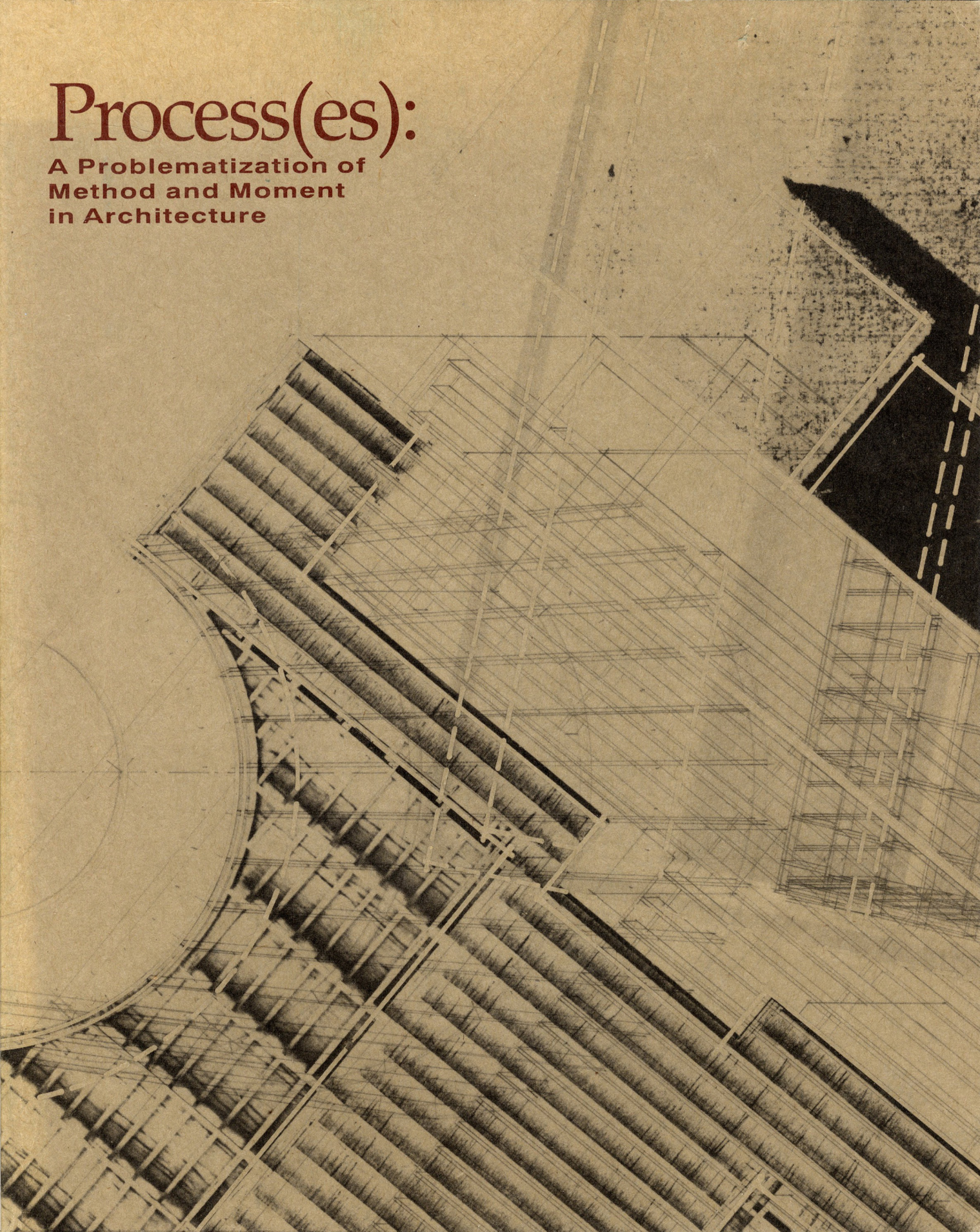
Process(es):

A Problematization of Method and Moment in Architecture



Dimensions

Journal of the College of Architecture and Urban Planning at the University of Michigan.

Dimensions is an annual publication managed and edited by students of the College of Architecture and Urban Planning.

Inquiries may be made either by writing to the above address or by calling (313) 764-1300.

We gratefully acknowledge the Mies van der Rohe Archive of the Museum of Modern Art in New York for permission to reproduce images from their collection. Rights to the Ludwig Mies van der Rohe original drawings and collages are owned by the Museum of Modern Art.

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A version of "Oxygen House" may be found in *Condemned Buildings: An Architect's Pre-Text*, by Douglas Darden, Princeton Architectural Press, New York, 1993.

ISSN: 1068-3895

$14.95

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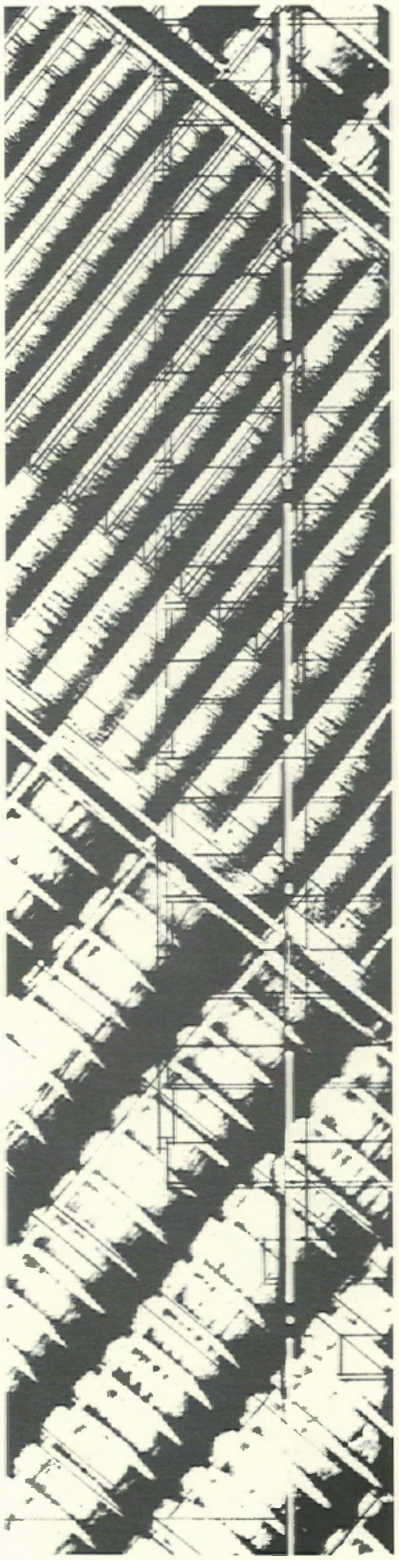
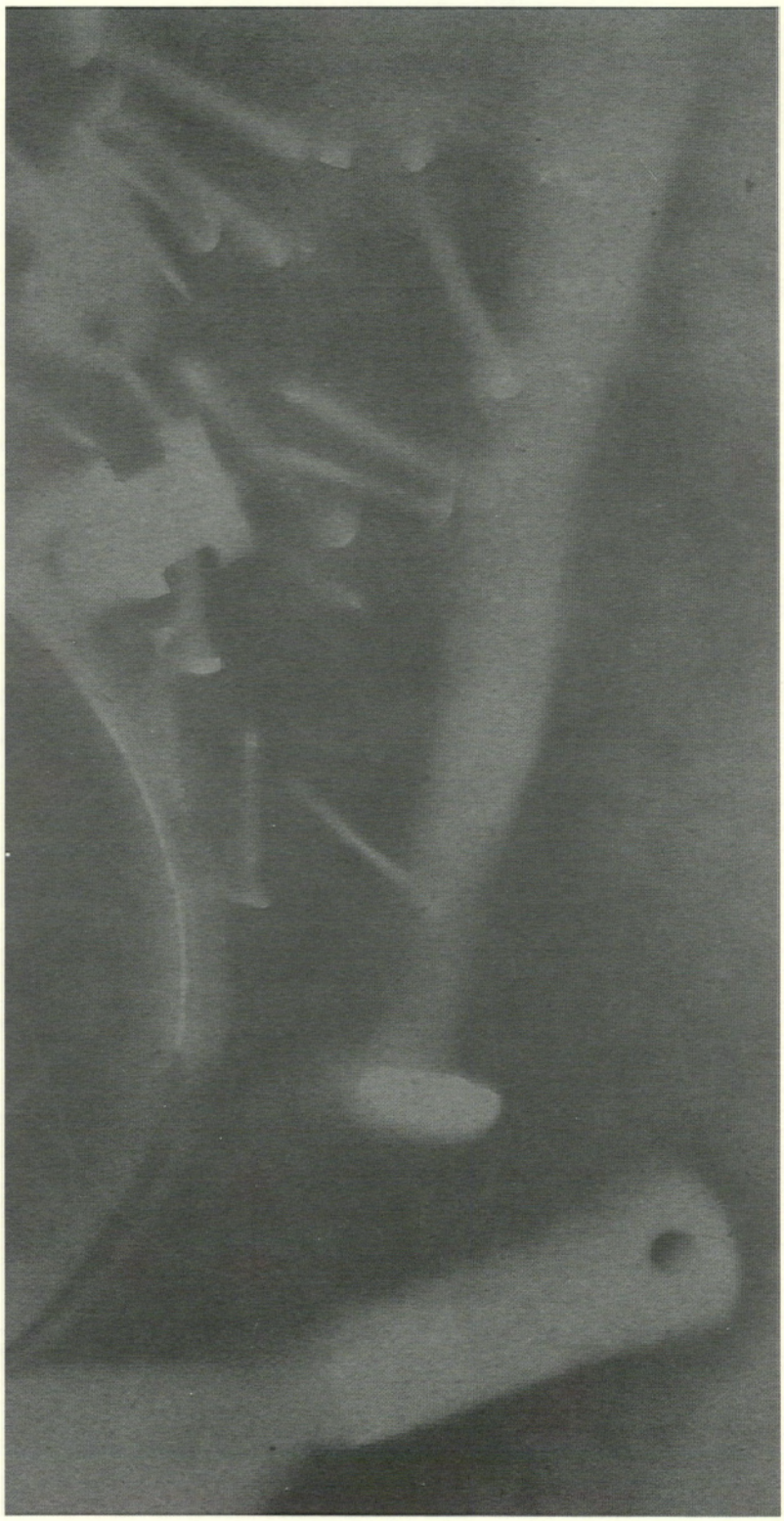


Dedicated to the memory of

Donna Salzer

1951 - 1992



Preface

We offer this product as a series of meditations on the processes of architecture. We understand these processes to include immanent activity, cultural criticism, studio pedagogy, academic discourse, manual fabrication, constructed drawing, and industrial production.

The dominant understanding of architecture as commodity or product originates from the industrial mode of production, a central paradigm of our culture. All activities of industrial fabrication are defined by a trajectory which rushes toward an ultimate purpose - the product. All decisions regarding the process of making are determined by this contingency upon the product, and thus it can be said that the industrial method is *driven by the product*.

A problematization of the process of making can shift the focus of our thought away from the product to its methods of fabrication, to the underlying matrix through which it was extruded. The very act of engaging in such work, grounded in process rather than striving after product, is a challenge to the product-oriented trajectory of industrial production. This sort of analysis and architectural activity slices through the over-determined matrices of modern industry and technology to stand in critique of the very 'neccesities' of industry. This publication showcases several investigations into product-blind work which imagine architecture in the mode of process, not production.

The conveyor belt in an assembly line is a physical manifestation of the product-oriented trajectory of the industrial process. The steady, indomitable motion of an industrial artifact on the belt, as it undergoes various operations of casting, bolting and welding, forces a standardization upon each constituent act of assembly. Each operation must be a perfect re-enactment of the last, and each part must be precisely identical to the other. The process of fabrication is supervised in the factory, while the rigorous standardization of parts is made possible by the institution of the hardware store.

The hardware store is a mechanism of ordering nature into a matrix containing the elements of construction. Our physical context is named and classified into an abstract grid which is the basis of the terminology of construction *(2x4, W18x40,1/4 - 20)*. Each element in the hardware

store relates to any other unit not as an anonymous piece of wood or metal, but as an index to a module, utterly replaceable by an identical specimen. One of the effects of the assembly line is thus the structuration of nature into a table of catalogued parts, ordered by serial number, size, purpose, quality and cost.

Through the structuration of materials and methods of fabrication, the corporeal experience of *making* is increasingly replaced by the immanent activity of the selection of pre-fabricated parts. The blueprint is the mechanism for this dissociation of the conception of an object from the act of its material production. Its scalar constructed drawing describes the intended geometries, and its syntactical codes define the materials and parts to be used. With the increased determinacy of the industrial mode of production both the resistance of the material and the record of the hand are effaced. The fury of saws and drills slice through wood and metal that would have taken hours to cut by hand. Artifacts produced through this method increasingly become thin collages of pre-fabricated parts and pre-determined operations, and are denied an aura of originality because their making is never informed by its own process.

Here at the University of Michigan, we are undergoing a period of pedagogic experimentation which has brought the resistance of materials and the possibilities of industrial fabrication into the studio. Architectural activity within the studio thus becomes fusion of the array of possibilities afforded by the hardware store, the range of operations possible in the work shop, and resistance of materials to these matrices. The act of making is occasion for the close and intense phenomenal experience of nature, when the intent of the hand, the configuration of the tool, and the resistance of the material coalesce in the moment of making. The construction of artifacts within the studio tests the limits of the relationship between the body and its artifacts, and inserts a wedge between the assembly line and the elements of the hardware store.

The profound distinction between objects created in studio and those produced in factories exists in their method of manufacture. The studio product exists as a unique object, constructed using some of the technologies of industry. If it is understood as a prototype, then it is a

simulation of the processes of the assembly line. If, however, it is understood as an autonomous object, then it may be seen as the first step in a possible reconfiguration of the industrial method of manufacture. These objects are born of the passion of making, not the exhausting pre-determinacy of the repetitive actions of the assembly line. Their form and materiality is determined through the process of making. And in spite of the their debt to the units of industry, they retain a proximity to the body, and so reaffirm the liberating process of making over the droning sounds of assembly line production.

Through an immersion into the materials and methods of industrial manufacture, Michigan's architecture program is now in a position of being able to critique the industrial method. These critiques might take the form of analyses of our methods of drawing the artifacts we intend to produce, investigations into indexical means of recording artifacts, studies of natural textures and strengths of materials, and research into the models of industry in relation to the human body. From such experimentation into the means of making, new systems of construction might emerge, which might deform themselves to suit the specific problems of each project of making, rather than endlessly applying the conventional method of construction through adherence to a pre-determined blueprint.

In addition to the standardization of parts, the phenomenon of cataloguing extends in two directions: inwards, into the body, and outwards, into the landscape. The process of classification discovers the interior folds of the body, as well as mapping the landscape through the highway. The mysteries of the body and of the forest have been transformed into the jargon of medical technology *(trachea, lung, arteries)* and the litany of names which constitutes our mapped landscape *(6, 7 and 8 mile roads)*. Through the automobile and the highway, the distances traversed in the landscape are collapsed into units of time *("Detroit is an hour away")*. Our age has therefore been described as one in which 'the body, the landscape and time have all disappeared.'

The rigidity and pre-determinacy of the industrial matrix have lead to an over-structuration of both the body and the landscape. If these two elements are the essential constants of architecture, then their

reconfiguration directly affects the range of activities which we call architecture. The discipline of architecture must re-problematize itself in response to these pressures, and question the relation of the body and the landscape to the network of industry and highway. The difficult status of the body and the landscape within the industrial context is the subject of a series of works featured in this journal: despite the mediating effects of industry, they seek to relocate the body relative to the landscape.

The University of Michigan is located on the perimeter of the 50-mile radius which defines Detroit's Metropolitan Area. It is thus linked to, yet dissociated from, the city of Detroit by the automobile and the highway.

This is the irony of the city, that it grew and defined itself as the locus of the production of the automobile, when the automobile itself would later threaten the city with obsolescence, by making possible its suburbs. The very product-oriented drive which structures the activities of the assembly line seems to have informed the history of the city, for when the city no longer served as an efficient site for the automobile industry, it was abandoned as just another obsolete mechanism. Detroit now litters the landscape in melancholy contemplation of its own post-industrial obsolescence. And in retrospect, it now seems that the abandoned shell of the city was a mere by-product of the process of industry. The city of Detroit generated the myths of the automobile, industry and the American landscape, but its present archeological remains portend the end of these dreams.

Our proximity to the post-industrial site of Detroit gives us a special charge and opportunity. Amidst the metaphorical and architectural ruins of industry, we undertake a profound re-examination of ourselves through a critique of our methods of making. From such immersion into the matrices of our culture's production, we hope to discover new interstices of possibility. This journal is intended as a record of those efforts.

Aditya D. Sood

Ronit Eisenbach was an Adjunct Assistant Professor at the University of Michigan and a graduate student at the Cranbrook Academy of Art.

This article is based on a graduate architecture studio at the University of Michigan, which was team-taught by the author along with Dan Hoffman, head of the Cranbrook architecture studios, in the Fall term of 1992. This paper details the underlying approach to the program, describes the process of the studio , showcases the collaborative work of the seventeen students working in the studio and discusses possible future trajectories that the work suggested.

The Map and the Madeleine

Ronit Eisenbach

What is the shared territory of the indexical[1] and representational aspects of language? Of lived experience and rational structure? Of event and memory? Of that which is below the surface and that which is above? The writers Marcel Proust and Jorge Luis Borges considered these questions. Proust's work dwells upon the exchange between sensuous experience and memory, while Borges considers our creation of rational and mystical constructs to define our world. It is the interest of this project to examine how these different aspects of our being might intertwine in a work of architecture.

The Map and the Madeleine

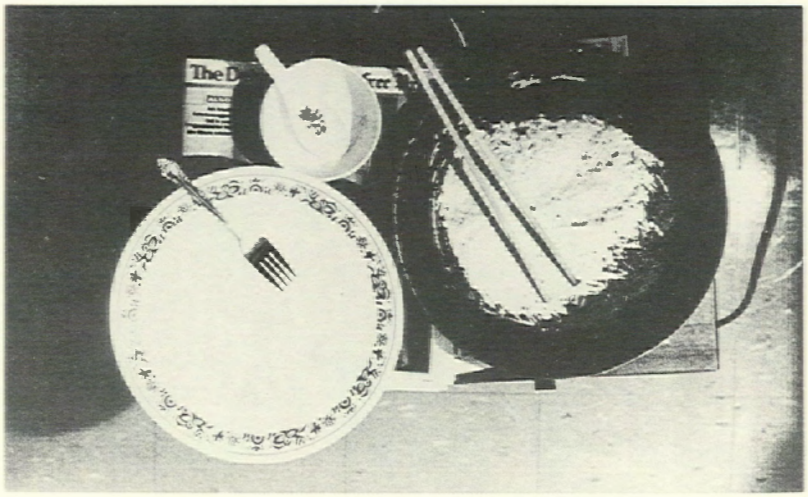
In the "overture" to *Remembrance of Things Past*, Marcel Proust recounts an episode of involuntary recollection and establishes the centrality of association and memory in his work:

...as soon as I had recognized the taste of the piece of madeleine soaked in her decoction of lime-blossom which my aunt used to give me... immediately the old grey house upon the street, where her room was, rose up like a stage set to attach itself to the little pavilion opening on to the garden which had been built out behind it for my parents...; and with the house the town, from morning to night and in all weathers, the Square where I used to be sent before lunch, the streets along which I used to run errands, the country roads we took when it was fine.[2]

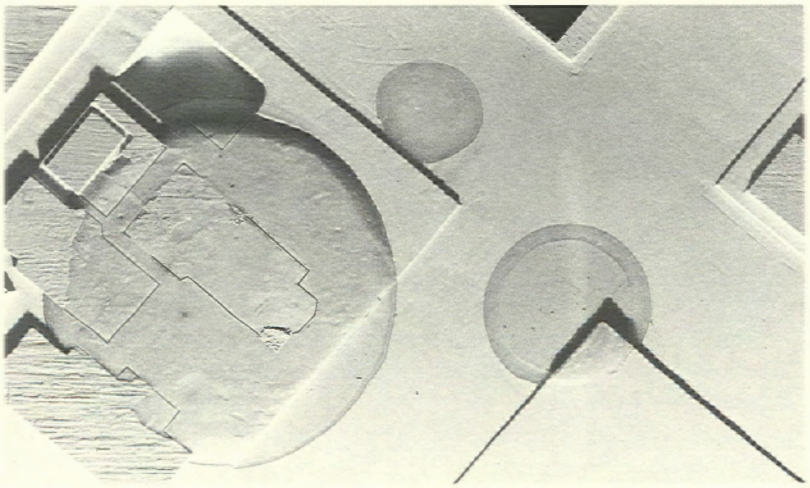
In this excerpt, the encounter with an everyday object and a familiar taste activate a deep personal memory through association. What makes the madeleine and the cup of tea so powerful is that through them the narrator accesses a past previously lost to him. Given this new awareness, the narrator is led to reconsider his present situation and reorient himself. Samuel Beckett analyzes this episode in his book on Proust. He writes:

The whole of Proust's world comes out of his teacup... a childhood that involuntary memory, stimulated or charmed by the long forgotten taste of a madeleine steeped in an infusion of tea, conjures in all the relief and colour of its essential significance from the shallow well of a cup's inscrutable banality.[3]

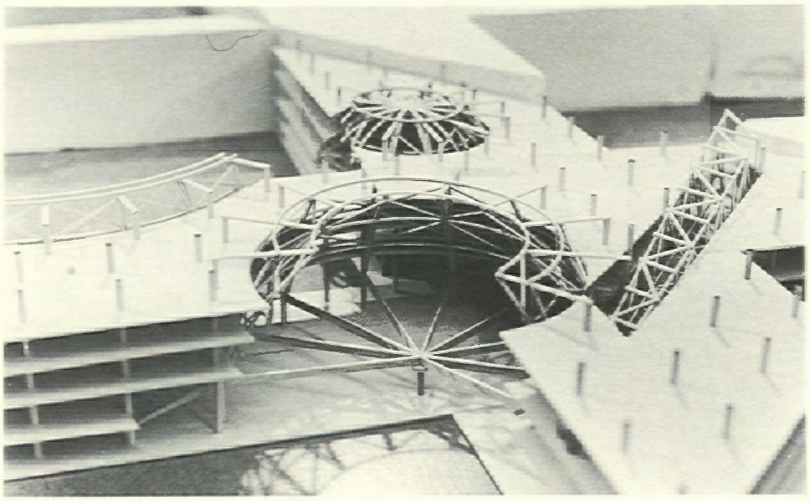
Proust's teacup and madeleine are personal keys, unlocking a history previously inaccessible within his unconscious. Similar items may trigger a response of involuntary recollection in each of us, but it is impossible to anticipate this reaction. However, this vignette offers us an understanding that the everyday objects that surround us are infused with a sense of place and with ourselves. Furthermore, the objects that we need in order to live - to eat, to sleep, to dress, to bathe, and so on - are imprinted within us, potential routes to a future remembrance.



