed with members of the Pool Operating Steering Committee in June, was too expensive and was subsequently changed to wood.
- ⁹⁰ Solomon, Susan G. *Louis I. Kahn's Trenton Jewish Community Center* (New York: Princeton Architectural Press, 2000) note 13, p.174.
- ⁹¹ Goldhagen supports the speculation that Kahn destroyed drawings of the Bathhouse to prevent design credit being attributed to Anne Tyng. "The original drawings for the

Bathhouse have been lost. Tyng went so far as to intimate that Kahn had destroyed them in order to obscure the importance of her contribution... However unpalatable the idea, it is plausible..." Goldhagen, Sarah Williams. *Louis Kahn's Situated Modernism* (New Haven: Yale University Press, 2001) note 16, p.244.

⁹² Viollet-Le-Duc, Eugene Emmanuel (Introduction by Barry Bergdoll, Translation by Kenneth D. Whitehead). "The Foundations of Architecture," *Selections from the Dictionnaire Raisonne* (New York, George Braziller, 1990).

⁹³ An acceptable solution for the design of the Snack Bar has never been realized. In 1962, after Louis Kahn was no longer involved with the project, the Community Center hired Trenton architect Franklyn B. Spiegle to design a snack bar for the Bathhouse. Newark architects Kelly & Gruzen had just completed construction of the main Community Center building and it is curious that an additional architect was introduced to the project at this time. Spiegle completed design drawings and a plot plan for the "Snack Stand" (Drawing No. 6210-1p: two sheets dated April 23, 1962; Louis I. Kahn Archives, University of Pennsylvania) that were issued for pricing but apparently the design was never pursued. The plan for the building is interesting in its attempt to reflect Kahn's design for the Bathhouse. The proposed building demonstrates how misunderstood Kahn's innovative work was at the time - even by a licensed architect. The later solution developed independently by the Community Center is shown below.



Community Center Snack Bar and Bathhouse (Source: Author's photos 2007)

⁹⁴ Viollet-Le-Duc, Eugene Emmanuel (Introduction by Barry Bergdoll, Translation by Kenneth D. Whitehead). "The Foundations of Architecture," *Selections from the Dictionnaire Raisonne* (New York, George Braziller, 1990).

Chapter 8

Chapter 9

⁹⁵ Concern for the preservation of Louis Kahn's buildings for the Jewish Community Center grew to international proportions in 2005 when art historian Susan Solomon organized an exhibition of suggestions she received from architects, historians and journalists who had been invited to submit proposals of what each would do, "If I owned the Trenton Bath House." The exhibit was mounted in Art's Garage, a local Volvo repair shop in Ewing, New Jersey. Listed below is a selection of submissions presented in the exhibit.

Succeeding generations...should be able to go there, look around, and experience ...the seminal work of his career, as well as an icon of Modern architecture.

Lydia Soo: Professor of Architecture and Planning, University of Michigan

As an educational tool...I would let the Bath House demonstrate that seemingly simple and utilitarian materials can have grace and elegance.

Meredith Ann Bzdak: Architectural Historian

Some cultural foundation takes it over to use as an architectural archive or museum... The original should not be permitted to decay further or to be destroyed for some speculative whim.

Peter Eiserman: Architect

Make it the atelier of an architect in resident who would be selected through an annual competition...As for the expectations placed on the architect, it would only be to work and, it is hoped, to ponder the mystery of space.

Michael J. Lewis: Professor of Art History, Williams College

Reuse the [changing room]...as art installation space...The installations would create an interesting juxtaposition between the idea of a changing room and a room that changes.

Nina Rappaport: Architectural Critic

Become a day care center where children would learn and play.

Jayne Merkel: Author

New masonry block walls should be built at a new, more suitable site. The roof structures...could be disassembled and rebuilt at the new site. The old walls could be left as a ruin, as a sign of how places, neighborhoods and time move on.

Eric H. Hermann: Preservationist

Disassemble the building and reconstruct it...in a new public setting without any program what-so-ever.

Ralph Lerner, Professor of Architecture, Princeton University

⁹⁶ “Ken Smith is unquestionably one of the most interesting voices in landscape architecture; his works reflect the intensity and energy of their surroundings and challenge the distinction between landscape and art form...His work demonstrated a remarkable ability to confront the common reality of many urban sites – hardscapes and low budgets – and produce unconventional designs that are hybrids between landscape architecture and environmental art. His approach stretches the conventional definition of landscape in response to a specific program that itself suggests a focus on aesthetic or practical issues more than ecological processes. Smith’s ideas are bold, evocative, and sometimes humorous...”

Amidon, Jane. *Ken Smith Landscape Architect: Urban Projects* (New York: Princeton Architectural Press, 2006).