The intertwining of bodily experience, event, and memory constantly recreates the individual and the world. In Proust's fiction, associations triggered by the sensory interaction of the body with things outside of it force a continuous revision of ourselves, thus transforming our internal map and our relationship to the world. As our perceptions change, we accomodate these changes either by transforming our understanding of the world or relocating ourselves within it. On the other hand, if we impose a rational construct upon the world, in effect altering it, we must evolve and reorient ourselves if we are to continue to find our place relative to it.



In the parable "Of Exactitude in Science," the inhabitants of Borges' Empire map the world outside of themselves by imposing a "rational construct" upon it:

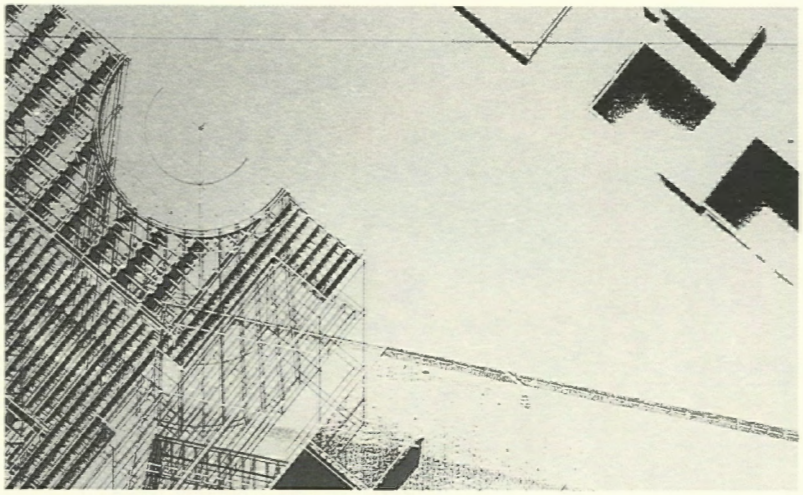


In that Empire, the craft of Cartography attained such

Perfection that the Map of a Single province covered the space of an entire City, and the Map of the Empire itself an entire Province. In the course of Time, these Extensive maps were found somehow wanting, and so the College of Cartographers evolved a Map of the Empire that was of the same Scale as the Empire and that coincided with it point for point.[4]

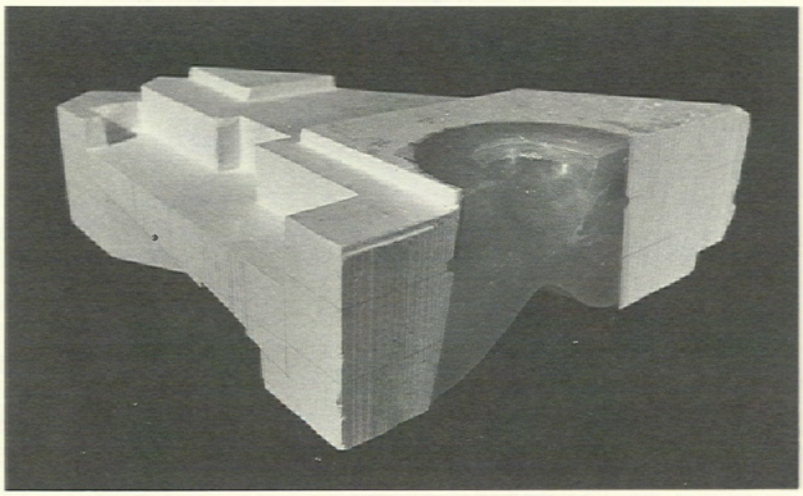
By describing a map which is drawn at a scale of one to one and includes everything in the Empire, Borges' parable raises issues of representation, exactitude, the encoding of "reality," scale, and the value of cataloguing knowledge. Borges' map is an example of the delirious consequences when these relationships are extended to their limits. For example, a scientific map of a place is an encoding that imposes a directed interpretation upon "reality." Relationships of geometry, distance, and location tend to operate according to the laws of similarity. Thus, a proportional correspondence is established between measurements taken from the map and the actual place itself. Borges' Cartographers embraced these relationships. However, by extending this logic to its infinite horizon - insisting that the map is drawn at full scale, has a "point for point" correspondence between itself and reality, and including everything in the Empire - the mapmakers push their "rational" construction into the realm of the absurd. Consequently, this cumbersome representation fails as a tool of projection useful to future generations; according to

the parable, the population became disinterested, and chose neither to update nor maintain it. Ironically, the perception of this idealized construction is transformed over time from that of a "perfect rational representation" to an awkward "object." This "map/object" adversely affects the lives of the inhabitants who are forced to address issues of storage, accuracy, redundancy, and history brought about by its construction.

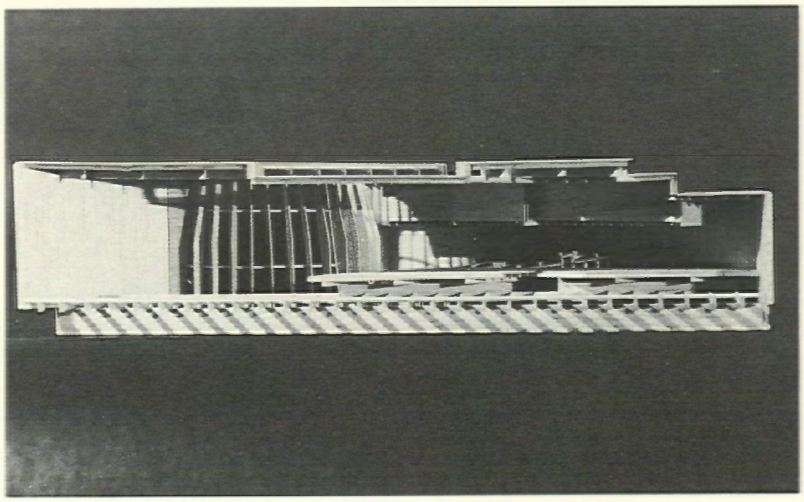


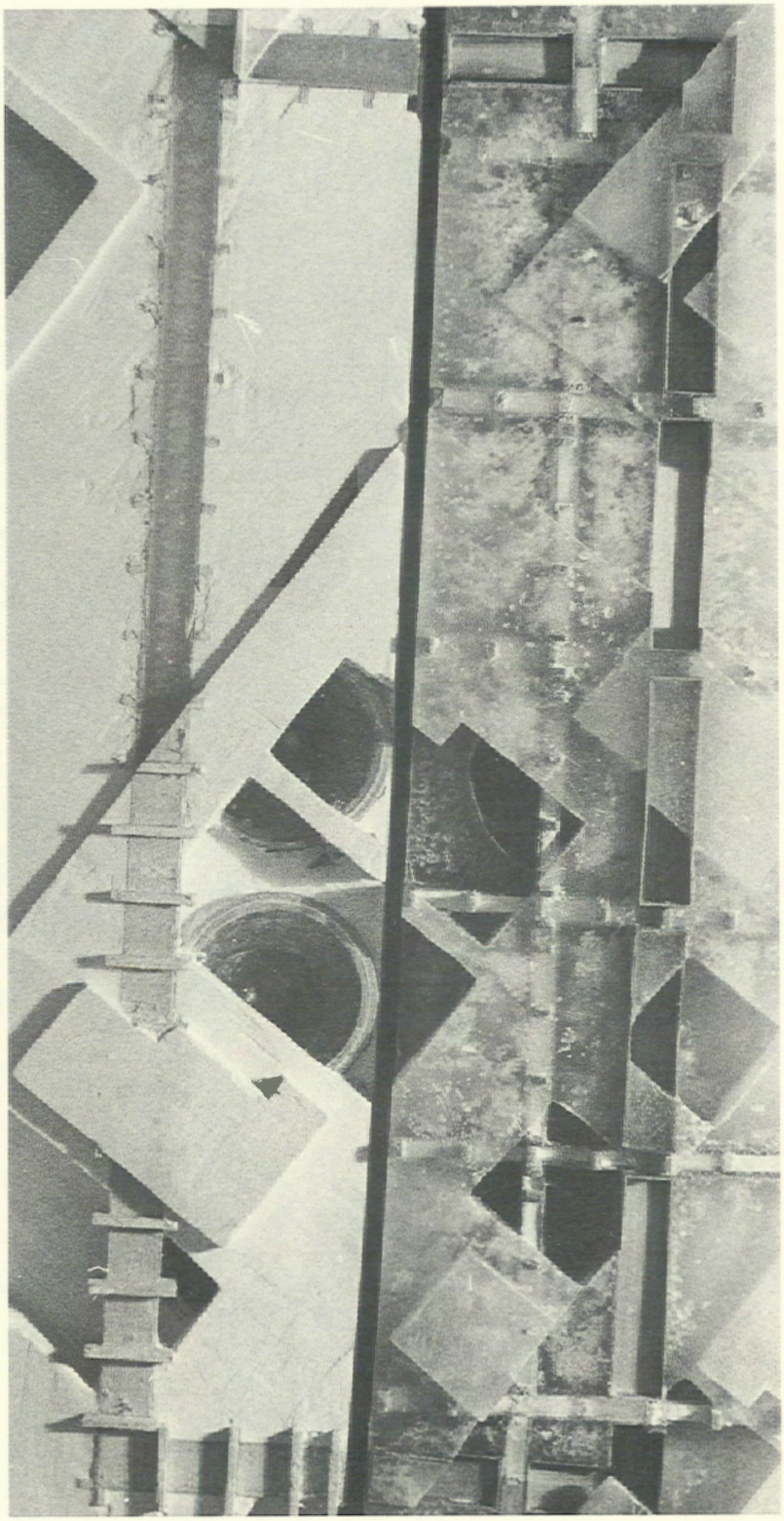
Maps: Projections and Notations

It is through a process of filtering information that the map serves its function as a lens focused on a limited manifold of relationships. It is this fact of inclusion in and exclusion from the map that gives us some distance and perspective on the world we live in, allows us to make decisions and to locate ourselves.



A map's data can be read in reverse, enabling us to reconstruct the filter or questions which isolated the information in the first place. In this way a second reading emerges which exposes the concerns of the map maker and illuminates the projective power of the map. For example, the information available in the Sanborn maps[5], water pipes, fire hydrants, exterior wall construction, the number of night watchmen, furnace type, and street addresses, all gather around the issue of fire. Combustion was the filter through which the realities of each city was seen. Only data deemed relevant to the decisions made by the fire insurance companies was included.





From the perspective of a city street map we can compare information that is already categorized; we can read names, measure distance and area, discern industrial from residential neighborhoods, determine adjacencies and access, and plan a route from one area to another. Depending on our familiarity with the city, this information is examined in isolation of our experience or in relation to it. We may be within the city when we read the map or somewhere else entirely. Our memory of a particular city space, relates, among other things, information found on such a map to landmarks, a cultural and historical context, and events experienced or retold to us.

If we examine our world from the point of view of lived experience rather than from a projected idealized construct, we move from the body out and can begin by considering familiar material objects and environments: objects adjacent to the body, clothes and blankets; artifacts of common use, keys and books; furniture upon which such objects are placed; the rooms which gather our activities; the homes which organize the rooms; and the city which is the repository for all of these things.

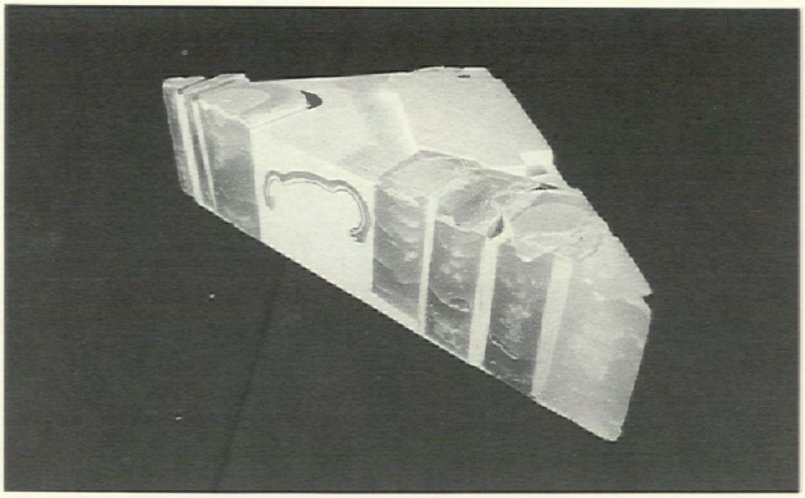
The Studio Process

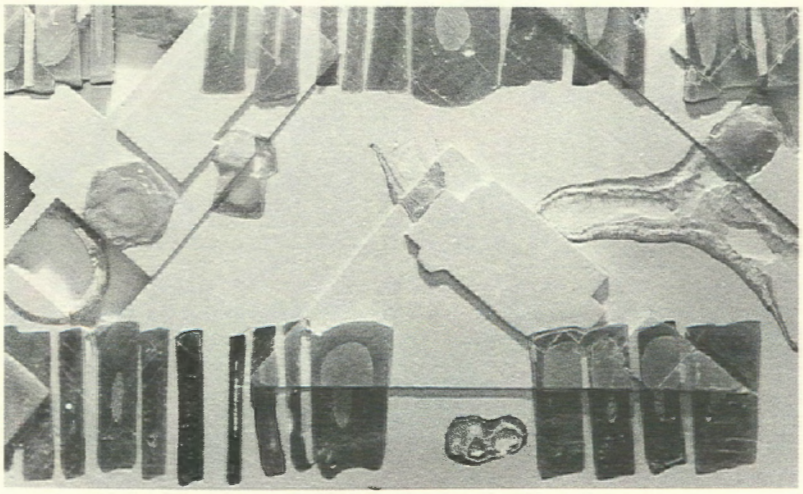
The studio searched for a territory in which to work that was both of Proust and of Borges: the intersection of associative memory and rational construction. To this aim, the studio pursued a number of investigations that culminated in a large construction to which

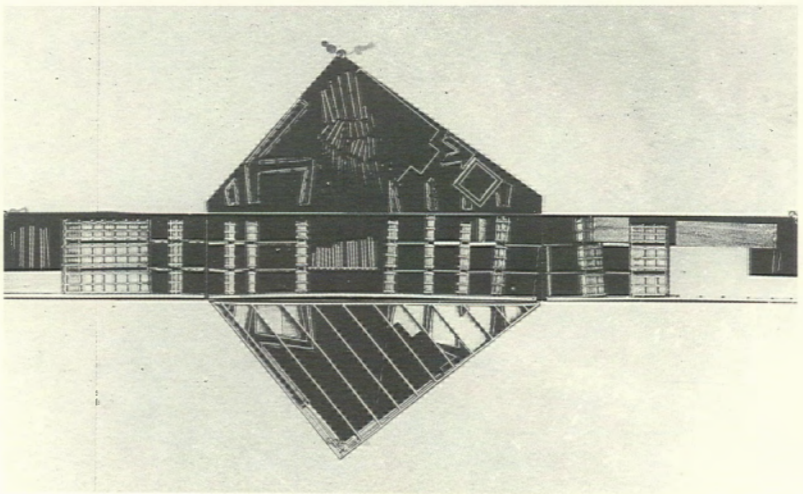
each student contributed. This hybrid object/map was generated through a sequence of manual and cartographic operations. After each operation, a new set of conventions was imposed upon the conditions which arose out of the previous process.

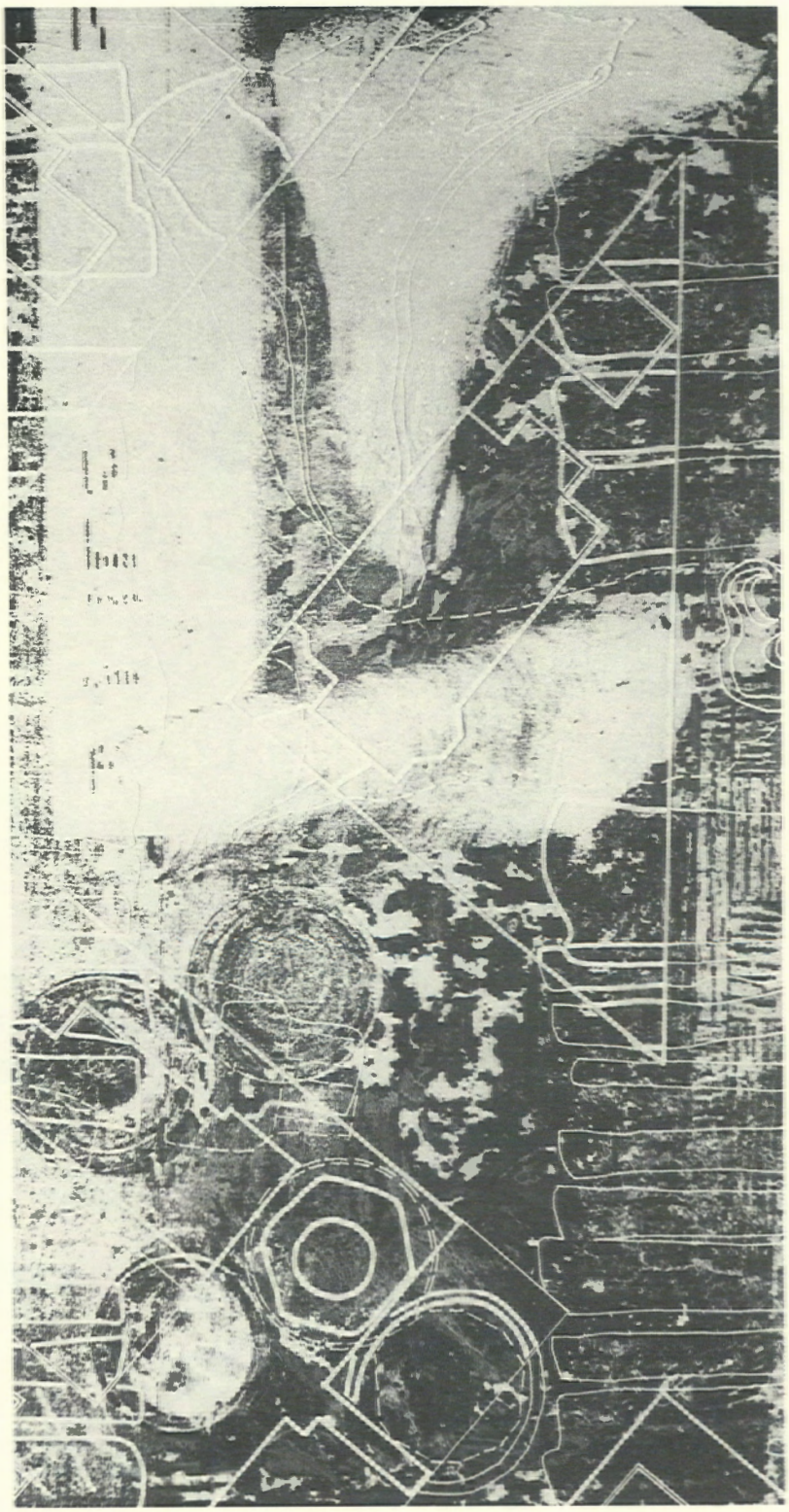
The initial investigation began with the individual students designating a meaningful relationship of personal objects within their own home. They were asked to consider the following implicit and explicit relationships found in each situation: spatial and temporal position, internal structure and geometry, material properties, and use. These situations were documented through photography, and analyzed through drawing and writing.

After isolating their critical relationships, the original situations were developed into physical constructions within a given 16"x24"x3-1/2" volume of space. These were then filled and covered with plaster and wax, embedding the "map of the map makers" and forming a new ground. The individual projects were organized into a larger grid surface which was then inscribed with a map of a residential neighborhood in the city of Detroit. All the buildings that were ever constructed in the neighborhood were included in this composite map.[6] The city map became the plan for an archeological excavation of the ground. Rules which guided the depth of excavation distinguished buildings that were currently









occupied from those that were vacant or demolished. A uniform system was established by the studio, which linked the depth of excavation to the condition of the house (i.e., existing, demolished, vacant), set elevation levels for streets and property, and set rules which legislated the appropriate action to be taken upon discovery of a buried artifact. By combining 1992 and 1954 Sanborn maps of the area, a map was created which showed all the houses originally built in this section. The studio's map of the neighborhood used variation in relief to distinguish between the three conditions: for existing homes, the footprint was in high relief; demolished homes, the footprint was excavated; and vacant homes combined the two strategies - the perimeter walls were in high relief, yet the spaces they delimited were excavated. "Street" fragments were assigned a column and slab structural system, 1/16"=1'-0" and 5 floors. "Block" fragments were assigned a bearing wall system, 1/8" = 1'-0", and 3 floors. Each individual chose a fragment to work with. They then applied the "rules" to their section and interpreted this new condition through building basswood models.

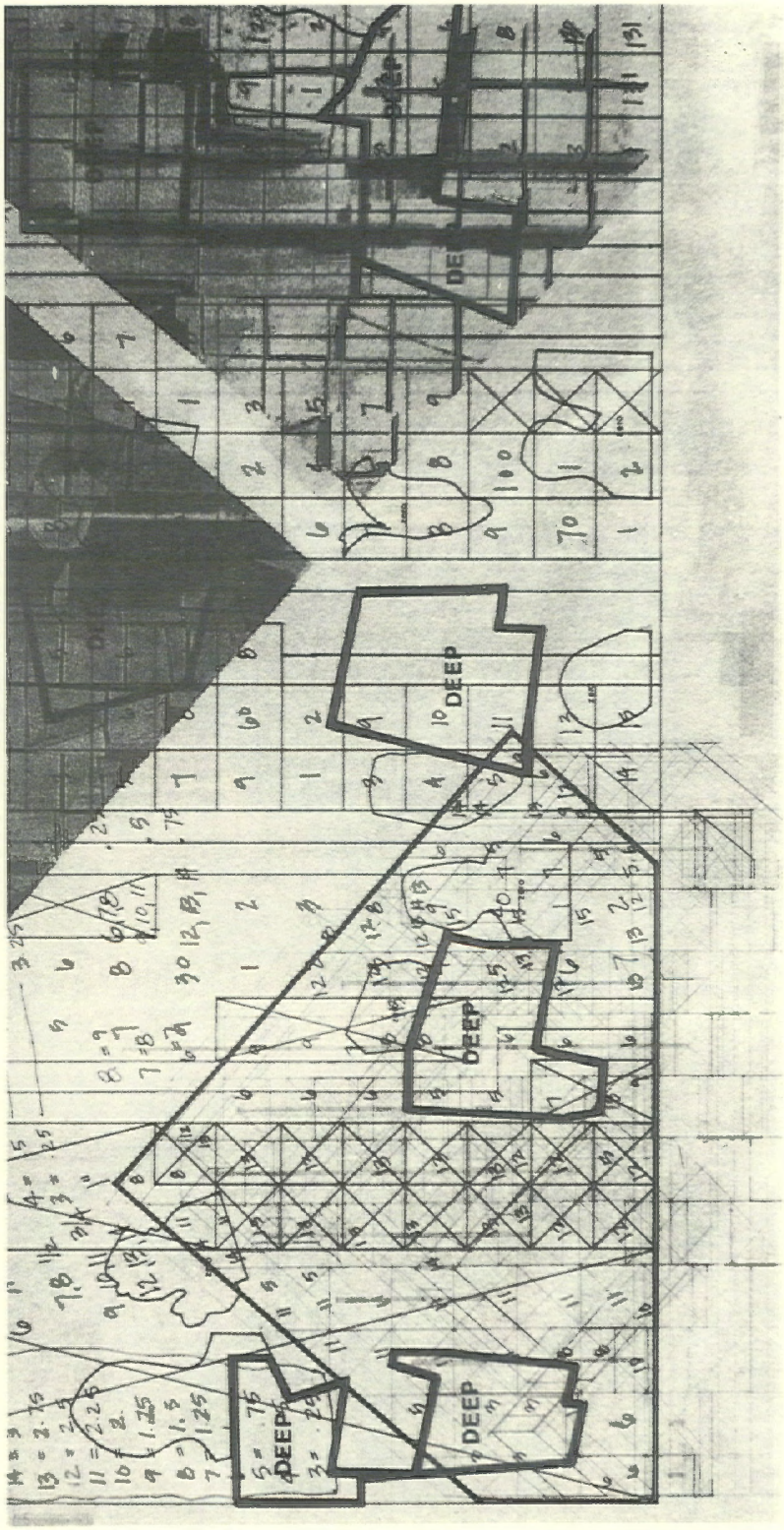
As a final step, the object/map was sectioned along the boundaries of streets and private property, revealing sections where both the inscribed map and the artifacts can be viewed simultaneously. By slicing the studio map perpendicular to the ground plane, the organization of the city was used to release information contained within the ground. The

resulting cut-out block and street fragments were then reexamined for their potential as building proposals. The students were asked to restructure these solid sections and translate them into spatial models which reflected the relationships which had accumulated.

The process was recorded through photographic means and interpreted in two "memory" drawings, which functioned both as projections and notations to the project: an axonometric construction document and an "archaeological" plan. The axonometric traced the transformation of the fragment from object to proto-building. The intention of the "archaeological" plan was to account for and reconstruct the histories of the site. In order to emphasize the combination of representational language and indexical activity in drawing, we imposed a no-erasure rule, whereby all lines drawn became a part of the drawing record. The combination of indexical means, such as photography and photocopies, and iconographic representations, such as cartography and architectural drawing, allowed us the opportunity to describe not only what physically exists on the site, but also what was buried or is present in memory, enlarging the dialogue between collective memory and rational construct.

Archaeology in Reverse

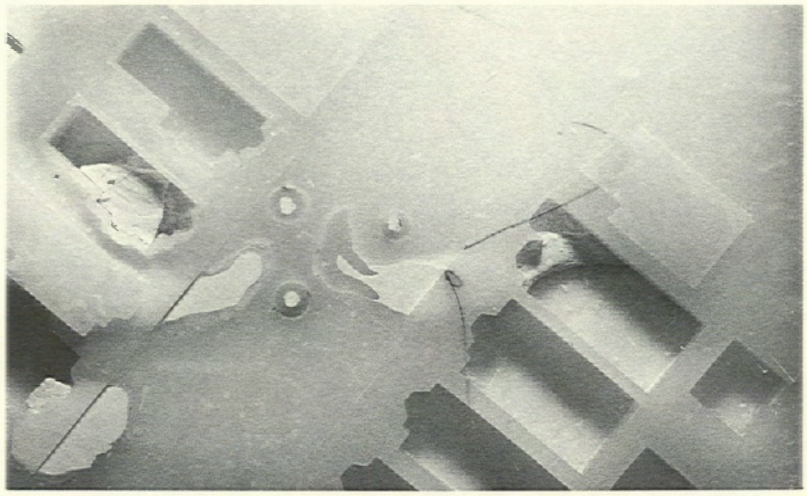
In this project, the "map of the map makers" was buried below the ground surface. The map of Detroit



was inscribed upon the upper surface plane and used to excavate the ground below. To read the studio's map, one's gaze has to penetrate below the surface.

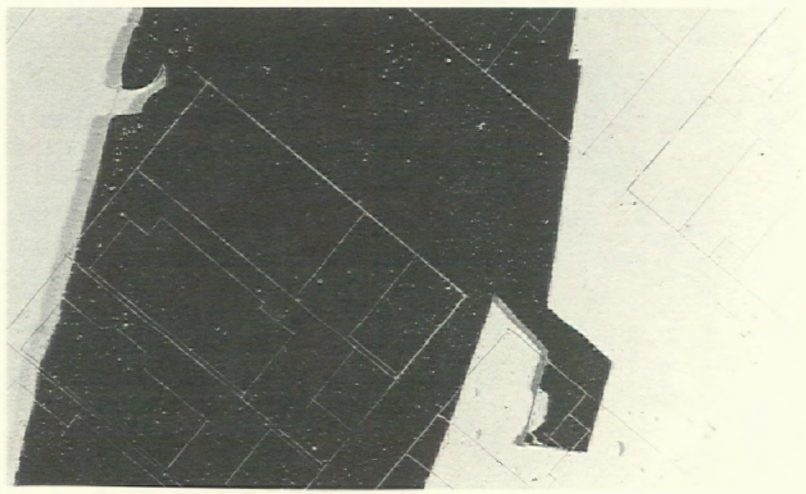
"Archaeology in reverse" engages both rational constructs, which use thought to cut through and organize material, and the experience of associations as an informant to the process of design. The work generally progressed through a series of steps designed to familiarize and then defamiliarize the object in the following manner: each individual would find him or herself at a moment of opacity that was the result of some indexical process. Students would then apply a form of empirical analysis to their objects which utilized a rational construct or convention to gain precision and to transform it. At this point the work was submitted to another indexical process which obscured the previous steps. This operation further filled in and distanced the work from the author so it could be approached from a different direction. An object/site was created where the location of materials and form were not specifically known. The work proceeded through excavation and the continued analysis of explicit and implicit relationships. The connection of the material world to rationality was to be found, rather than imposed. The space of uncertainty located between that which is remembered and that which is revealed enabled the faculties of interpretation. The condition of section gained significance as the view which offered glimpses into the

submerged body of the object. The archaeological condition of architecture, or building through covering and uncovering, simulates the construction of a ruin in reverse instead of designing from an idea or an ideal.

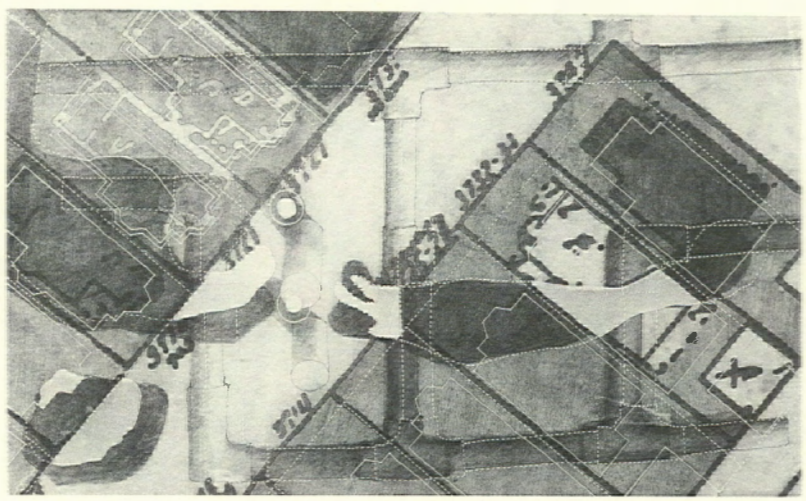


Intertwinings

The map of artifacts and the map of the city must be reread in light of their intertwining. The processes of slicing and excavating unearthed a section of cup, of pipe, of foot; a geometry normally hidden within the wholeness of the object. Shards of reconstructed objects, isolated from their original situation, are now inserted into a new field, generating new relationships. In addition to the meaning which is encoded through a symbolic relationship between that which is drawn (the inscribed map) and that which is being represented (a residential area of Detroit), the presence of artifacts at a different scale located according to a different logic on the map, indicate another field of signification. This is accessed through the association of related domestic activities and spaces rather than through a correspondence of mathematical similarity to a "real" situation elsewhere.



A gap is created by the difference in scale and content between the map of Detroit and the household objects. Our reading of the city map is transformed by the insertion of the private realm into the public. No longer opaque, the map has gained a translucence through which we see other kinds of evidence of human activity buried



within. Overlaid upon one another, the house and the artifact interact; through association, all houses become potentially filled with similar objects. The scale of mass production at the level of the object is insinuated, and the city is transformed into an immense warehouse, a collective collector. Our understanding of that particular wax object has been affected by the overlay of the map; now it refers not only to its specific origin - the plate, for example - but has entered the world of representation becoming a symbol. As a symbol, it is no longer singular and unique, but refers to the set of all other possible plates.

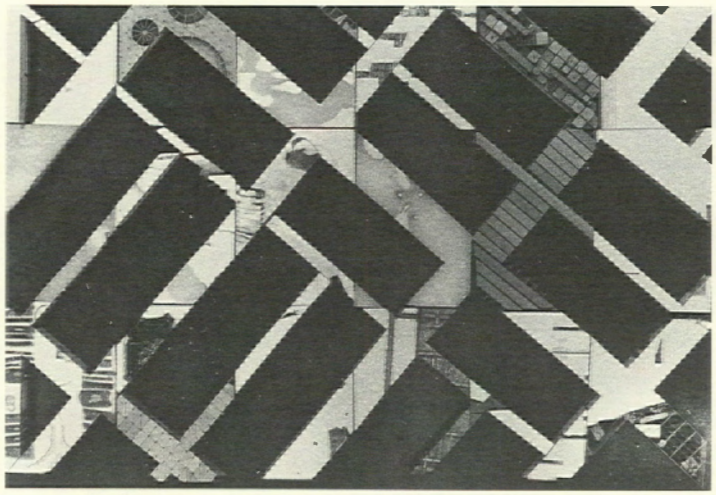
The map as a symbolic representation is disturbed by the presence of actual objects at full scale, by the language of the real world indicated by its materials, and by the physical processes engaged in its construction. Similarly, the actual construction has absorbed some of the "other," forcing us in some instances to read it as a representation, a coded message, and at other times simply for what it is. Neither purely model nor object, neither solely indexical nor representational, we have entered a territory of hybridized language. As a result, the terrain is a bit unfamiliar (though certainly not uncharted), which perhaps allows us to inhabit it with the eyes of multiple characters: surveyors, dreamers, adventurers, wanderers, architects, and archaeologists.

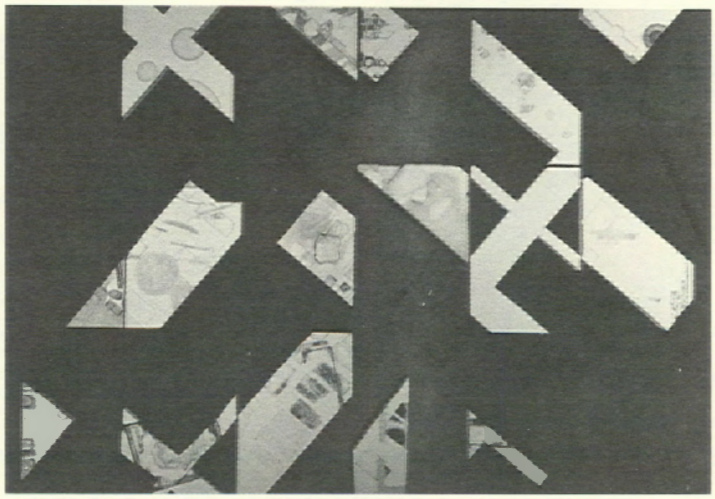
What has been created is thicker than a traditional map yet inhabits a space thinner than most objects. It is somewhere between a thick

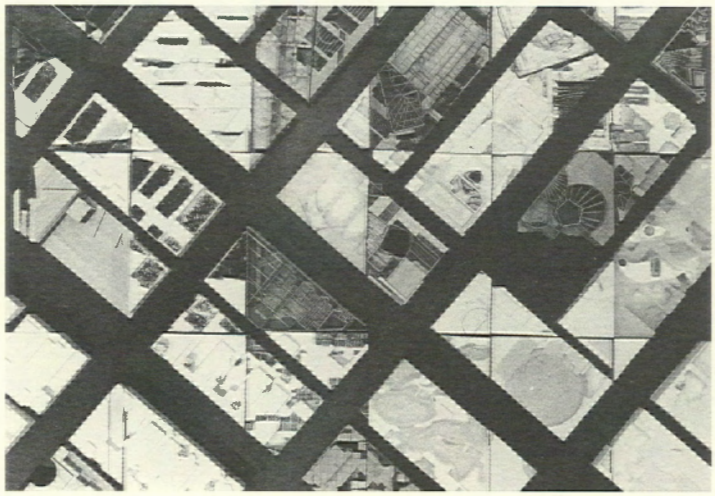
drawing and a highly compressed dense space, between representation and object, between plane and volume, an entanglement of situation and representation. Perhaps because it is no longer a "pure" replica of a lived reality in a single language, it approximates a map of a dreamt existence, of a translucent city, which does not need to follow the same rules of logic.

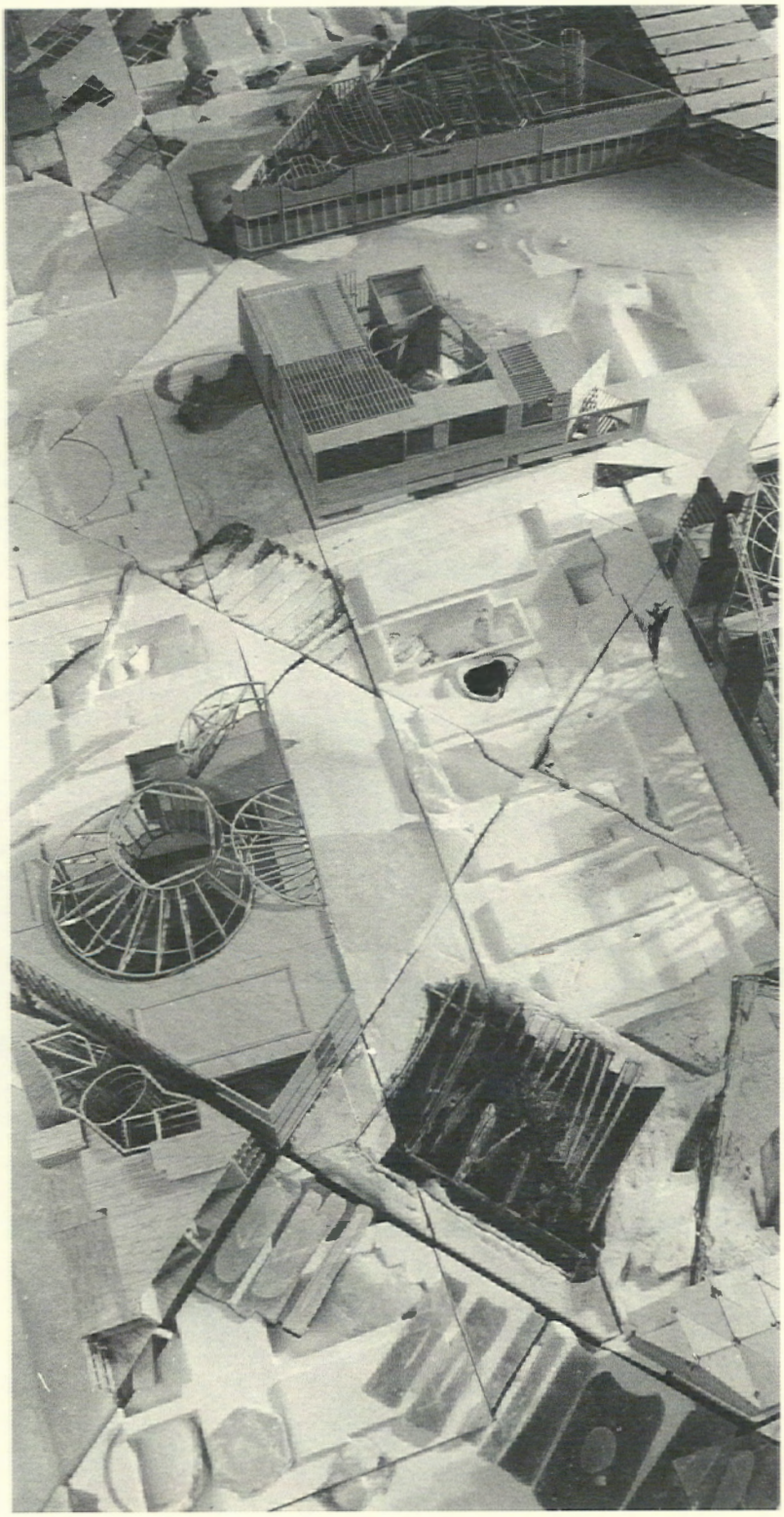
Due to its fragmented nature, the possibilities of reconfiguration are endless. This "map" is a chameleon: in one configuration it takes on the appearance of a twentieth-century North American city; in another, one recognizes a nineteenth-century European city; in another, the suburban corporate landscape is mimicked. There is no ultimate configuration or path to travel through it. This is a reflection of how it was made; one activity superseded the one before, the cessation of activity an arbitrary point in time. The map no longer reflects a place that is or was; the map has become a place in itself and anticipates what might be. Though built at full scale, the objects are no longer useful for their original function; severed from their original context, they have become representations, models, evidence.

The insertion of the private realm in the form of familiar personal objects into the public realm of the city map is a critical reminder of the project. This infiltration challenges the traditional hierarchies and boundaries of space and culture, for it offers the









perspective that the American city is not only driven and determined by policy from above and outside, but is also a result of an infinite accumulation of smaller actions and decisions. This ruptures one image of the city but replaces it with an image of continuity over scales.

Conclusion

The evolution of the studio program was based on the hypothesis that the reflection of ourselves, our bodies and our intellectual constructs links all scales of our built world. The studio searched to understand and isolate relationships that were similar across the various scales of the built environment from personal object to house to city. Whether we examine a madeleine or a map, in our absence these items speak about ourselves, our limits and possibilities, about our constructs of space, culture and language, and about the needs and desires of our bodies. These transcending ideas isolated in the individual projects (such as container, light, shadow, support, hinge, repetition, reflection, section, geometry, and structure), together with the sequence of work and established conventions, organized the projects and provided a thread of continuity throughout, allowing us to nest one stage of work within the next.

This work was made both by adhering seemingly unlike things and by dividing their union. "To cleave" has two opposite meanings. The first definition is "to adhere closely: stick: cling to." The second definition is "to split or

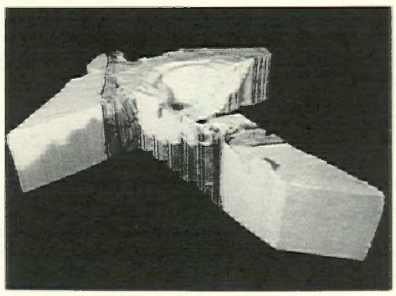
divide; to penetrate or pass through."[7] This cleaving - the symbolic and the indexical, the scale of the body and of the city, the personal and the public realms, convention and contingency - has led to a studio effort and a way of thinking which offers the possibility of retaining a sense of shared territory.

The inspiration provided by Proust's vision of the potent power of a "banal" object to remember our experience and enrich our internal world, and Borges' utopian representation of the world as a full scale map, has challenged us to combine these different aspects and constructs of ourselves in our work. The immediate experience of acting and remembering, and the distanced experience of mapping and representing, are both essential in making architecture.

Notes

[1]I use this term, as C.S. Peirce defined it, as that category of sign that is produced as a result of a direct physical encounter between cause and effect - a marking of presence, a trace, such as a fingerprint or a crack in a wall. This type of record operates as a piece of evidence which points to its own origins and to the physical properties of the world. Indexical operations used in making can self-consciously exploit the inter-relationship between site, action, and record to create an object which refers to past events. I have investigated this possibility in the project "Site/Action/Record" at the Cranbrook Architecture Studio, 1991. See C.S. Pierce, "Logic as Semiotic: The Theory of Signs," *Philosophic Writings of Pierce* (New York: Dover Publications, 1955). See Rosalind E. Krauss, "Notes on the Index: Parts 1 and 2," *The Originality of the Avant-Garde and other Modernist Myths* (Cambridge, Mass.: MIT Press, 1984).

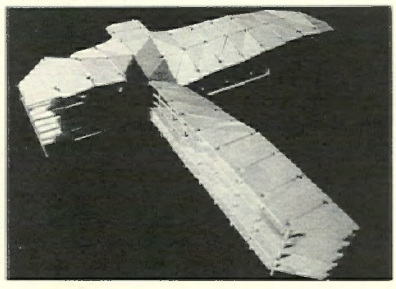
[2]Marcel Proust, *Remembrance of Things Past: Volume I, Swann's Way*, translated by C.K. Scott Moncrieff and Terence Kilmartin (New York: Vintage Books, 1981), 51.



[3]Samuel Beckett, *Proust* (New York: Grove Press, Inc., 1981), 21.

[4]Jorge Luis Borges, "Of Exactitude in Science," *A Universal History of Infamy*, translated by Norman Thomas di Giovanni (New York: Dutton, 1972),141.

[5]The Sanborn Map Company began making maps of major cities to serve the needs of the fire insurance industry. The earliest map of Detroit that I found was 1889. These maps were updated and used by the insurance companies until 20 years ago when the laws changed to geographically based rates. They are also used by city governments and planners. It is an interesting example of a set of maps that not only described the city that was built but affected the city that was to be built. This was achieved through building codes, fire insurance costs, and by providing accurate base maps which recorded the growth and decline of American cities.



[6]Unlike the Sanborn maps, whose information was chosen to describe future fire risk for insurance companies, our map describes a present situation conditioned by the past. This representation considers the neighborhood together with one aspect of its past by showing all construction on the site and specifically indicating the building's condition of decay.

[7]*The Random House Dictionary of the English Language* (New York: Random House, Inc., 1966).

Tom Sherry is a graduate student at the University of Michigan's College of Architecture and Urban Planning.

A Diary of Internal Process

Tom Sherry

"...my Dad has lived in the same square mile all of his life. He attended, taught, and was the principal of the same elementary school on Detroit's East Side. Now he does residential renovation work for community members. His presence is a continuum. It helps solidify the local 'community of memory.' Today the neighborhood is unraveling, but he won't leave — is it wrong to hang on to a past sense of community — I mean — is he obligated to stay?"

"Tom, I think if he leaves he should apply the feelings of his old community to his new one. It's possible to remember the past and live in the present."

"What about me, am I obligated to go back..."

1974: I could ride my bike in the street like the big kids because the grown-ups blocked off the streets for the block party. We had a bike parade and my dad helped me make mine look like a jet. My dad put the school's volleyball net in the street and everyone played all day. Then at night all the neighbors brought food and picnic tables in the street and we all ate dinner together. There were hundreds of people and we all watched Laurel and Hardy movies on our front lawn when it was dark...