⁹⁷ Lubell, Sam. “Preservation Groups Protest Aspects of Lincoln Center’s Renovation Plans,” *Architectural Record*, January 27, 2005.

⁹⁸ Smith, Ken. “Modern-Era Dan Kiley Landscape Threatened at Lincoln Center,” *The Cultural Landscape Foundation*, 2005. “The Cultural Landscape Foundation is the only not-for-profit foundation in America dedicated to increasing the public’s awareness of the importance and irreplaceable legacy of cultural landscapes. Through education, technical assistance, and outreach, the Cultural Landscape Foundation broadens the support and understanding for cultural landscapes nationwide in hopes of saving our priceless heritage for future generations.” tclf.org/organization.

⁹⁹ Tilden, Freeman. *Interpreting Our Heritage*, third edition (Chapel Hill: University of North Carolina Press, 1977) p.114.

¹⁰⁰ Ibid: p.8.

¹⁰¹ Tilden, Freeman. *Interpreting Our Heritage*, third edition (Chapel Hill: University of North Carolina Press, 1977) p.8.

¹⁰² Sorensen, Thomas C. *Open Spaces for Town and Country* (1931).

“The concept of the junk playground was invented by a Danish landscape architect, Carl Theodor Sorensen, whose lifetime project was to transform the status of the park from an object of aesthetic contemplation into a site of active and participatory recreation. Following his observation that children were attracted to construction sites and junk yards, he proposed to enclose a space, supply it with building materials, discarded objects and tools, and allow the children to build the playground according to their own ideas and for their own pleasure.” (Source: Kozlovsky, Roy. “The Junk Playground: creative destruction as antidote to delinquency,” paper presented to the Threat and Youth Conference, Teachers College, April 1, 2006.

¹⁰³ Solomon, Susan G. *Louis I Kahn ‘s Trenton Jewish Community Center* pp.127-28.

Chapter 10

¹⁰⁴ (Source: hermeticcrush.com/HVAC-History) 1950-1955: Heat pumps are built and marketed by companies in Southern United States for local markets. However, many units are sent north to be installed in colder climates and unsuitable applications. As a result heat pumps have a high failure rate and get a very bad reputation. This failure practically destroys the heat pump market, which does not recover until the 1970's.

1950-1970: Large builders like Levitt and Sons of Levittown, Pennsylvania; Ryan Homes of Pittsburgh, Pennsylvania, and Fox and Jacobs of Dallas, Texas begin building large tract housing developments with central air conditioning as standard equipment. This major development forces other builders and the financial community to get on the bandwagon to go to central air conditioning as a marketing tool to sell houses.

¹⁰⁵ (Source: jocohistory.net/culture)

Developing An Edge City

After World War II, families flocked to the suburbs, where new houses were built in record numbers. Government housing programs made new homes affordable for more people and defined the American Dream. By the 1950s, the good life was found in the suburbs.

“Developing an Edge City” examines the government’s role in shaping this vision of the good life; the effects of racial discrimination and the movement of jobs and shopping from the city to the suburbs. Again, three themes organize the main issues: Suburbia for Everyone? A New Urban Form, and What is the Good Life?

Suburbia for Everyone?

Here, visitors consider the difference between the postwar ideal and reality. The suburban vision of the good life promoted by the popular press and subsidized by the federal government excluded many from the dream of a home in the suburbs. Others questioned whether this particular definition matched their own ideas about the good life.

Six profiles present different perspectives on the postwar suburban expansion. The Watkins family profile introduces the baby boom and Prairie Village, a prototypical postwar suburban community. An interactive illustrates the phrase “a house a day,” by pushing buttons for different years, visitors light up the various subdivisions in Prairie Village and see the suburban expansion from the mid-1950s through 1962.

Victor Regnier represents the commercial developers who opened shopping malls in Johnson County’s suburbs. His profile stands amidst a turquoise and white 1955 Chevrolet Bel Air parked below a recreated neon sign from the Mission Shopping

Center. Commercial growth not only made suburban living more convenient, it brought jobs to the suburbs and ultimately created a new type of living environment.

¹⁰⁶ (Source: hgtv.com/hgtv/remodeling/article/0,1797,HGTV)

Remodeling: Steel House, Extreme Homes: House & Garden Television, Episode 305

In post-World-War-II America, Lustron houses, including the one now owned by Jim Morrow, popped up all over the country. In 1950, the original owner bought the house--delivered to its site in 4,000 pieces--for only \$13,850, and it was purchased by Morrow in 1990. Located just a few miles from Lake Michigan, this residence is situated in an older part of town. The exposed pieces of the house--the roofing, overhang and siding--are made of steel, and the remaining sections are porcelain-coated metal. Encompassing 1,300 square feet and included a matching garage, the design resulted from the post-war housing shortage, during which houses were marketed to returning veterans. Nearly 3,000 of these homes were built in 18 months, though only a fraction of them still remain.