Whenever I think of my old neighborhood in Detroit, I get very emotional. My childhood years were as rich as their urban setting. Today I see the East Side on the brink of decay and I want to save it. I believe so strongly in a particular sense of community, which can only exist in the context of a city, that I am tempted to embark on a personal crusade to restore it. I despise the middle class transiency that has led to the economic transformation from adequate wealth to an approaching poverty. Yet professional goals will likely direct me away from my dying city and into the current trend of professional transiency.

1977: Chris was my best friend. We would sit in the alley behind the Whittier Party Store on the crates in the alley where mom said not to go. Opening the baseball cards and eating the gum - not because it was good but because we weren't allowed to eat "sugar gum." We saved our pennies and picked up cans to try to get our favorite Tiger - Ron LeFlore. One day Matt said that Chris was moving away and Ron

LeFlore was moving in to Chris' house. I called him a liar but it was true and Chris moved to somewhere called West Bloomfield. It took an hour to drive there and they didn't have any sidewalks...

For six years I have watched Detroit erode from a safe distance. In May, my period of sanctuary ends. My professional education will confront an intangible urban loyalty. The resulting collision will not be a "new beginning," as is often the misconception that accompanies the act of graduation. Rather, it is merely a continuation of a personal process that one lives every second of every day; a process that is comprised of a seemingly endless network of decisions and consequences. This "new beginning," then, is not a beginning at all, but a single instant in one's personal process that is rooted simultaneously in past experience and in future vision. This instant, however, is an important threshold that releases the graduate from the shelter of the university environment — a threshold that marks the entrance into unfamiliar territory. Anticipation of this threshold provokes memories, plans, dreams. In May I will graduate from a community of learning and awareness into a professional community, and I will likely live in a new residential community. On what grounds do I decide which communities take precedence?

1979: My sister and I walked three blocks to the other busy street, Morang, and took lessons at the Art Studio. Our first teacher was a big lady named Mrs. Richards. She was nice, but she always called me Ted. We used charcoal and pastels and drew pictures of the cartoons on hallmark cards. Then we got to go to the adult class in the back and our teacher was Mrs. Profit — her hair was even redder than mine! I got to be pretty good at pastels, but I would never try oil paints like my sister. The adults in the class used to get mad when our pictures looked better than theirs...

"Where were you last night, Tom?"
"I was over at Mark's *house."*
"Oh yeah? How's the Mancuso clan doing?"
"I don't really know — they weren't there—"
"Did you go in the hot tub, or is it closed for the season?"
"I wasn't at the Mancuso's, I was at Mark's new house—didn't you hear that Mark bought a house?"
"Really? He bought *a house?!!"*
"Yeah — Farmington — three bedrooms, living, dining, kitchen — not bad!"
"He must be making some cash — he owns a house and he's only 23! I'll be lucky to get my first house by the time I'm thirty!"
"Tell me about it..."

I had the above conversation with my housemate a few weeks after visiting my friend Mark's new house for the first time. Nothing had seemed unusual about it, but today I shudder at its stereotypical American middle-class connotations, those of advancement based on

income and consumption. As an independent young adult, I've determined that owning a house may soon be an important factor in attaining personal satisfaction. I cannot deny that I have been affected by the societal trend of individualism in the last decade. I have been conditioned to strive for individual "success." I will enter the professional community in May. To what degree should I channel my energy into manners of self-advancement?

1982: They closed off East Warren for the annual Cannon Baseball Parade. The sun was out for opening day, but it was freezing cold, especially for walking down the street for two miles in my baseball uniform. We couldn't wear coats because coach said that all the people on the sidewalks should see what team we were and that we had pride. I couldn't wait to get to Cadieux Road so that we could get on the field and play. Opening Day was great because there were hundreds of people from the neighborhood watching...

"...as institutions, the government and the educational system have simply failed to change with the changing needs and values of society."

"Yes, but the same can be said for architecture — it is still white-male dominated and both the architectural education and the profession itself have proceeded in directions that have failed to address current sociocultural issues and changes..."

In recent years it has been rare for constructive societal change to occur "from the top down." In reality, bureaucratic distancing between "the top" and "the problem" has shifted the burden of social responsibility to the individual citizen; it seems that the most effective sociocultural improvements occur on a local "grass roots" scale.

Most college graduates have both a keen awareness of today's sociocultural shortcomings and the skills necessary to enter a specific profession. This poses a conflict: they do have the potential to make a personal investment in their community, but in all fairness, a professional education is extremely demanding, and the emotional and financial wound that it has inflicted upon the graduate are often most easily healed by a traditional entrance into the profession. Why should the young professional be obligated to 'save the world' when six years and fifty thousand dollars have just been invested in an effort to enter a profession?

1984: I looked out my bedroom window and there was another car! I wrote down the license plate number and counted six — six in the last half hour. I called Jon and told him to come over because it was time to stake out the "drug house." We followed a harmless looking couple in Jon's car after they made their pick-up. The blue sweatshirts and dark shades must have made us look older in their rear-view mirror

because they started driving like hell through alleys and going the wrong way on one-ways. We lost them at City Airport when they drove through a red light...

Americans today sense tremendous pressure to succeed as individuals, and societal issues such as the current sprawl caused by the transformation and transiency of urban neighborhoods are making it more difficult for us to coexist in an environment that resembles a community. We exist somewhere in between pure individualism and communism. It is not realistic to think that someone could (or would want to) "live" at either of these two polar extremes: we all have our own *individual* characteristics and, to some degree, we must *coexist* with one another. In other words, everyone has an obligation to themselves and to their community. When someone fulfills both obligations, "personal satisfaction" is achieved.

1985: It was great while I was actually in the school building, but once the bell rang, I got out of Warren as fast as I could. There wasn't anything to do in Warren except watch the identical ranch houses speed by on the way to McDonald's. It seemed like every kid had a car, and for good reason — if you tried to get anywhere on foot, you'd just get run over anyway. De La Salle High School wasn't quite the same after it moved out of my neighborhood, either. The new building was stale — an old middle school — but it was bigger and they need the space. I started to wonder if they what they really needed was the real estate...

Robert F. Sherry, 50, is my father. He was born on the East Side of Detroit roughly 1 mile from where he and my mother live today. He works independently in the neighborhood as a small-scale residential renovator. Prior to that, he was a teacher and principal at the same Catholic elementary school that he attended as a youth. He attended high school on the East Side and college at the University of Detroit, where he received his teaching certificate in 1966.

Most of my father's friends stayed in the neighborhood during and after college because "it was a great community to live in — the city was still quite stable and offered everything that we needed. Even Dave Debuscheirre, the best high school basketball player in the state in 1959 went to U of D and then to the Pistons." My parents met in college, were married in 1968, and I was born in 1969. My father began teaching in 1966 and painted houses in the summers to raise extra money. After leaving education in 1990, the residential side work became his profession.

With education as his vehicle, my father made a strong impact on the local community: he was a fantastic educator who could have advanced to instruct at a college level. But that is not what he wanted. "I was more interested in helping the local kids to develop their own identity through

the voluntary pursuit of an education. I tried new methods constantly to keep curiosity and interest high among the students. I also tried to enhance the physical environment of the school." He converted a classroom into a library with a small theater stage for the primary students. He created a layer of elective classes that included foreign languages and shop courses that he taught himself — and the list goes on. The thousands of students and parents that he has touched with his passion for education made their presence felt in June of 1990, when a farewell mass was held in his honor. I had never seen the church so full — not even at Midnight Mass on Christmas Eve.

1987: We still played tackle football across all the front lawns after school — I guess my Dad finally gave up trying to save the lawn. The new guy that lived between about the 25 yard line and the endzone at the far end never said anything because we were there first. The Johnson's and the Jankowski's never cared so why should he? I think he knew that we came with the neighborhood. We were too big for that "field," but the game was only 3 on 3 now because the Blair's had moved and so did the Liagre's. Sometimes we'd get adventurous and leave the "for sale" signs standing while we played...

The strong community flavor of the '70s and '80s has now come to pass. The transiency of the past decade has transformed the East Side into a "temporary" neighborhood for the lower to lower-middle class. Fewer and fewer of the houses are owned by the occupants, and the resulting deterioration shows it. My father tried to stop the quality of St. Matthew school from declining as the neighborhood declined. Three straight years of fourteen-hour days caused him to resign out of physical and emotional exhaustion. Now his work involves the physical repair of the deteriorating neighborhood.

My mother tried to convince him to move last year — they had a great offer in nearby St. Clair Shores — but he wasn't ready to leave yet. His sister and mother still live 10 blocks away, and he's not ready to abandon the 48 years that he has invested in the East Side. My father is no longer located at his point of personal satisfaction because his community is dying.

1989: I searched through the time schedule one more time and finally gave up. L S & A classes simply didn't interest me anymore. I had made up my mind. I pulled out my bulletin to see when my portfolio was due — What?!! Monday? It was Wednesday, alright. After a three-hour spasm of Xeroxing, pasting, and gasping for air I looked into Professor Werner's steely smile and he said, "you're lucky, we're going to start reviewing them after lunch — throw it on the pile..."

I am 24 years old. I grew up on the East Side of Detroit with my younger sister and my mother and father. We were a lower-middle-class family

that had significant financial difficulties during the inflation period of the mid-70s. When my mother went back to work in 1980, I was only 11 years old, but I inherited the responsibility of caring for my 7 year-old sister between school and dinner-time, when my parents returned home. This latch-key situation gave me a sense of adult responsibility that increased my confidence as an individual. I always excelled in sports and in the classroom, and due in part to the enormous number of children in my neighborhood, I made friends easily.

1991: I stood in cap and gown behind the podium at the Power Center, thoroughly exhausted from two straight years on an architectural crash diet. I looked out and focused on dozens of close friends. Where else can someone make *dozens* of close friends...

From 1970 to about 1985, our neighborhood was quite integrated both financially and racially. The community was rich with activity and our family was very active both in the church and in the neighborhood. While in high school, the neighborhood declined in what is now a typical urban pattern: families who had "made it" moved to larger houses in the suburbs, and lower class families, many of whom were black, moved in. Today, the neighborhood is predominantly black, and many of the homes are rental properties. Because I have been in Ann Arbor throughout this transition, I have not experienced it as a community member. Although I am as close to my family as I have ever been, I no longer feel "at home" in my old neighborhood. Its transition has left me in a state of alienation. Every time I visit (it hurts to use the word "visit" but it seems appropriate) there are more houses for sale on my block, and several more businesses have closed or changed hands: even the Art Studio closed a couple months ago. In addition, I know far fewer people in my neighborhood today than I did when I was five years old. The combination of my absence and the neighborhood transition has turned me into an "outsider" in a community that I once cherished as my own.

1991: The birthday surprise was coming together exactly as planned: first, I had remembered the Detroit house-key and now the stir-fry was perfect with ten minutes to spare; I inhaled deeply, taking in the aroma as J.D. commented on the nice balance of color. My mom's favorite dish was cold when she arrived in the police car, sticky with tears. "They stole the car right in front of me..."

My community-related activities have changed since attending college: I have been an active member of the student community, but I no longer sense that I affect an urban community. For years I volunteered at the softball throw competition at the state-wide Special Olympics at Wayne State. My initial fears and uncertainties gave way to exhilaration when I sensed the positive impact that such an event made. I was a part of that. My community activities in Ann Arbor have also made an impact, but

it seems institutional. I have been involved in raising money for charitable causes numerous times, but I have become detached. I have "signed the check," and then once in the mail, it is forgotten.

1992: Ralph showed me into the conference room and said, " Let's see if I can get this right—you're Joe's cousin?" "Friend of little brother," I replied. But then he looked through the portfolio and started to react positively. I couldn't believe it, after years of trying, I was having a good interview. Small, young, hungry, growing. I thought about the fact I didn't own a car to make the 45 minute drive to suburbia — "Enough said, I can start on Monday..."

I was also quite active in my East Side church community, but have lived an increasingly secular life since going to college in 1987. I tried it here in Ann Arbor. Where is the continuity? The church community is as transient as the student body. The anonymity of the university exists in the church community out of necessity, but that realization didn't make things any easier. But I could have become more involved. Why didn't I? Was it the transiency, or was it simply a factor of time? Architecture school takes so damn much time.

1992: Mark had been kidding about buying a house for about a year, or so I thought. He looked me in the eye, told me he was broke, and asked me if I wanted to move into his new house after graduation and rent one of the bedrooms for a low rate. The temptation continued, "it's only 15 minutes from your office... " I told him that if we could live in the same 12' x 12' room at college for an entire year and emerge as great friends, then this should be no problem — no problem at all. The following week I pulled up in front of the place with my house-warming gift in hand and noticed that there weren't any sidewalks...

My father's loyalty to his home astounds me at times. How can he sit there as it crumbles? I suspect it's a complex mix of stubbornness, love and fear. Not a fear of the urban decay and its inherent dangers, but a fear of the emotional void that would inevitably accompany a flight from the East Side. He feels pain in his role as a spectator of the "Great East Side Exodus." Is it a waste of fifty years? Hardly. He draws tremendous satisfaction from seeing an old student in Louie's sandwich shop and talking about her three kids - one's going to high school next year - and the old days at St. Matthew. Yes, they are reminiscing about the past, but her genuine gratitude for the things my father taught her are very much in the present. Or how about painting that little bungalow on Woodhall St. for the third time — "...well its been thirty years since I did it the first time. You know something, that guy was old when I painted it in '63..." It's a lifelong process. A process of people, of place, of growth and decay. There's no such thing as a "new beginning."

1993: My Dad's voice emerged from the East Side through the telephone receiver, "I don't know how to tell you this — Joe C. got shot. Tried to get his car at a gas station at Seven and Schoenherr. He's gonna be alright, but he took it in the head and they don't know if he'll ever see again... "

According to American society's value definition of middle-class success (one that revolves around personal advancement), I have been successful throughout my life. I will have overcome difficult financial times to earn two college degrees and a professional occupation by the spring of my 24th year. Unfortunately, today's society dictates the need for a college education, and the fulfillment of this need removed me from the community of which I had been an integral part. I wanted to do architecture, but not until long after I arrived in Ann Arbor. I have grown into the architectural mindset, and I am quite comfortable, if not excited about spending my professional life as an architect. But where should it happen, and for whom? My entrance into the profession will be difficult, and the progress deliberate. This is the natural process of a profession driven by the need for a seemingly infinite body of knowledge. The learning never stops.

1993: I was looking at the stack of red-lines on my desk when Kelli said, " Ralph has something for you." "I can see that", I mumbled. "Not those, look underneath..." I had never seen 1000 business cards in one place before, especially not with my name on them...

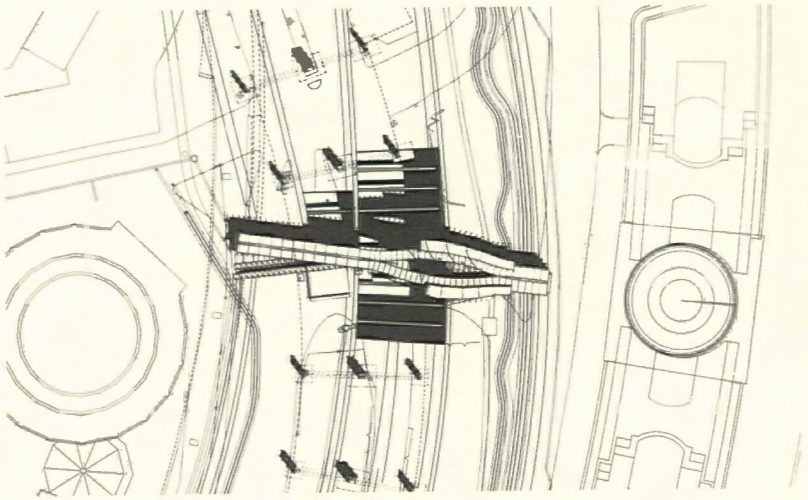
The designer learns from every decision in the design process on the way to a final product, which then informs the first design decision made on the next project. Nothing within the design process occurs independently. Nothing is without impact. Similarly, I recognize my life on the eve of Commencement as a location within a complex process which evolved for eighteen years in the setting of the East Side. Will I return? I don't know. Will I leave? Impossible.

1993: The fifteen pints of Guinness looked like they were ready to march off to battle the way Jim lined them up on the right side of the bar at the Cadieux Cafe. There was one pint for every person in the bar. There was one pint for myself and each of the fourteen friends of mine that were in the Cadieux that night. It was cause for celebration - Dan was in from Washington, and he knew exactly where to find us. Jim started telling the story about how he hit the line drive off my forehead when he was in the eighth grade and I was in seventh...

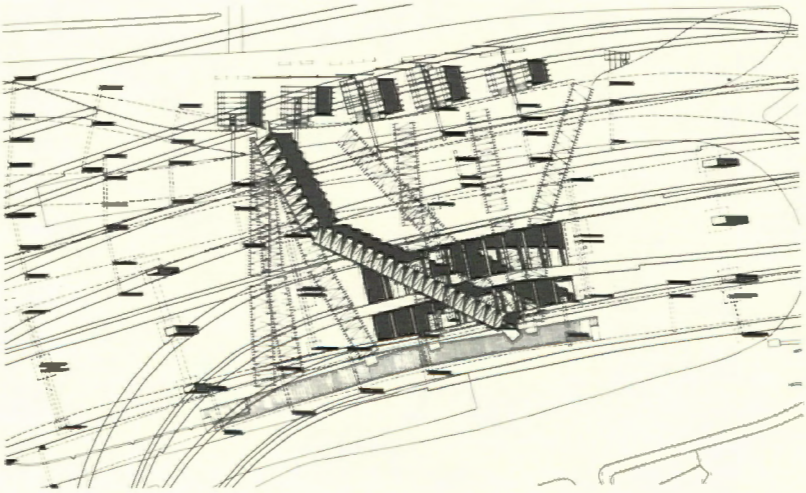
(The preceding is adapted from a term paper submitted for an architectural course, "Sociocultural Issues in Design," instructed by Dr. Sharon Sutton. The paper was directed toward university students who will soon graduate and enter the professional community. My intent was to propose a rigorous method of self-reflection that would

assist the young professional in analyzing his or her process of living in an attempt to achieve a high level of personal satisfaction; a satisfaction that I defined as resulting from one's fulfillment of both individual and community obligations. The method required the subject to (1) conduct personal case studies, to (2) pursue relevant published writings, and to (3) keep a journal of thoughts, beliefs, memories, etc. Using these three tools, one will make discoveries about self, work, community; discoveries that can suggest post-graduate direction. Included throughout are anecdotes that comprise part of my process of life - *Tom Sherry*)

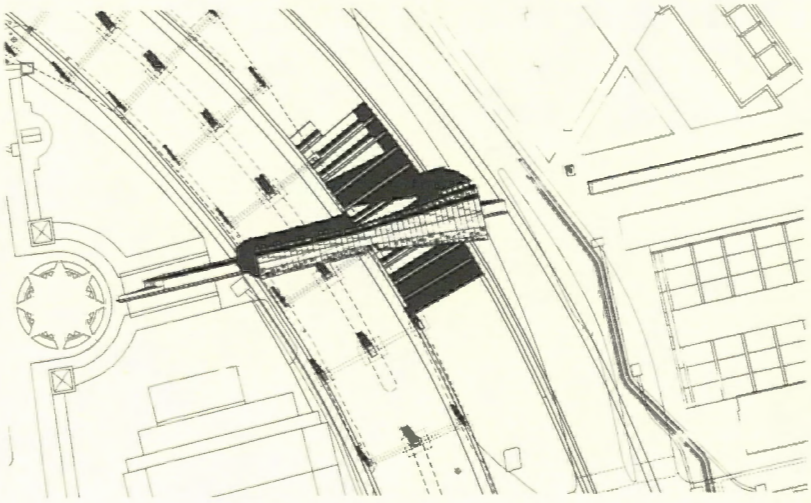
Commuter Bridge *wraps itself around a column of the highway. The reveal within the bridge gives the pedestrian visual access to the excavations in the site below. This separation also allows two different experiences of the crossing, depending on which way the commuter is headed.*



Haymarket Bridge *is located adjecent to an open air public market where shop owners will sell their wares at push-carts on the weekends. The form of the bridge is intended to undergo repeated displacements at various stages of the highway's construction.*



Listening Bridge *is located near Boston's Waterfront Park, and takes its form from the experience of walking to the sea. Sounds from the waterfront and echoes form the contstruction below are intended to interest in the experience of the pedestrian passage across it.*



Interim Bridges Project

Introduction

We showcase the work of the firm Kennedy and Violich Architects as an example of an architectural practice which critiques the conventional methods of making architecture.

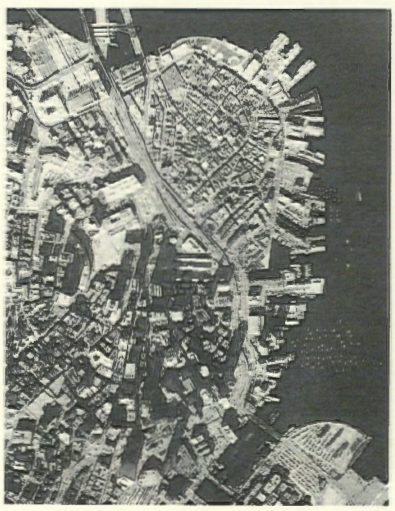
The usual relationship between the architect and the community is reactionary: the city or individual patron perceives a need for a project and then calls on the builders. The Interim Bridges Project , however, was conceived by the firm, and sold to the city, rather than the reverse. Their architectural practice is thus born from a critique of the city and manifests a critical understanding of the needs of the city.

The Interim Bridges Project responds to the demolition and reconstruction of the central artery highway by using it as a site. The long process of construction (over fifteen years) is itself the expected temporal span of the Interim Bridges Project. A historic change in the narrative of the city, the submersion of the highway below grade is marked and remembered by the pedestrian bridges. The changes in city life which will come about because of the decade long disruption by the construction of the new highway are attended to by these bridges.

These pedestrian bridges locate the body within the city by allowing them to cross over the incision in the landscape intended for the automobile. This extreme proximity of the pedestrian body with the future and past auto-vehicular thoroughfare is a charged critique of the post-industrial city. The narrative of the pedestrian citizen is embodied by the architectural forms of the three bridges. The urban processes of listening to the waterfront, exchanging at the market, and peering down into the construction site are each marked by respective bridges. The anonymous process of urban construction is brought closer to the residents of the city by the proximity which the bridges allow and the voyeuristic possibililities of directly looking at the process of this construction.

This architectural form is built using the normative means of industrial construction. The matrix of the wood frame is pulled out of its anonymity by its idiosyncratic use in each of these site specific bridges. The very materials and methods which were used to build the city are now used in its critique, the bridges, which when they are built will form a new layer of archeological memory to the city.

Sheila Kennedy's following text explicates the firm's critique of the contemporary city and describes the first step in the construction of these bridges — the building of a prototype of the Listening Bridge.



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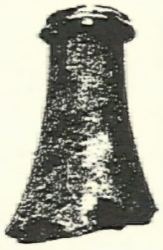

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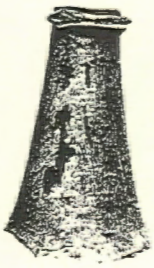

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Interim Bridges Process

Sheila Kennedy

With the peculiar tendency of the contemporary American city to erase, rather than build upon its past, the notion of an ordering presence of an evolving *physical* structure in the city would be difficult to argue. Change, rather than growth, is manifested through strategies of erasure and replacement, in which the city's physical structure is excised and recreated. In the 1960's, this process of eradication was manifested in Modern urban "renewal" programs which sought to provide a new infrastructure for the city through the mechanism of large scale, centralized planning. In the contemporary city, even growth as 'change' has become relative and is no longer synonymous with physical expansion or even with *difference*. The artifacts of the contemporary city are constructed from sets of industrially reproducible and replaceable materials. These elements, or others exactly like them, are used and reused in a continuous cycle of construction and demolition. The constituent parts of the city are linked to one another in a condition of mutual reciprocal contingency which is based on (the geography of value) the availability and location of urban land. It is the non-physical economic infrastructure and the politics of its attendant legal allocations which remains the same.

Below: Entomological Collections Research Hall, Musée d'Histoire Naturelle, Bruxelles, 1913.
Facing Page: Selections from the Exhibition in the Listening Bridge Prototype.
Preceding Page: Aerial View of Boston, 1992; photo: Alex S. MaClean
Concrete Debris, near Blackstone Street, 1955

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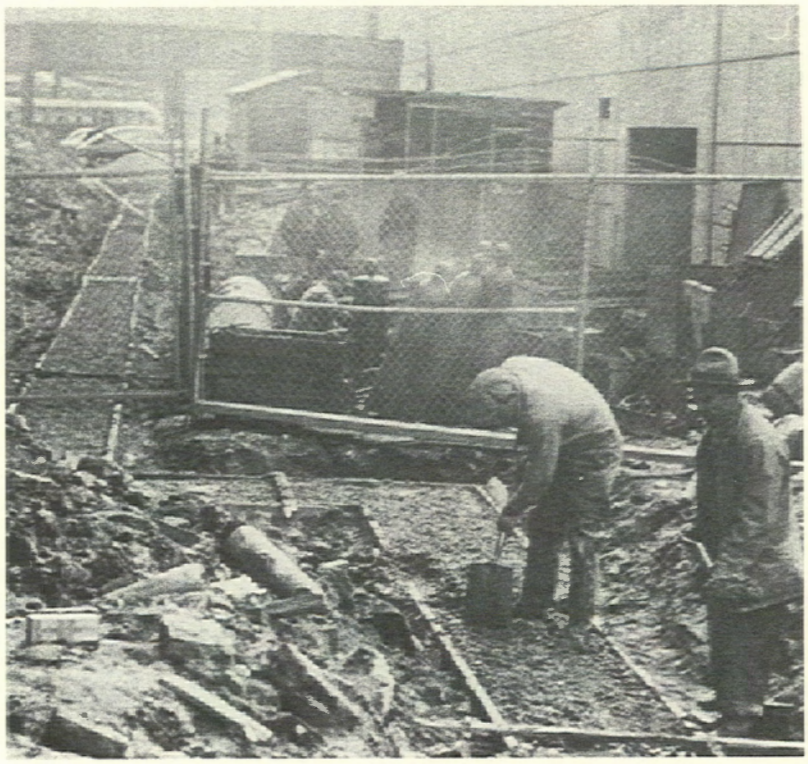
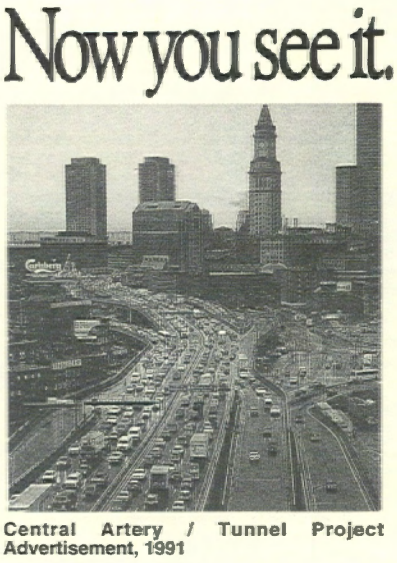
2 x 4 Debris, Haverill Street Block, 1954

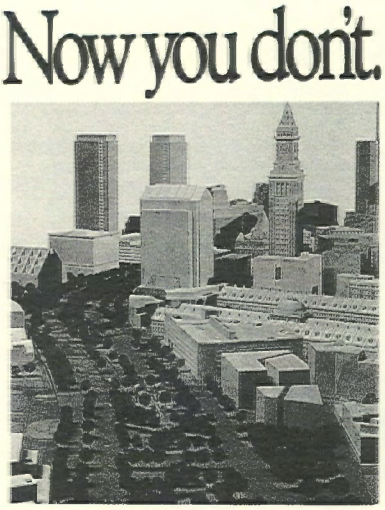


In Boston, the building of the elevated Central Artery in the 1950's and its anticipated demolition, replacement and rebuilding in the 1990's is indicative of a *shift* in the cultural understanding of the production and duration of urban artifacts. The proposal to construct a new Central Artery under the ground beneath the site of the existing highway does not constitute change as much as it does displacement or *replacement*; the substitution of one artifact with a larger, but essentially similar artifact. This is exemplified in the change of implications in the Work Project Authority slogan "Building America" and its contemporary counterpart "Rebuilding America," used in the 1992 presidential elections. The modern slogan drew its resonance from a post war metaphor of the act of construction as a symbol of progress and of the permanence of its progressive development. "Re-Building America," however, suggests not simply the repetition of a previous action of "building," but also indicates a restorative desire to return to the myth of a previous condition of apriority. There is a folding of a future condition upon a version of the past. In the process of continuous redesign in the contemporary city, the distinctions between the "not yet" of new construction and the "no longer" of demolition are blurred. "Rebuilding" implies, but *never acknowledges* the need for critical assessment. "Rebuilding" is a term whose operative mechanisms and cultural assumptions are transparent to itself. This produces a condition of cultural amnesia which impairs a critical assessment of the means and methods of production and promises only the endless replacement of the same.



Central Artery / Tunnel Project Advertisement, 1991

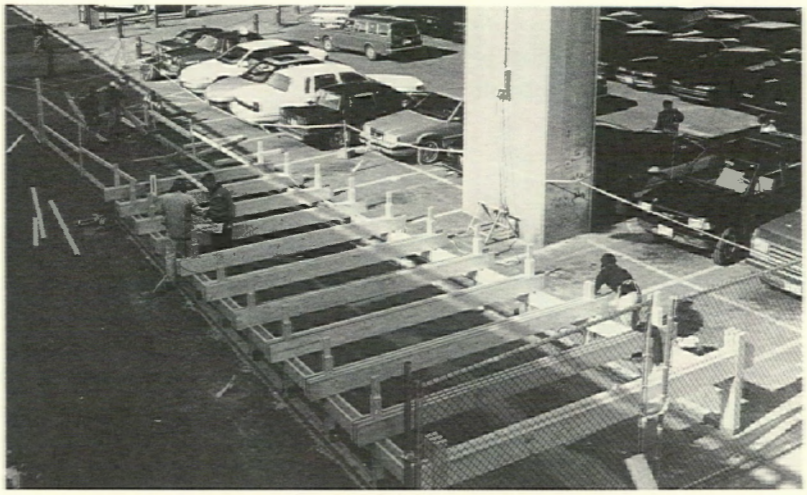
How are we, as architects, to understand the status of public works projects and the public service of their objectives? How are their planning procedures, and mechanisms of construction to be evaluated if construction is no longer understood to be permanent or progressive? A new space of critique is possible. "Rebuilding" (and the public works process) is modelled not as a visible process, but as an instantaneous and almost magical transition, where the duration of construction is virtually invisible. "Now You See It, Now You Don't." The Interim Bridges Project opens up the interim period of the construction of the underground roadway as a *time* which contains possibilities for the creation of public space. The provisional architecture of the Bridges inserts itself within the seam produced by the juncture of the 'not yet' with the 'no longer' and claims, as its site the space between the two constructions, the marginal pocket of territory under the existing elevated Artery and above its new counterpart underground. The architecture of the Bridges provides a passage to this moment in time (and its spatial and interpretative possibilities) and a passage through this interim period which offers a physical access as well as an access to information about how a contemporary public works project works.

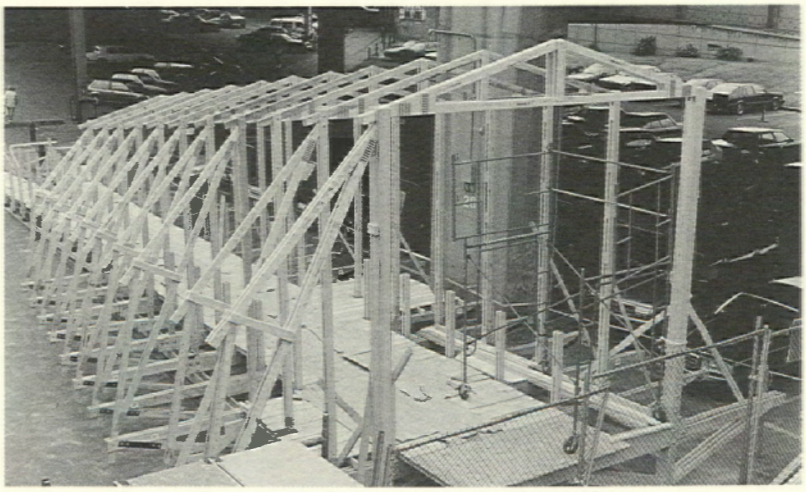


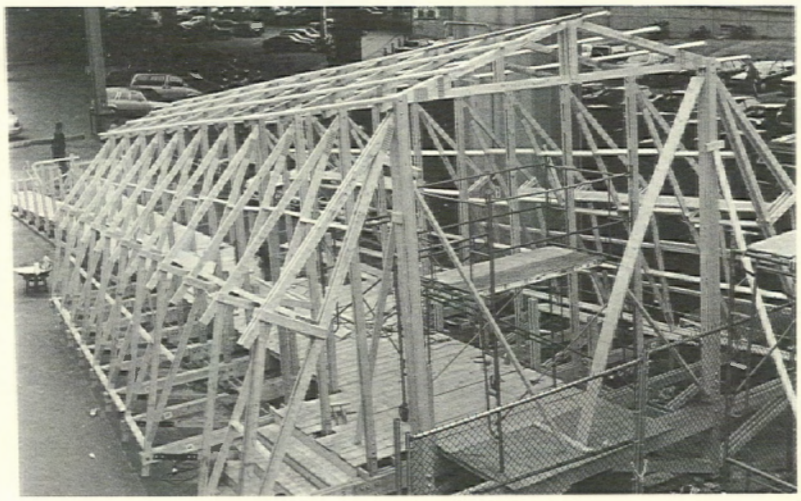
Central Artery / Tunnel Project Advertisement, 1991

In 1992 a prototype of a portion of one of the pedestrian passages designed in the Interim Bridges Project was realized. Independently

Listening Bridge Prototype under construction, 1992, photos: Brian Lemond

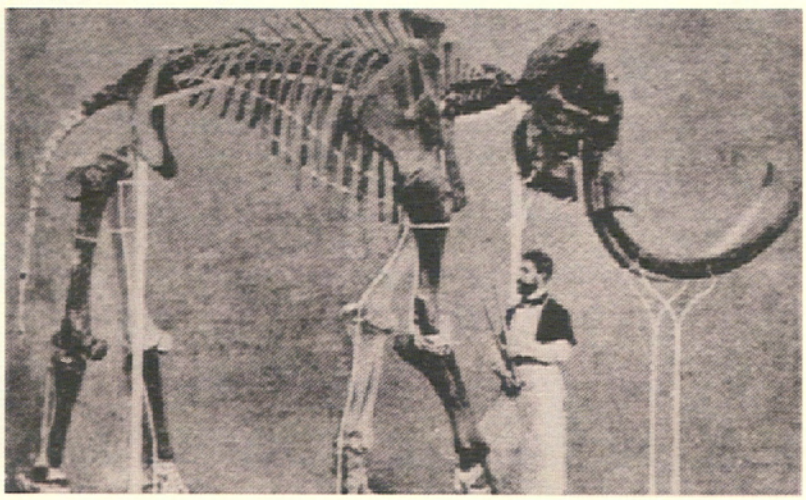






funded by the accrual of small public grants for the arts, [1] and built by volunteers, [2] the prototype was constructed as a full-scale, working model to be used and considered by the public. The prototype is conceived as an armature, a catalyzing organization, that uses the shared and common realities of existing urban situations to produce public programs and to (re)claim these events as part of a public space. The time of the prototype's construction was selected to engage the specific circumstances of an archaeological excavation necessitated by the State and the Federal Highway Authority prior to the immanent construction of the new underground roadway. Although specific to this particular set of circumstances in Boston, the prototype works as a national case study which offers a strategic approach to the making of public space from the intersection of an existing infrastructure and the events and situations of a public construction process.

The prototype was constructed in a parking lot adjacent to the elevated highway at a location that boarded an archaeological excavation. The prototype exists in a place of no address, [3] and creates in that place a space where the disciplines of archaeology, urban planning, architecture and critiscm intersect. The construction of the prototype overlapped with the process of excavation and this situation (the exposition of the former life of this part of the city and the artifacts from which it is made) provided a context for *The Temporary City*, an exhi-bition that uses the history of the construction of the first Central Artery, the displacement created by Eminent Domain, and images of the artifacts found at the excavation site to address the economic, political and legal infrastructures which shape the production, duration and obsolescence of urban artifacts. The construction of the prototype was documented, as well as the permit and code review process, fax correspondance and insurance requirements on State owned land.

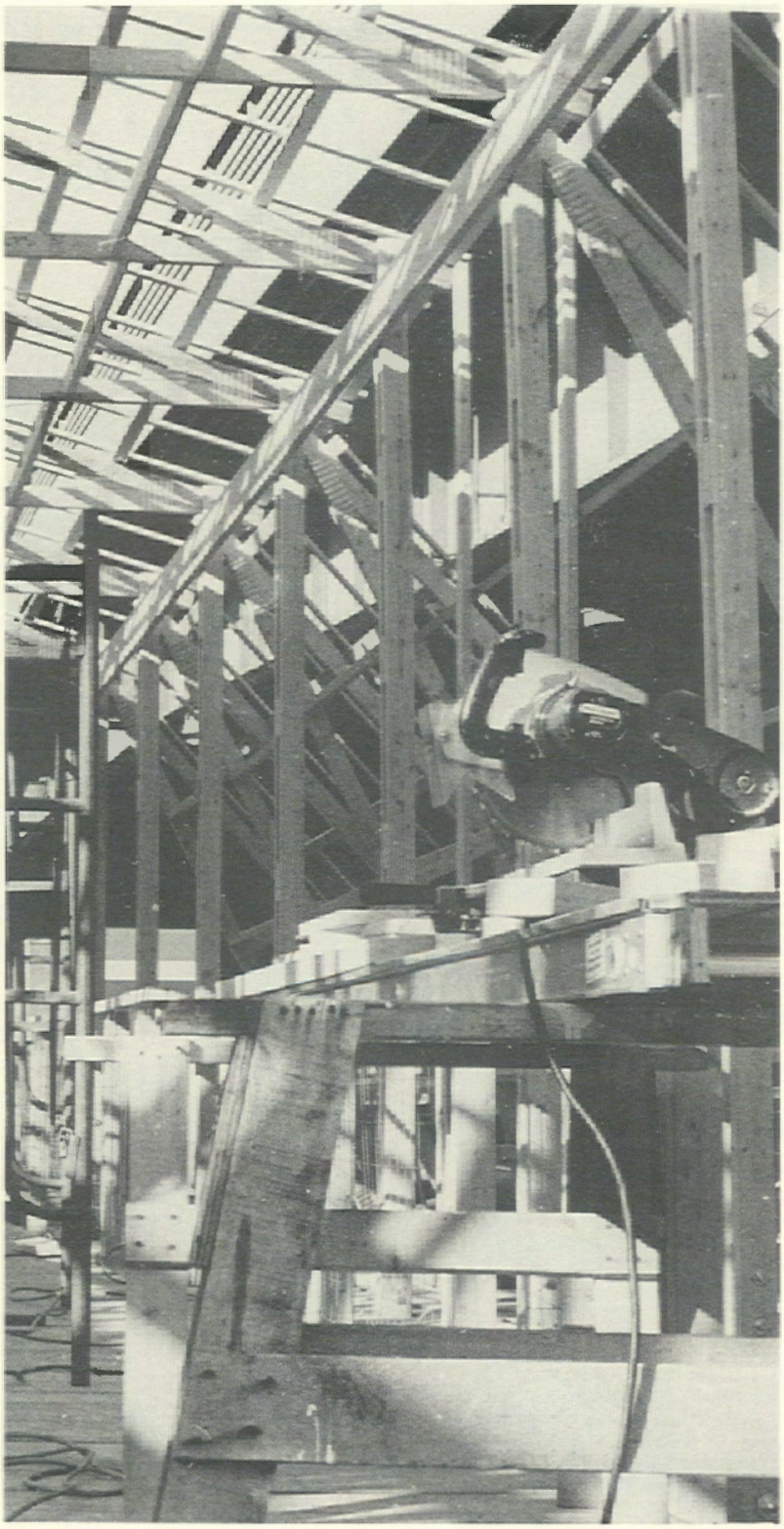


Vertibrate Reconstruction

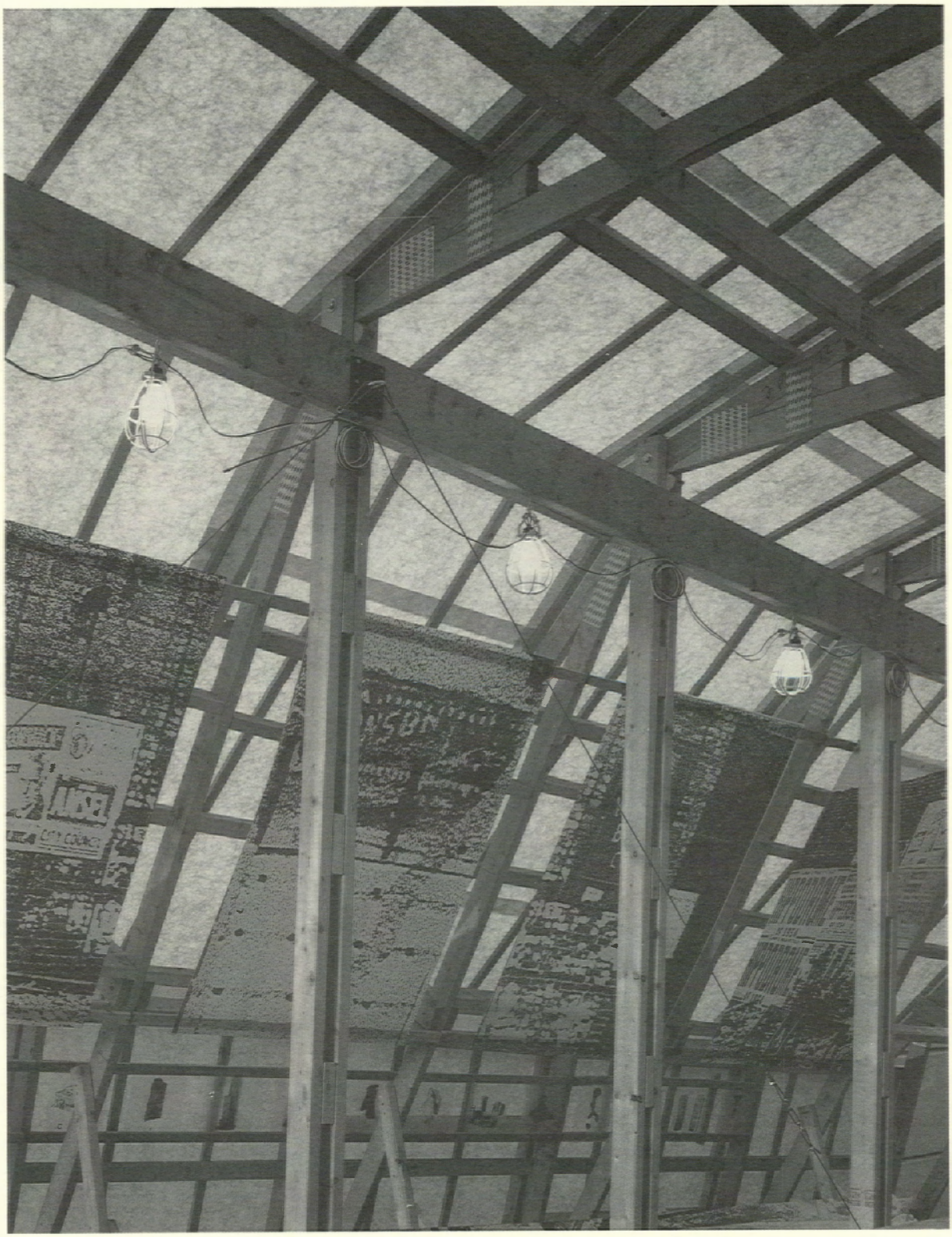
The repetitive wood frame armature of the prototype creates a lattice that permits a number of contiguous activities and their associated spaces to be brought together in a relation of potential equivalence. The physical enclosure of the prototype produces a space which connects the activity of walking on the Freedom Trail and the space of tourism with the telluric space of the future roadway underground and the excavation activities of the archaeologists. The adjacency of the excavation site and its visibility from the elevated platform at the end of the prototype situates this space also in the space of archaeology and its theories of interpretation. The archaeological methodology resonates the strategies of urban planning with the conceptual mechanisms and legal procedures of construction, which locates the particularities of place, moment and material within matrices of letters and numbers of contracts and property lines. The presence of the highway at Bent 28 and its inclusion/ interruption in and upon the envelope of the prototype isolates it as an artifact, an object of contemplation. The reframing of what is being exhibited is paralleled in the (selection, treatment and presentation) of photographs, working drawings, contracts, documents, and newspaper articles from the 1950's. Specific portions of the documentary materials are enlarged to bring forward aspects of their contents which are less visible and allow them to emerge as possible subjects. The contextual contin-gencies of archaeology, so crucial to the interpretative (re)construction of the artifact and it's implied completion as a fragment, contaminate the 'purity' of the 'contents' of the exhibition by establishing the relational possibilities of the architectural and the infrastructural to emerge and view as possible subjects of the exhibition.

To establish relationships between disparate disciplines and scales of artifacts, the prototype asserts its autonomy from the circumstances of its site through its authority as a *frame structure*, a repeatable and reusable structural system. The connections of its parts are bolted to allow for its eventual disassembly. If the relations (of exhibition, architecture, infrastructure, archaeology, construction, and demolition) engendered by the frame are mobile and in flux, latent in the frame is another potential of mobility- its displacement and possible reconfiguration.