Once inside, it is obvious that this is a true pre-fab house, with hidden screws connecting panels to a steel framing system. Although Lustron had allowed homeowners to choose from five different colors, gray was the standard, with bathrooms often yellow or other brighter shades. A particularly unusual feature is the built-in steel furniture, including steel kitchen cabinets, bookcase and vanity, and a steel china buffet combination. Because Lustron had once sought the expertise of automobile designers, the houses have a streamlined look including horizontal lines, recessed drawers and geometric patterns.

See also: Lukas, Paul. "Absolutely Prefabulous: An all-metal mass-produced house just may be America's architectural ideal," *Money Magazine*, April 1, 1999.

¹⁰⁷ Sherfy, Marcella and W. Ray Luce. *Guidelines for Evaluating and Nominating Properties that Have Achieved Significance Within the Past Fifty Years* (Washington: U.S. Department of the Interior, National Park Service; revised 1998, originally published 1979).

¹⁰⁸ Ibid: p.186.

¹⁰⁹ Knerr, Douglas. *Suburban Steel: the Magnificent Failure of the Lustron Corporation, 1945-1951* (Columbus, The Ohio State University Press, 2004). p.183-184.

¹¹⁰ Thornton, Rosemary. "Never Before in America: the Invention of the Lustron," The Old House Web (oldhouseweb.com).

¹¹¹ Elman, Kimberly J. and Angela Giral. *Percival Goodman: Architect-Planner-Teacher-Painter* (New York: Princeton Architectural Press, 2002) pp. 55-56.

¹¹² Ibid.

¹¹³ Goehr, Lydia. Aesthetic Theory: "The Critical Theory of Walter Benjamin (1892-1940)," Columbia University Lecture, March 16, 2007.

¹¹⁴ *The Rome Letters*, p.55.

¹¹⁵ Ibid: p. 213.

¹¹⁶ While completing research in the Kahn Archives at the University of Pennsylvania, the author reviewed a sepia print of the July 1, 1977 site plan showing on the reverse side of the drawing the circumscribed area of the Day Camp eradicated and the four pavilions drafted in pencil on the front. This appeared to be the only change to the drawing and suggests that the pavilions were given a final adjustment together with a small modification made to the tree enclosure at the northern edge of the circle. It is possible that this correction indicates a change in layout for the pavilions or introduces a new orientation for the grid in this area to produce the alignments of the Agora in Athens. In any case, it seems reasonable to conclude that the layout of the Day Camp was not a random act and was given considerable thought in the plans for the Jewish Community Center.

¹¹⁷ It is not surprising, nor difficult to understand, that Louis Kahn struggled and inevitably failed to find a suitable place within his vision for the Bathhouse for the hot dog stand repeatedly requested by the client. This is the counterpoint to the denial of his later proposal for the construction of a ceremonial fireplace for the Day Camp which was transfigured by the client into a barbeque pit and then never built. At issue was not the predictable babble resulting from the distinctly different language of the client and of the architect but, rather, the issues of control being expressed in the divergent messages behind all the noise. These differences were to prove consequentially irreconcilable as the project degenerated through the design process for the main Community Center building. An endgame was achieved with the firing of Louis Kahn as architect and with the hiring, in 1961, of Newark architects Kelly and Gruzen to finish the work. That Gruzen was left to tell Kahn that he was no longer welcomed at the site is indicative of the depth of general misunderstanding at this point.

¹¹⁸ Slonim, Rivkah and Liz Rosenberg (Editors). *Total Immersion: A Mikvah Anthology* (New York: Jason Aronson, 1996).

¹¹⁹ Jason King Associates, London, New York, Vancouver (*kingjason.net*).

¹²⁰ Mandela, Nelson. *A Long Walk to Freedom: The Autobiography of Nelson Mandela* (New York: Little, Brown and Company, 1994).

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- ¹²¹ "Any city gets what it admires, will pay for, and, ultimately, deserves. Even when we had Penn Station, we couldn't afford to keep it clean. We want and deserve tin-can architecture in a tinhorn culture. And we will probably be judged not by the monuments we build but by those we have destroyed." "Farewell to Penn Station," *New York Times* editorial, October 30, 1963.
- ¹²² Cotton, J. Randall. "New Horizons in Historic Preservation: No longer is historic preservation about the oldest or best," *Old House Journal*, Home Buyer Publications/Active Interest Media, October 2003.