The systems, spaces, documents, and activities of production which the prototype conjoins do reference and influence one another, but they are never wholly integrated. The structures of the highway and the prototype simultaneously invite and resist comparison. The similar and distinct structural systems of the Prototype, On Ramp, and Artery, in close spatial proximity, each establish a different order of inclination. There is an oscillation between the elevational order of the wood frame structure and that of the highway at Bent 28. Each intrudes upon the space of the other and prevents any singular, totalizing unity of space or time.



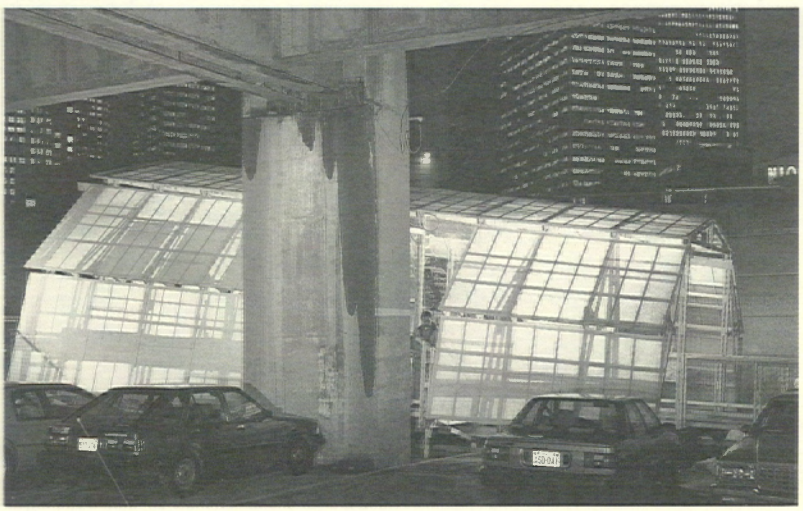
Listening Bridge Prototype under construction, 1992, photo: Brian Lemond



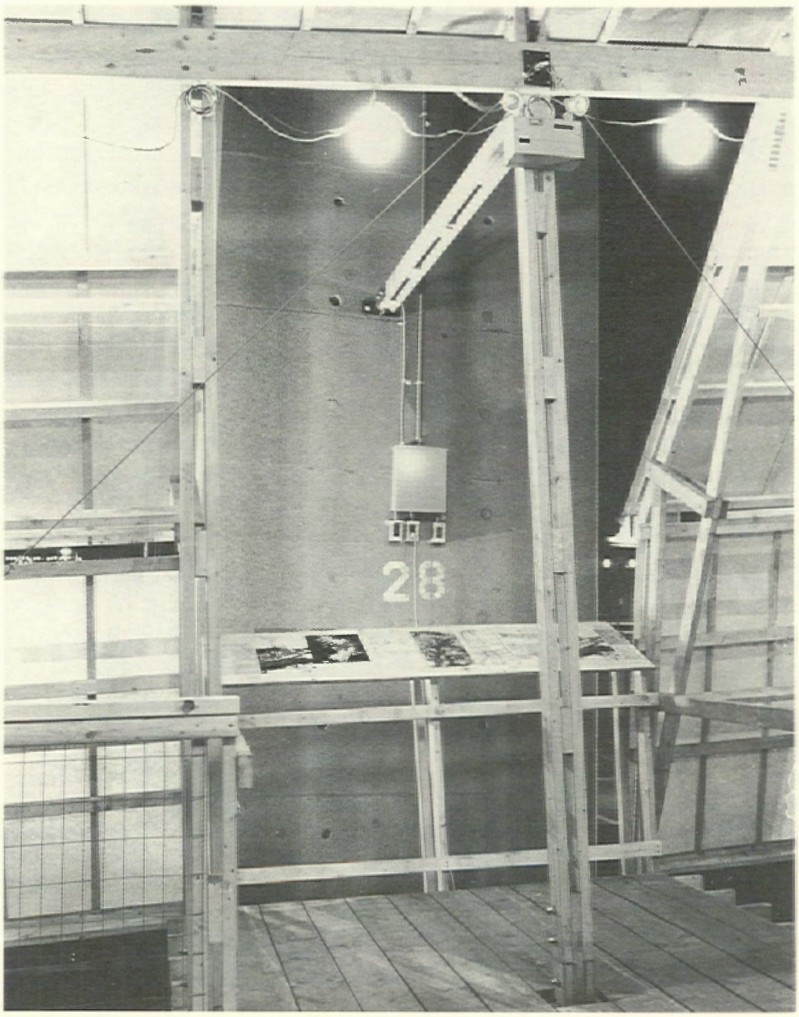
The nature of the relations produced by the prototype is dynamic due to the particular progressive and changing circumstances of the excavation and the construction unfolding around it. Both processes, because of their temporary nature are ultimately circular. The excavation is dug and refilled, the prototype constructed and dismantled to await possible reuse in the future. The availability of the exhibition, which was open 24 hours a day, inverts the traditional relationship of the space of the museum to the space of the city and its culture. The exhibition is 'permanent' or continuous, the city around it is temporary and each day its surrounding context changes. The meaning the prototype assumes, invests in the circumstances of its particular place *in time*. The activity of digging takes on another dimension in light of the Central Artery Project plans, and the historical circumstances of the excavation (and its purpose: the recovery of objects) become contaminated by the temporal adjacency of the immanent new construction. The interpretation of the prototype is not complete, but is continually being produced by the public.

The language used by the public to describe the prototype reflects its resistance to the definition of a singular interpretation or name. The structure was listed on the Building Permit as a pedestrian walkway and viewing platform, it was classified as a place of public assembly (Type A-5 construction) by the State Building Inspector and has been described by members of the public as a bridge, a warehouse, a viewing platform, a museum, and an ark. During construction, it was often mistaken for an on ramp or other integral part of the new roadway and in the press it's form is frequently described in terms that suggest a fusion of the organic and the mechanical: a "phosphorescent worm."[4]

The architecture of the prototype both engages *and is produced by* the contingent circumstances of site (the unpredictable situation of the archaeological event), its duration in time, and the *presence* of its material



Facing page: Bent No. 28, Interior view of Listening Bridge Protoytpe, 1992
Left: Night view of Prototype.



Typical Display, *The Temporary City*, curated inside the Prototype.

and its capacity to register these circumstances. The inherent material properties of the resin fiberglass sheathing contribute to adjust and particularize the perception of the structure. By day, the skin takes on the colors of its surroundings and is, at times, either reflective or opaque. By night, it becomes translucent, and registers the shadows of its contents.

The use of standard construction materials and modes of assembly in the prototype necessitated a reconsideration of the idea of the detail and its role within this provisional architecture. If, as an architecture, the prototype "points to its principles of construction at its constructed points,"[5] what detail is cannot be thought of or located only as a point of juncture. The frame structure is an architecture of repetition, that provides a field condition. A detail here is no longer understood to receive particularity from the singularity of its situation or the uniqueness of its procedure of construction. The detail becomes a proviso of the

material. The detail resides in the choice of material, and an understanding (and activation) of the inherent qualities of its surfaces, and their capacity to register the circumstances of light, event, and time. The detail is the experience of a moment of perception made possible by the frame armature, a strategic assembly of circumstances which have the potential to be perceptible at a given moment in time.

The prototype depends upon the Central highway; its need is produced by this construction. The protype serves physically in a direct sense, and it serves to open an inquiry into new sites, programs, and materials that may operate as a scaffolding for contemporary logics of production which define our culture's attitudes towards the artifacts which it produces. By presenting its construction as a visible part of the project's material or 'matter,' the prototype makes the processes of its own production. *The Temporary City*, the exhibition it displayed, documented how the prototype was realized, not only as a tectonic structure, but also as a project in relation to existing zones, codes, property allotments, and regulations; a temporary structure whose realization makes evident the procedural infrastructure which is 'built into' the use of 'public' land. The small scale and material vulnerability of the proto-type, (which subjects, yet is also subjected to these non physical urban orders) must then seen in relation to that of the highway.

The prototype challenges the transparent status of 'product' inscribed in the current operation of the architectural profession and is a project conceived, initiated and realized by its architects. It is a project which included or 'contained' the structuring of its own independent forms of capital, unmediated by banks, mortgage rates, or other fiscal institutions, to implement its construction in a place which it reclaims as a public site and for which it makes an address. It is a critical architecture that operates from within to suggest the connections between the physical facts of the Artery as a constructed element of infrastructure and the less visible, but perhaps more permanent economics and political infrastructures of land use and planning of the public works processes which are at work in its making.

The prototype is, in every sense of the word, no more and no less than a provisional architecture. It provides, its provision is not considered to be permanent, and it is qualified by the conditions that it creates. The space of the project, as a strategy *(a plan of action)* is permeable enough to include the unpredictable circumstances of the situations that it makes public. The presence of theses moments expands the experience of the full life of a public space in time and suggests new possibilities for the conception of architectural detail. The prototype re-examines received notions of the *value* of an architecture, and the public service of its objectives by engaging the geography of events to enlarge our conception of urban public space and by expanding the possibilities for when and where and how architecture can come to be.

Notes

[1] The design of the Interim Bridges project and the final construction of the prototype was funded by two university research grants, The William F. Milton Fund and The Tozier Fund, with several grants for the arts open to the public by a competitive selection process: The National Endowment for the Arts, The Massachusetts Cultural Council, and The New England Foundation for the Arts.

[2] The prototype and the installation of the exhibition *The Temporary City*, were constructed by students, volunteers, and friends working together in an extended crew: Joel Bennet, Kent Collard, Jeffrey Colon, Todd Dykshorn, Katie Faulkner, Reed Freeman (Project Photographer), Yuyang Liu, Thomas Mahler, Melanie McArtor, Lori Noto, Heather Renihan, Warren Techentin, and John Wentwort, as well as members of the Carpenter's Local Union 33 who volunteered to help.

[3] The first line to be filled out in the State of Massachusetts Building Permit is marked "Project Address." The prototype was to be constructed in a parking lot under the Central Artery which existed and could be described as adjacent to Bent 28 and the south bound on Ramp of Interstate 93 but could not be located by address, as there was literally no address. After some deliberation, the Permitting Official made up an address for the prototype ("100 North Street Rear") which was typed on the Building Permit.

[4] See a review of the prototype, *The Wall Street Journal* , December 9, 1992.

[5] I am indebted to Ann Bergen's description of textural joints in the Timeus which has prompted this critiques of the locus of detail. Burdett, R. and J. Whiteman, editors, "Architecture Gender Philosophy," *Papers In Architectural Theory* (Chicago Institute for Architecture and Urbanism, MIT Press, 1991), 21.

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The Collapse of Craft through Autofabrication

Josh Brandfonbrener

Objects inherently carry meanings and indications about their design and manufacturing; the object itself indicates and reflects the thought and labor expended on production. Ruskin wrote about objects evincing the involvement and joy of the mind and hand that made them.[1] But the production is also indicative of the value the culture places on labor, skill, and objects themselves. The process of translating designs into cultural artifacts, then, impacts the object's use and design as well as implicates broader issues about the manufacturing culture. In traditional or conventional methods of 20th Century industrial manufacturing, the process of translation involves series of intermediate pattern and tool makers re-iterating the design; these iterations depend upon the expertise and skill of the intermediaries hands and eyes, on intangibles of "touch," and on inter-personal communication. The conventional process of preparing for industrial production is lengthy and relatively expensive, with the metaphoric "distance" between the design and the product increasing with the intermediaries' interventions.[2]

Currently, however, an emerging technology, "autofabrication," is radically altering the translation from design to object and in turn is changing how objects are perceived and evaluated. The relationships between craftsmanship and technologic capability, and between labor and hardware are in flux as a result. Autofabrication removes the *manu* in manufacturing, leaving the remaining sense of *facere* in crisis. In place of manu-facturing, "data-facturing," of which autofabrication is a part, creates a dialectic between a nostalgia for the imprint of the maker's hand and an embrace of new, redemptive technologies.

As autofabrication proliferates, not only the perception of objects, but the way in which these objects are consumed and valued by the culture is questioned. What happens when previously costly and rare objects become cheaply and readily manufactured? The idea of the "authenticity" of an object, its closeness to an origin giving it value and legitimacy, becomes suspect as along with an object's status as "replica."

Autofabrication

Autofabrication refers to a group of proprietary processes which create a solid-surfaced object from a stock of homogeneous material by selectively activating or catalyzing and solidifying the stock. Several companies are marketing these devices; the applications are growing as user demand increases and as material science provides new substances. The most widely used system currently is "stereo-lithography," made by 3-D Systems in Valencia, California. The aerospace industry, led by Pratt and Whitney, is leading in application of autofabrication.[3] Automotive manufacturers as well are beginning to utilize autofabrication; the Dodge extensively used autofabrication in the design process to bring its new Viper into production at a record pace. Currently, autofabrication is predominantly applied as a method of "rapid prototyping," but true autofabrication will develop quickly as the process expands into other industries.

In autofabrication, an initial computer-generated model of the object is drawn, either in plan and section or in three-dimensional projection. This is then "sliced" into consecutive layers along an axis which most easily facilitates the fabrication; this is analogous to computed axial tomography (CAT scan). In stereo-lithography, these layers range from .005" to .01". In architectural terms, a large number of sequential sections are cut through the object in one direction. The process is also similar to the integrating of a solid surface in calculus by Riemannian sums; the slices are so close together that they approach a continuous surface instead of a sequence of steps.

Once the slices have been made in the CAD model, the data is sent to the autofabrication unit itself. In stereo-lithography, the device is a tank of liquid, photo-activated polymer resin, with a platform which moves through the resin and a helium-cadmium laser above the resin. The platform begins the object at the top of the resin; a wiper-arm swishes a layer of resin exactly the thickness of the computed slice onto the platform. The first computed layer is then "drawn" by the laser into the resin. It begins by drawing the outline of the layer and returns to "fill" in the layer. The ultraviolet light from the laser activates the sensitive resin, solidifying only the portion directly exposed to the laser. After the first layer, the elevated platform descends into the resin by the thickness of the next layer. The wiper arm again swishes resin across the top of the platform to insure the appropriate thickness of resin is on top of the previous layer. With the next layer of liquid in place, the laser then draws the second slice in the sequence. In addition to solidifying the next layer within the plane of surrounding liquid, it also bonds this layer to the still hardening first layer. Successive layers, then, are drawn and bonded to the previous. The object is generated upside-down from these layers, forming a continuous, solid surface from the stock of resin.

This process, as it expands into manufacturing, will replace skilled, expert pattern and tool makers. A pervasive bias exists in American

business in favor of the "high-tech" and against the "old-fashioned" labor-intensive methods. In this technological "manifest destiny," the advent of a new technology generates an era of revitalized economic and industrial prosperity. The technology itself becomes mythologized as redemptive and enlightening, as industry struggles to stay "up-to-date" and competitive. As will be discussed later, craft-skill disappears as a result. As industry must increasingly utilize its expensive equipment in order to be cost effective, the demand for skilled labor falls off. Autofabrication, then, results in a "collapse" of craft in manufacturing; the distance between designer and production decreases, excluding the previous intermediary processes.

Design to Production

This collapse can only be demonstrated after a brief description of mechanical, manual translations of designs in conventional manufacturing methods. Generally, the designer of an object or part will produce a measured sequence of drawings. The drawings are passed to a pattern maker, a model maker, a tool maker, or a prototype maker. This intermediary interprets the drawing and manually transfers the dimensions to material for the making of a prototype. This intermediary has both extensive manual skill and knowledge of the production methods to be used. This allows him to make a prototype which represents the design in three-dimensional form before making the final tooling. The prototype is frequently in a material, like wood, foam or machined metal, different from the final realized product and produced by a different method. The model of a stamped steel part, for example, might be entirely hand carved in wood by the pattern maker. It is truly a model, for it resembles the final product but has been produced by another process and of another material.

The pattern maker also introduces into the design factors which facilitate the final production, for example, changing undercuts to allow for mold release or material thicknesses to insure successful production. In the manual transfer of information and intangible, haptic nature of craftsmanship, inaccuracies are inherently introduced, regardless of tolerances maintained by the machinist. The intermediary leaves an imprint on the design, then, as the exigencies of production or the inaccuracies of the prototype are incorporated.

These changes are an accepted and integral part of the process. The input of the intermediary concerning production criteria may necessitate the design returning to the designer to reassess the object. This flow of information permits refining and evaluating before the expensive final molds, dies, or tools have been made. This exchange and interaction during translation makes the manufacturing process a socially dynamic one.[4]

In the traditional prototype process, several months may be necessary for an intermediary to fabricate the part or the object out of wood for the designer's approval. Similarly, once the expensive and laborious prototype is made, the tooling itself may take several more months, as the exact method of production (testing machinery, assuring clearances, refining sequences of fabrication) and the tool itself are made. If, in the design process of a complicated piece of machinery, a previously completed part must be redesigned and retooled, months of delay may be incurred. Final quality and length of design and prototype process are then directly equated. Although a very responsive process, it is nonetheless cumbersome and time consumptive. The final product both requires and represents the hours of labor and level of accomplishment in its history. A complicated, well-designed object necessitates both more time and a higher degree of skill to develop and manufacture than a simple one. It is this contingent requirement of time and skill which imparts value onto the object.

Translation to Autofabrication

In contrast to this "traditional" manufacturing process, autofabrication involves a completely different set of relationships between design and production. In addition to the reduction of the intermediary, the idea of the prototype itself needs reconsideration, for the model and the final are now virtually identical. In several processes being developed, autofabrication will generate objects from a stock of powdered metal or polycarbon which is fused or sintered as described earlier. These materials allow autofabrication to generate objects in the desired, final material. These models are also made on the exact apparatus which will eventually fabricate them in their final form. The generative data remains the sole source of direct input throughout the design and production process. The distinction between prototype and final object blurs, for each is equally distant from the source and origin, made on the same equipment and from the same material.[5]

Autofabrication will also cause a different utilization of labor than conventional methods, resulting in greater and more efficient relative expenditure of time and labor on design. Much more time can be spent on refinement and revision because of its efficiency. In several hours, a designer can have an exact three-dimensional object where it would have taken months before. With the current autofabrication technology, engineers and designers can fabricate entire prototypical engines, for example, in a few days from resin and do "form fit studies;" assembling the entire end product while still in design. This is impossible with the prolonged, conventional prototyping process. Pratt and Whitney now encourages its engineers to try "crazy" ideas and to experiment, for the monetary constraints of making a prototype involving months of labor are gone. [6] Autofabrication can also readily make objects which are impossible even to adequately represent in orthogonal, parallel-line drawing.

A comparison to desktop publishing is apt. Rather than employing skilled printers using antiquated means of setting type, "electronic" publishing relies on expensive, technically sophisticated equipment with capabilities frequently beyond the skill of the user. The novice can now electronically accomplish what only the master could have before. Similarly in autofabrication, the skill of the tool maker, his personal tricks and his mastery of tools acquired through long hours of apprenticeship are replaced by a sophisticated but un-differentiated, non-specialized, neutral device.[7] At one shop making complicated engine parts I visited, technicians fresh out of technical school were making parts by autofabrication and other methods which only the most skilled and experienced conventional tool maker would have attempted before.[8]

Autofabrication, Skill and Labor

Several questions arise from these changes in the translation process. Does autofabrication allow today's tool makers to achieve the skill level of their predecessors far sooner than before, leaving more of their career to master never before known skills and heights of expertise or are they simply dependent upon the machinery, obviating mastery and skill entirely? Does the loss of some skills cause a drop in the overall level of production capability, or just an upward shift? Pattern shops, for example, tend to be filled with old men unable to find younger apprentices to learn their trade. Similarly, the large military producers in Connecticut are no longer running training schools; in the past, they trained machinists to attain the skill level necessary for the high tolerance world of weaponry. These machinists would eventually leave the big companies and open independent shops or go to work in other industries. Manufacturing skill was thus predominantly developed in military industries, trickling down into less technically demanding industries.

Autofabrication differs, however, from the increase of mechanization which has characterized much of Twentieth Century industrial manufacturing. In the typical labor-management battle over industrial mechanization, assemblers, welders, or machine operators are replaced by robotic, high speed machines. Yet, in these processes, the generator of the object was still fundamentally hand-made. The end production or assembly may have been automated, but the object still depended on a vital craft link to reach production.[9] Autofabrication represents a more far-reaching, morphologic change in production.

Autofabrication and Perception of "Object-Value"

Autofabrication, by changing the relation of object and source, calls into question the object's authenticity. Authenticity, in its root "entea," a tool or instrument, depends on this entea to validate or make real the object. Evidence of skill and master tool-handling, and variation of this, is a way

of assigning objects relative value. The range of graphic, manual, mechanical, and social instruments previously required are now incorporated into a CAD system and an autofabrication unit. When the hand is removed and making becomes neutral, another kind of yardstick must be used to evaluate objects. The electronic, original data, instead of communicating to the tool maker who then directed the tool, communicates directly to the tool itself.

There are other end-results of autofabrication for the consideration of material goods and objects. As desktop publishing brought about new definitions of image processing, autofabrication leads to "desktop manufacturing" as the hardware proliferates and becomes less expensive. Equipped with a CAD system and an autofabrication unit, small companies and even individuals will be able to achieve results that only major industries could before.[10] Like electronic publishing, the desktop manufacturing revolution will depend on a relatively high initial expenditure on hardware relative to the skill level of the user. Novice machinists with the proper setup will equal the quality and exceed the efficiency of master tool makers and heavy industry. When production is taken out of factories, this data-facturing can be described as truly "post-industrial." Will the range of objects and components available on the market explode as a result, or will manufacturing simply exploit the reduced labor requirements to produce the same objects faster and cheaper? Levels of customization and design never before imagined are feasible as the inertia and bounds of conventional industrial production are bypassed.

As specific products and industries are de-industrialized, the network of production and distribution will also be transformed. In current industrial production, parts are still centrally made and then distributed around the world; objects still have a point of origin, a geographic source as well as a haptic source. Cars made in America, for instance, have engines made in Japan and shipped overseas. The place of both manufacture and design indicate certain qualities. The complex and expensive nature of most parts still relatively insures that the possessor of the specific tooling and machinery for production maintains control of the replication of their design. While the actual, physical object generally prohibits easy copying, possession of the physical object itself still regulates payment and the transfer of funds. The object itself still implies conventional understandings about its economic value and ownership.

In an autofabrication environment, most of these relations are changed. Most dramatically, geographic distinctions of industrial production are obsolete. If an assembler in a foreign country requires a part, instead of shipping the actual part, the data will be sent directly to the assembler's autofabrication unit, and the part will be generated from the designer's original data. This "electronic warehouse" dramatically alters the

concept of the transfer of goods. With the aid of digital scanners, the ownership of the original data is now in question. No longer would extensive tooling and capital outlay be necessary to copy a competitor's design. From one original object, a scan could infinitely reproduce exact replicas. But, the use of the word "replica" is itself problematic. Replica implies a degradation of quality and increase in distance from the original. In exact digital manufacturing, the "replica" has the same, first generation relation to the generating data that an "legitimate" original has. When an object is reproduced electronically instead of mechanically, the first, genuine and the one-millionth, illegitimate generation have equally direct origination from the data. In the age of electronic, digital reproduction, ownership of a design is completely turned upside-down. The transfer of goods is based on design data instead of actual objects, while possession of an object provides access to the generative data. The transfer of data as the commodity of production is clearly a trend much larger than this issue alone; data is perhaps the raw material of the next production age.

Autofabrication and Consumerism

A production environment centered around data has vast implications about the social and economic implications of objects in a consumer society. In a world where autofabrication de-emphasizes the actual, physical object in favor of the generating data, will consumer culture become more consumptive of cheap and readily replicated objects, or will that ease of replication remove the allure and luster of material possession? When an entire culture is flooded with de-valued objects, perhaps the drive to own and possess ever-more exclusive objects will be lessened. Alternatively, a nostalgic desire for exclusively pre-industrial, handmade objects may arise, where today's material culture prizes both antiques and the latest high-tech product.

Autofabrication at an Architectural Scale

Taken to a scale larger than an individual object, autofabrication has implications for the construction of buildings. With a jump in scale by an order of magnitude, autofabrication units would be capable of off-site manufacturing of entire building components, like wall sections and structural elements. Advances in material sciences relating to autofabrication might produce stocks of material capable of composite construction; a blend of several kinds of material in the stock, which when activated by different light/heat sources could produce solids capable of structural load bearing, insulation, wiring, plumbing etc. Autofabrication could then produce fully finished and outfitted building components in a single production step, ready for transport and erection at the site. Again, as in the autofabrication which exists today, this collapse of the building process would eliminate the involvement of many trades, many inaccuracies in the building, and many iterations in the process (shop drawings). It would establish a new hierarchical

importance of the designer's drawing. The drawing, instead of being filtered through and interpreted by many layers of intermediary would directly instruct these enlarged autofabrication units. As in objects, this would largely de-socialize the act of construction, but also increase the flexibility and responsibility of the designer. Decreased inaccuracies and exigencies of construction would permit a level of detail and complexity impossible in today's highly segmented and specialized construction world. The structural and formal possibilities of true composite construction would also seem to be vast and unexplored. The pragmatic objections and impediments to buildings like Gaudi's and Sullivan's, that the craftsmen no longer exist to do the work, is obviated.

Autofabrication and the Tool

Along with ownership of the data and presence of the hand, autofabrication calls into question the tool itself. All machines require certain tools and other machines in order to be made. As the primordial origins of tools and machines are examined, before the advent of machinery, only hand tools were used; back further, only hands were used to produce artifacts. To make the first tool, bare hands and perhaps naturally-made rock implements were used. Through this infinite regression, all tools and machines share a genealogical heritage. In the mythic past of all machines is a hand-held rock. All tools, then, depend on previously made tools to be made; similarly, machines rely on previous tool and machines. Tools and machines increase in generational distance from the original, primordial tool with each successive tool.

This heritage of tools, however, is altered with the advent of autofabrication. In conventional methods, a new die, for instance, might require a multitude of tools which must exist before that die can be made. Frequently in manufacturing, in fact, new tools must be adapted and invented for each specific fabrication circumstance; this is the idea of tooling, the necessary step before an object can be made. In autofabrication, the idea of tooling and dependence on previous generations of tools is eliminated. With one autofabricator, all successive tools and autofabrication units themselves could be produced. Autofabrication can achieve generational independence from its predecessors; no new tool must ever be made. Every object can be made from the original autofabricator. The generational distance from the source tool is removed. Once established, the process of data generated manufacturing exists independently from the outmoded, method of making. Autofabrication then frees production not only from the hand but also from the hand's surrogate, the tool.

Conclusion

The intent of this paper has been to neither lament nor promote the advent of autofabrication, but merely to illustrate and speculate on the changes brought on by this technology. It will inevitably spread in the

manufacturing world, as the investment by the aerospace, military, and automotive industries dictates. The drop in skill level and an increasing dependence on more sophisticated machinery are interdependent. The growth in computer-numeric-control (CNC) systems in the last decade attests to this - as technological sophistication and capital investment rise, the demand for relatively slow, skilled labor decreases, and the necessity to apply the technology to wider markets increases.

With the leveling and de-valuation of an object's production, the design comes to the foreground, both as the generator of the object and as the last realm of meaningful intellectual and manual input. As observed earlier, whether this means a vastly expanded role for design, or merely a proliferation of cheaper faster goods is unclear. This kind of change in production might allow makers of artifacts to reclaim territory ceded to industry without retreating to anachronistic, nostalgic methods.

But perhaps the idea of object as signifier of thought and labor is obsolete in the world of data-facturing. This epitomizes the perceptual crisis which autofabrication induces: given no tool in authenticity and no hand in manufacturing, do objects maintain value? If the traditional basis of ascribing value to an object, human thought and human labor, are alienated, can the cultural artifact still be consider as a valid indicator of the culture? In conventional industrial manufacturing, a culture significantly invests socially and economically in the process. As autofabrication de-industrializes manufacturing, moving it from the social to the individual realm, can production still be considered a social act?

Notes

[1] John Ruskin, "The Lamp of Truth," *The Seven Lamps of Architecture . The Works of John Ruskin, Library Edition* (New York: Longmans, Green and Co., 1903), 81.

[2] Much of the technical information and background for the field research which initiated this inquiry was directed and guided by Tony Massini, Director, Yale Mechanical Instrumentation Laboratory, New Haven, CT.

[3] Interview with Dick Aubin, Project Manager, Prototype Manufacturing Development Operation, United Technologies - Pratt and Whitney, East Hartford, CT. March 5, 1992.

[4] Interview with Art Redmon, Redmon Pattern, Bristol CT, February 3, 1992.

[5] Interview with Kevin Kennedy, ProtoTech Engineering Inc., Darien, IL, March 14, 1992.

[6] Aubin

[7] Interview with Fritz Maurer, Maurer Metalcraft Inc., Milford, CT, January 29, 1992.

[8] Interviews at Dynamic Metal Products, Manchester, CT, February 26, 1992.

[9] Interview with Howard Goldfarb, Leed Himmel, Hamden, CT, January 28, 1992.

[10] Interview with Nick Pacelli, N and J Foundry, East Haven, CT, January 25, 1992.

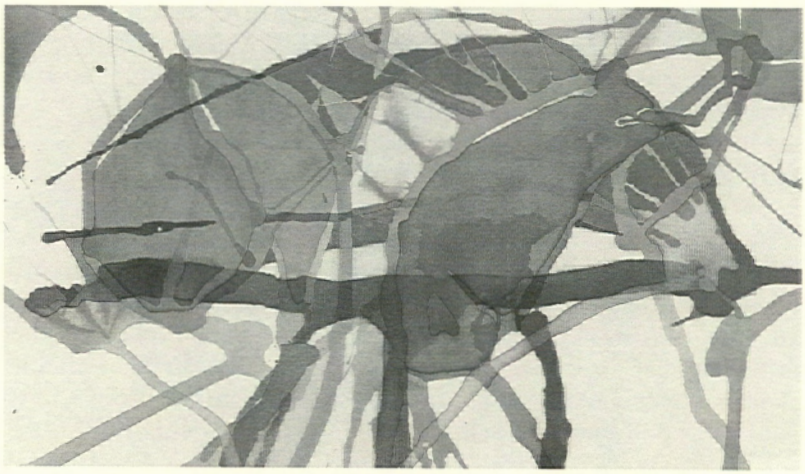
it takes courage

to grow up

and to be (-ing)

who you really are.

-e.e. cummings



J. Jiyun Park is a former student of University of Michigan's architecture program. She now lives and works in Cleveland, Ohio.

Catharsis

J. Jiyun Park

a cleveland poet, nuela archer, spoke of silent stories. we are familiar with stories of the american dream and beauty pageants. we are told them over and over again in movies like, *pretty woman*, alias *cinderella*. if we can grow up, becoming who we really are, imagine the stories.

my emergence from adolescence through streams of consciousness, the discovery of self and of society, and the questioning of existing conditions brings me here.

through curiosity about deconstructionism, the work of peter eisenman and jacques derrida, i encountered things much bigger than myself. situations which institutionally empower particular individuals, and powerful conditions that shape my self image or self identity appear in my fears, anxieties and angst. they inundate daily life through media and popular culture with potent images.

it is what children inherit, their roles as women and men. it is what is considered valuable, and it is the tools by which we measure our self and our body/mind. it is a shadow/a grid where you can hide from what frightens you most.

deconstructionism presents the shifting of a grid. who constructed the grid? who determines its significance and why? what is the meaning of the shifting of a grid? how pervasive is the grid's social constructs, and what happens if you do not fit? what happens in a forced fit?

on questions of identity:

while there has thus been a lot of debate, I think there has been less of a

critical examination of the terms, categories, or concepts through which the discourse is carried on. There has been a tendency instead to simplify and flatten things such that positions emerge that no one is content to adopt without qualifications. And this attitude of not being content to accept already given ideas or to adopt ready-made positions is itself crucial for us provided that it leads to a complication of the questions *- in short, if it makes things more intelligent.*[1]

[1] John Rajchman, "Question of Identity," *October 61* (Cambridge, Mass.: MIT Press, 1992).

complication of the questions

critical discourse

normal discourse

abnormal discourse

Since 'education' sounds a bit too flat, and Bildung *a bit too foreign, I shall use 'edification' to stand for this project of finding new, better, more interesting, more fruitful ways of speaking...it may instead consist in the 'poetic' activity of thinking up such new aims, new words, or new disciplines, followed by, so to speak, the inverse of hermeneutics: the attempt to reinterpret our familiar surroundings in the unfamiliar terms of our new inventions....For edifying discourse is* supposed *to be abnormal, to take us out of our old selves by the power of strangeness, to aid us in becoming new beings."*[2]

[2] Richard Rorty, *Philosophy and the Mirror of Nature* (Princeton: Princeton University Press, 1979), 360

samuel beckett's play "waiting for godot" opens with a dialogue between two people, sitting beside a road. there is neither formal introduction, nor climax, nor conclusion. this beckons the audience to question the absence of plot. with no beginning nor ending, the play focuses attention on the question of waiting. for whom? for what? it is never made clear, inviting audience to participate.

it is an active thinking process with the audience. i question the road as path, a journey. the path is a *means* without the certainty of a prescribed *end*. each journey is then allowed to continue independent of a prescribed set of "ideas" and along an individual self chosen path. dialectic theatre arrests coming and going, going and coming. asserts "now".

i am typing this word. process of writing and word processor, cutting and pasting. what i am writing in this font size is a response to earlier text in larger font. process records

experiences, narrating, in a way, writing about process.

the travelers along the path and the pair waiting for godot have relationships that are a knife-edge apart. they are follower/leader, master/servant. twist the ends of a long thin piece of paper and attach them. the pair is escher's moebius strip.

image relates to identity

mind/body

public/private

external/internal

master/servant

man/woman

subject/object

autonomous/personal

writing "my story" flushed out many dark and hurtful memories, re-living the desire to be blonde and blue-eyed. (thank you l'oreal and bausch and laumb). facades can penetrate.

[images of grid words to crossword puzzle relationship.]

grid/labels/boxes/categories veiled over me, stuck too closely, as skin. the way i used to see myself, images of myself, constructed within hierarchies and a language that embodied surface conditions. positions which translate into an architectural formal language of hierarchy, symmetry, proportion and scale.

the gap between the tool which de-scribes and understanding oneself, the authentic self, is obfuscated. (michealangelo's hand and cyber image) language is a tool. there are moments when language seems to fail me, attempts at clarity escaping articulation and understanding. communicating things which cannot be spoken of easily and perhaps should not be.

it has been said that much of my work is personal. that this is bad. in lectures, i have heard kenneth frampton and many neorationalists say that architecture should be autonomous. *autonomy*, while meaning self-governing and independent, appears to involve several conditions:

the external condition as an abstracted reality,

...in modern 'Cartesian' scientific age, man does not merely impose his own construction upon reality. He does indeed represent reality to himself, refusing to let things emerge as they are.[3]

[3] Martin Heidegger, "The Age of The World Picture" from *The Question Concerning Technology* (New York: Harper & Row Publishers, Inc., 1077), xxviii.

...he became the subject, the self-conscious shaper and guarantor of all that comes to him from beyond himself.[4]

[4] *Ibid.*, 147.

the external condition resembling pure aesthetics or universal abstraction,

...misses so much of the fiber and fabric of real circumstances, real daily lived life....formal issues are cultural issue in disguise...cultural identity...pervasive impulse to control, precisely, to order precisely, to tell people precisely how they should live and how they should be and what they should have. the impulse towards abstraction is dangerous. its dangerous to give up everything, to gloss over and sacrifice complexity for the purity of an idea...the forced fit...i've seen atrocious things done by people with such lofty ideals. [5]

[5] Shelia Levrant de Bretteville, Chair of Yale School of Graphic Art, *Graphis*, March 1992.

the internal condition of self-governing independence.

sam the sculptor[6] told me that *personal* meant,

per-person

son-product/prodigy

all-all/universal

and that which is deeply personal is the prodigy/product of all persons, to the extent that it can be understood by all.

prodigy defined as an act or event so extraordinary or rare as to inspire wonder; or a portentous sign or event; an omen. *prodigious*. "perhaps the main reason for such shifts in the use of these intensives is that once they have been used for a while they no longer intensify."[7]

[6] Sam Nichols, sculptor at the Cleveland Institute of Art (CIA).

[7] *American Heritage Dictionary*, Third Edition (Boston: Houghton Milton Co., 1992).

i realize that *autonomy* has more than one meaning and that its meaning may change through time. within its meaning there is a resistance to freedom, a responsibility to some inherent quality or set of parameters and an inherent system of logic or simply personal experience.

...lightest framework, the lightest infrastructure to hold the greatest appropriate complexity, the least imposing form....design as the celebration of diversity."[8]

[8] Shelia Levrant de Bretteville, Chair of Yale School of Graphic Art, *Graphis*, March 1992

the screen between our mind's eye and what is really out there is constitued by pedagogy, industry and language.

the existing method of filling in gaps with pre-conceived notions of reality seems at odds with the magic and beauty of discovery. process is as much about familiarity with a larger than life "concept" as admitting how little control or grasp of it we have.

architecture best records the absurdity of a specific time. the rational mind is unable to precisely record the complexity of our time or identify the enduring qualities of architecture. process allows intuition and situated knowledge to affect design with a precision similar to antonio gaudi's work in barcelona. it's about setting up our own parameters for making, while being sensitive to to changes and reciprocities in our own communal existence. It takes time to listen.

it's about recording, in text, a moment of catharsis, consciousness.

a place for departure:

no system of logic can contain its own explanations. — godel

impetus for making

Allowed materials around me to finish some of the details. Knowing inventory of materials allowed the conduit to complete the path. Material realization of pulling device required a relationship that is not about a representation of a cube in plywood, but the real force of the material to resist what the drawings did not.

Details include marks from table saw blades of a standardized thickness, as the selection of one can generate the others, ribbon, stables, puzzle-like. Cube as the abstraction, calling out the infinite grid.

Cut my leg during a shaving accident and noticed the curve mark/slice. A knot along the edge of a piece of scrap 1/2x2x18 lumber resembled the slice. Eric O. Sutherland gave a gift of walnut wood which he was using to slope his drafting board. It was smooth on three sides, revealing a knot on the fourth. The select cuts revealed a particular section of wood. The wood became a new site whose dimensions and extractions had a relationship to the actual site. Drills in the walnut mark a way of re-presenting the experience of the dam to fill the gap.

Obfuscation Dance. The importance of clarity, the delight of the one-liners seems to be reflective of the modernist myth of clean and austere. Does this type of clarity suggest a selected frame of reference which might exclude?

No rationality. Completely responsive and reactionary to forces outside of my own ability to reason it before its conception. Responsive to the material and the tools of the woodshop and to the readings of Rietveld Schroeder and Peter Eisenman and Derrida. Created a violent text-maker, very one directional. To me its about loneliness, the desire to dance with someone and getting very close to knowing who that partner would be. Dancing with myself, with my work, having a discourse.

The steel that surrounds the wood is of a different spirit. How will the wood make its way out. What kinds of relationship can exist between the two. Wood as natural and steel as something manufactured and developed man-made of natural materials. Its potential energy of the wood to dance with the steel. Its release and penetration would become my next set of investigations.

shed skin...catharsis...process as personal. finding resistance in the corporeal, as the first parameter of experiencing space.

A woman's body as container for her spirit.

The spirit of Virginia Woolf's "A Room of One's Own."

About the body. In preliminary investigations about human anatomy, particularly the reproductive organs of the woman, it's become evident that there is an oversimplification of the woman's body. The social constructs through which we view the body are powerful surface conditions which shield us from ourselves.

Watercolor, in the absence of a woodshop. Water, gravity and breath as ways of generating structure or direction/path. Boundaries are blurred, washed away or collaged. The complexity or density of painted layers opacifies the reading of a translucent medium.

The process is simultaneously about complexity and clarity. The discoveries of painting illuminates ideas about two-dimensional surfaces and illusions to depth. Yet the more I paint, the broader the issues become. Things I know from experience get recorded in the paintings. The paintings surprise me. They verify that that which is intuitive is nice, and yet it demands something. A dance partner; something to resist its freeness. A discourse with myself through my work.

issues of container/containment, covering/uncovering.

in the dance, who leads and when? beginning to understand that *autonomy* is the resistance for architecture. that is to say, the force against which architecture attempts to reveal what is inherently architectural. which is simultaneously, though very different from an *autonomy* of the self-governing individual, the self-empowered individual, courageously exposing vulnerability, free, standing nakedly.

On the Need to Design Useless, Destructured and Ugly Architecture

Emil Sotirov

Why Useless Architecture?

If architecture is "locked" in the "universal chain" of mutual "exploitation" and "channeling" of human life — where every human practice is used for another practice's goals, and uses other practices for its own goals — perpetuating, in this way, the general condition of instrumentality (nothing is important, including humans, because everything is instrumental), Useless Architecture would give presence to that suppressed human need to be loved for what you are, and not for what you perform. Everybody knows that need.

Exercise:

Design a house without interior space. Or, design the ruins of a building whose original function you do not know. Or, design a small summer house for a Parisian clochard - situated on the sidewalk of a small Parisian street or square. Do not try to meet any of his needs. In the summer, he does not need a house at all. Use your professional architectural knowledge to give his life presence.

Emil Sotirov is a graduate student at the University of Michigan.

Why Destructured Architecture?

If formal order, structural stability and durability of buildings are established by architecture as metaphors of institutional order, stability of power systems and durability of ideologies, then, probably, a Destructured Architecture would give presence to the basic human need for transcendence of given establishments, conditions, or constraints. To deconstruct a structure is a pleasure - every child knows that.

Exercise:

Think of an institution or people you do not particularly like, the Bulgarian State Security. Then, design for "them" a "shelter" that, while still standing, would be really "mature" for structural and formal disintegration, and would express very clearly that condition. Use your professional knowledge of formal order and structures in the way a criminal with a medical degree would use a scalpel. Prepare a model and test/taste its tendency for formal and structural disintegration.

Why Ugly Architecture?

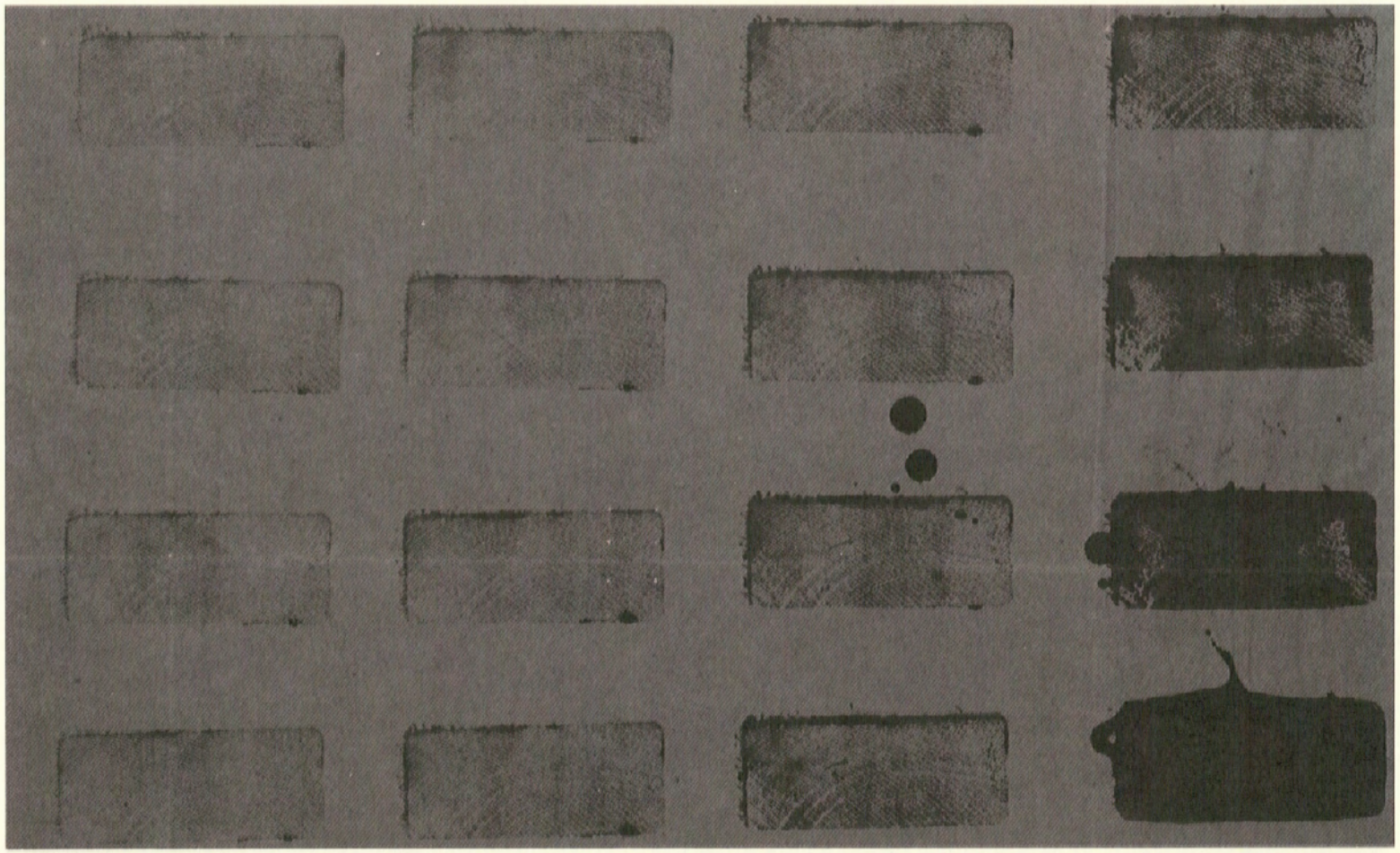
If Architecture is embodiment, expression, or a presence of human values, then, we could imagine appreciating Ugly Architecture in the same way we value people for honesty, sensibility and intelligence, and not necessarily for beautiful appearance. Designing Ugly Architecture would, perhaps, open our eyes wider to aspects of human existence beyond appearance.

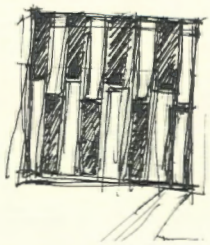
Exercise:

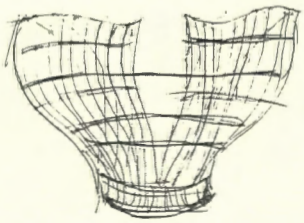
Try to discern and describe for yourself what ugliness in architecture would be. Then, design an ugly house for your best friend. Observe the relief of not having to make the house beautiful. There is, in your friend, an "embarrassed", "poor", "alienated" side that you, as a friend, are able to see and understand. Give presence of that side.

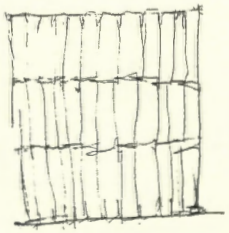
Note: If you really like an exercise - repeat it.

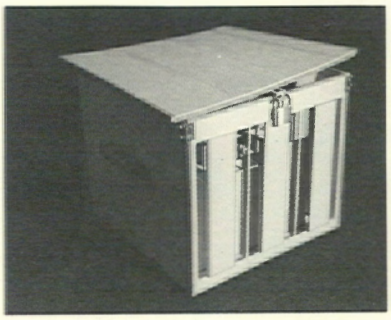
Student Process(es) :









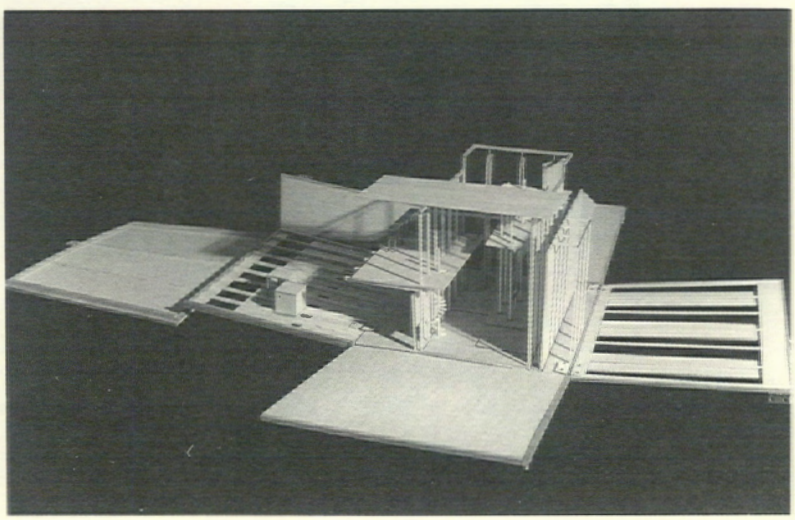


Lisa Belian
Year 3
Studio Critic:
Maria L. Santos-Munne

"Working from Within"
The project involved selecting a piece of clothing and generating a space around it.

OBJECT
From the object, the first structural layer was formed.

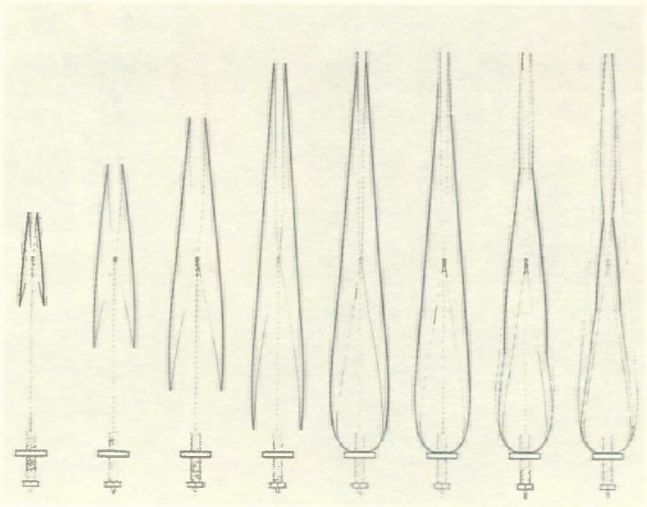
FORM
The room was to provide a space for a tailor to exhibit designs. In order to accommodate the public-private needs of the tailor, it was necessary to define - divide the rest of the spaces around the room.



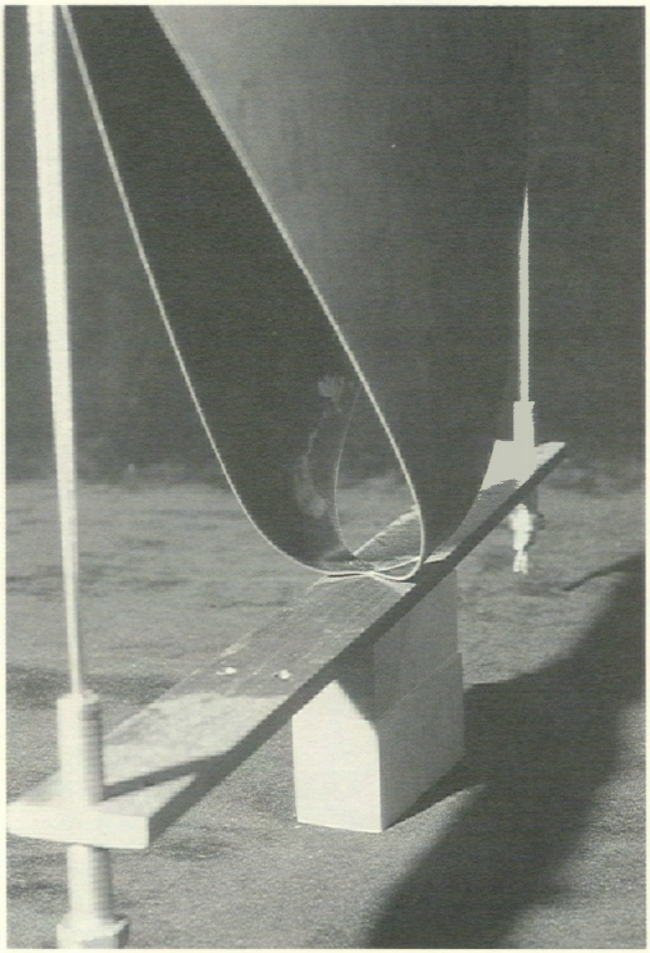
PLACE
In order to house the 'Object' within the 'Room' within the 'Place', a skin was designed.

CASE
The clothing consisted of a gauze-like material wrapped around a body (much like a mummy) in the form of a dress.

The viewer wraps around the building arriving at the display area (where the dress is suspended by strings) as the clothing wraps around the body.

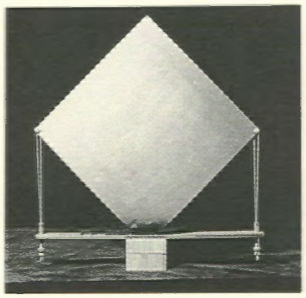


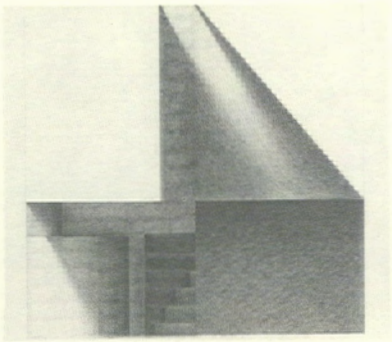
Steve Vanden Bussche

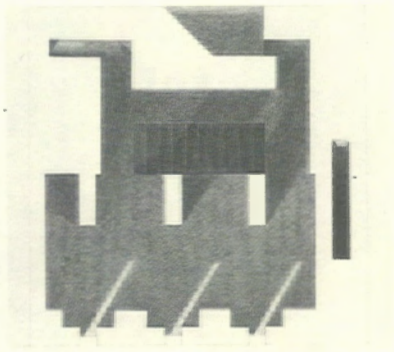


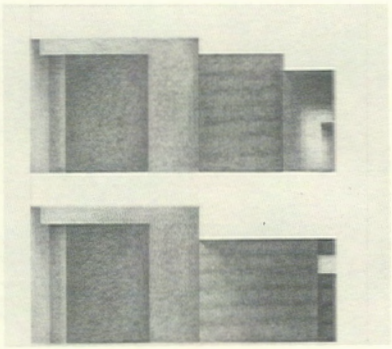
Kent Kleinman
Studio Critic
Year 3

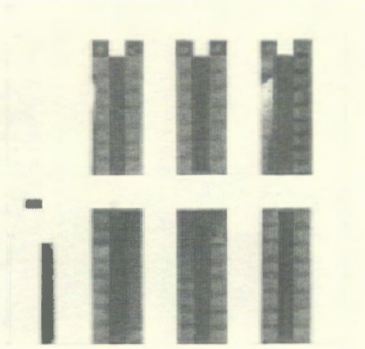
It strikes me that the studio brief is not a problem statement but rather an excuse to act. Perhaps, in the end, a problem statement surfaces in the work, but then it is summoned by the elegance of its own solution. This paradoxical relationship suggests that origin and terminus can signify an identical moment. It further strikes me that the term "Brief" might be a clue to the "unspeakableness" of certain conditions, and that brevity - a brief brief - can be an asset in promoting a heightened necessity for work.

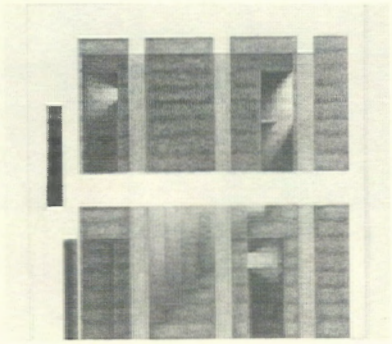


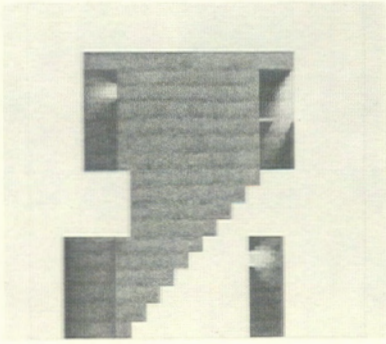










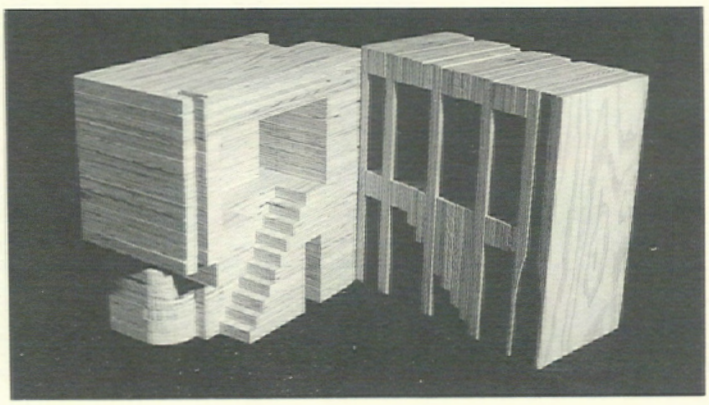


The work shown here is the outcome of three assignments; the programs were as follows:

1. Given two plates of 22 gauge steel measuring 12" x 12" each, construct a record of the application of a force.

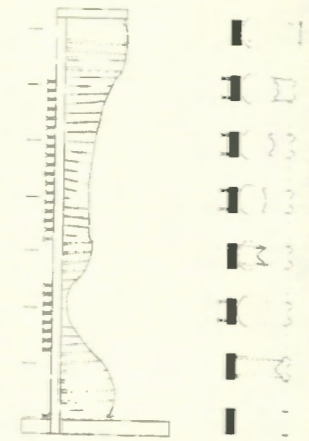
2. Within the thickness of 40 sheets of 1/2" plywood, each measuring 5" x 10", design and construct two dwellings. The sheets will be assembled to form a 10" x 10" block with 20 sheets facing down. The scale is 1/2"=1'-1". Do not use a jig saw.

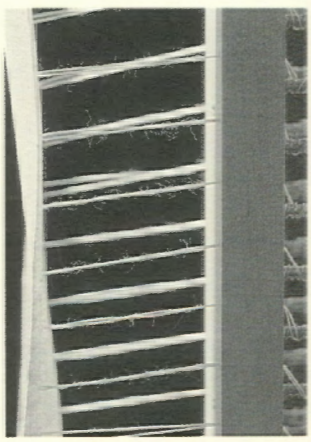
3. Form a latex skin cast from your body measuring 20" in one dimension, construct a framework that approximates that of the original site.

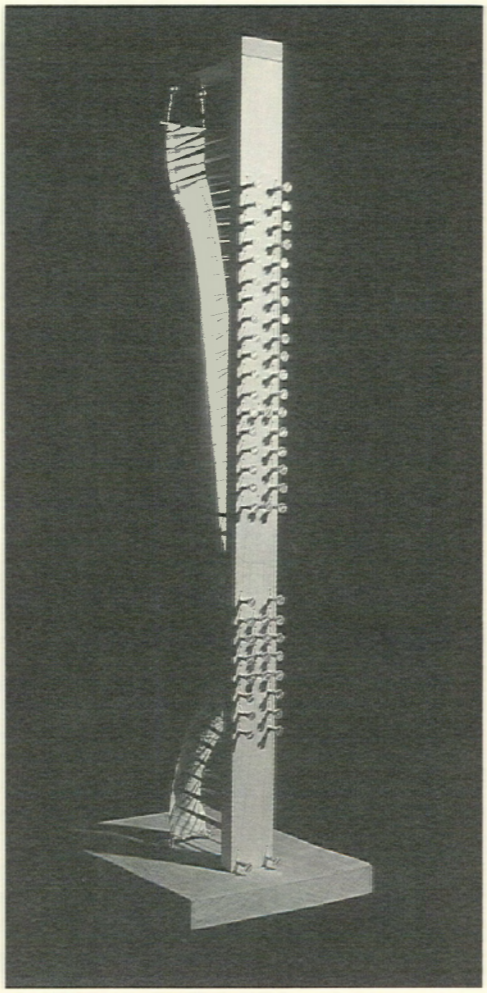


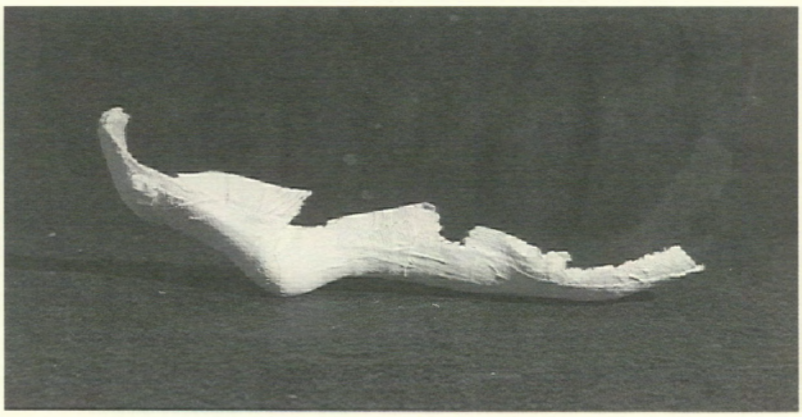
Gordon Merritt

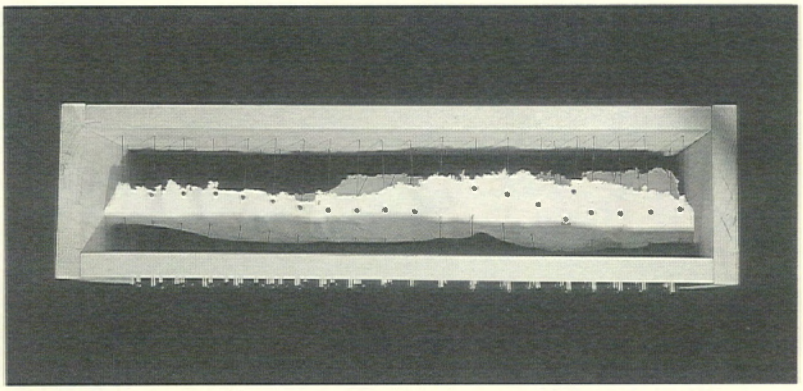
There are several common threads that run through these projects. The first has to do with material resistance. The forms are essentially circumscribed by the parameters of their construction rather than the parameters of their depiction. The second thread concerns the status of drawing. Drawing always followed the process of building. In this sense these works cannot be termed "models." The two activities - drawing and building - almost touch each other in the plywood assignment, where each sheet is a thickened section or plan, drawn with a pencil and thickened with the blade.



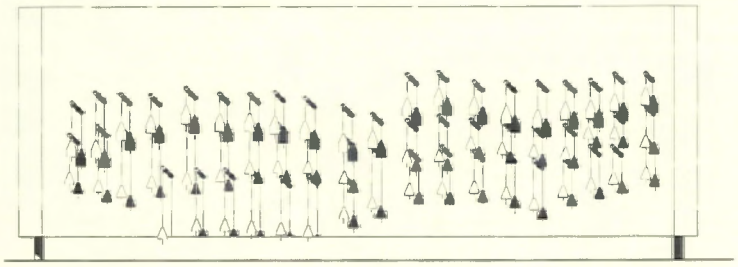




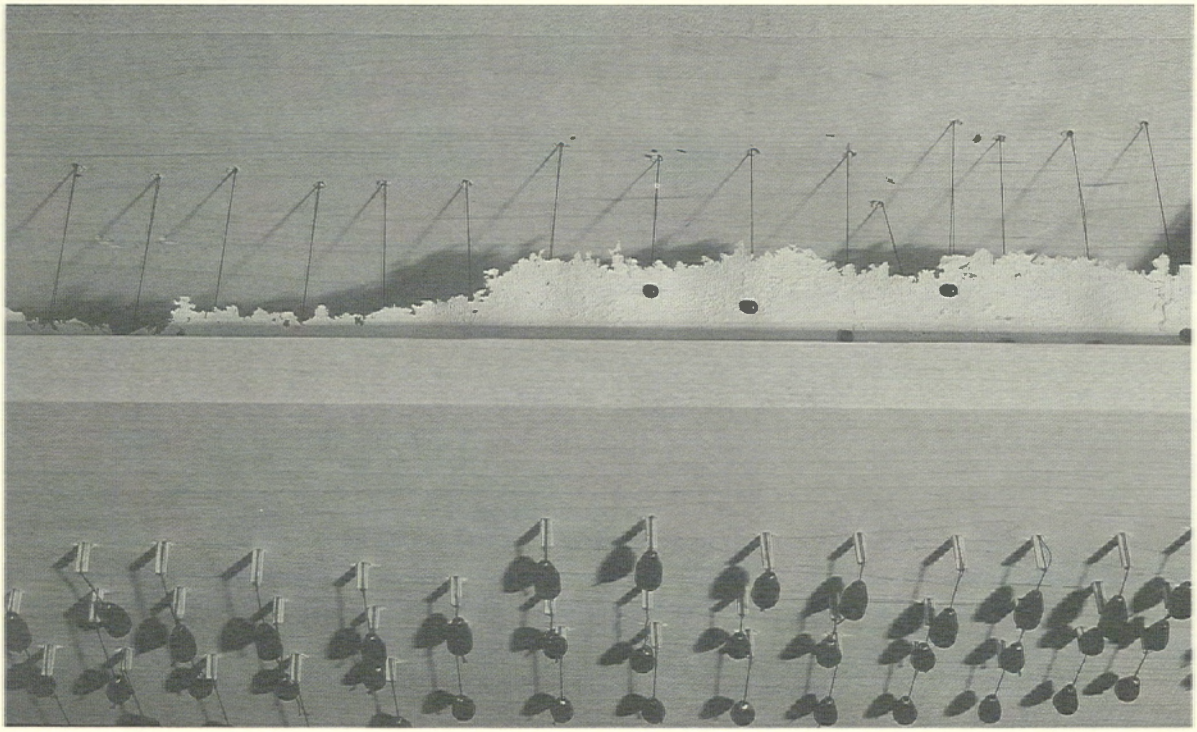




A third theme concerns scale. The artifacts occupy the scale of their production, ie. one to one, yet simultaneously they strive for a certain scalelessness, perhaps akin to Gerrit Rietveld's famous chair, that wanted to become - and became - a house. Finally, the work is infused with both doubt and confidence in the expressive potential of the built environment. This last theme is the most important: it concerns the passion for solidifying the world.



Eydie Ann Gretkierewicz



Anderson Lee
Year 4
Studio Critic:
Robert W. Carpenter

"The design, presentation and discussion of architecture is suspended between presence and absence. Indeed, the anxieties of creativity emerge with respect to the challenge of always only simulating. Architectural models and drawings often do have an aesthetic immediacy, and yet they always persist in reminding us of 'that which they are not.' In short, the referent can never be fully abandoned."

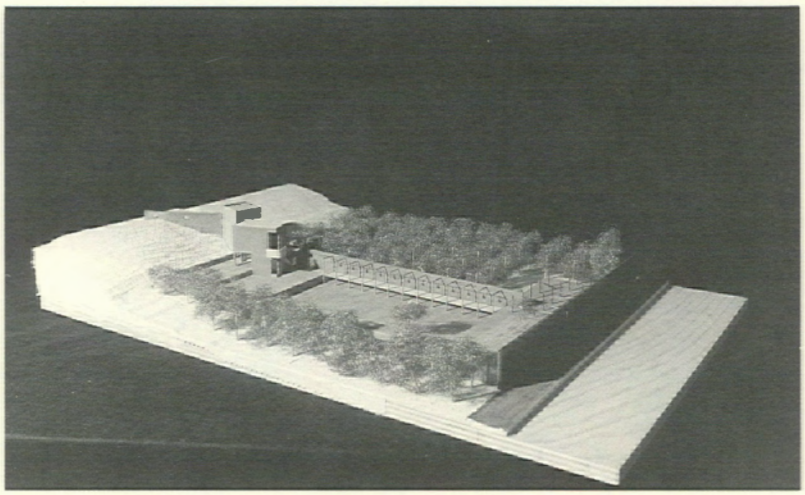
– Robert Carpenter

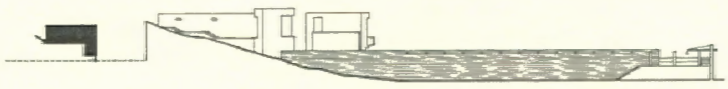
Based on a series of readings, the construction of a library and the question of infinity became the focus of studio discussions. A reading of Too Loud a Solitude by Bohumil Hrabel preceeded the design of a parlor/garden for the main character, a bibliophile, as rendered in the book.

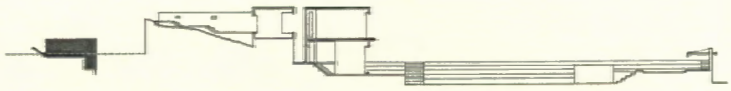
The project began with a series of investigations of figural surfaces and forms. A spiral was introduced into this volume, and it was then transformed into a three dimensional object. The form was generated first, before programmatic elements were introduced.

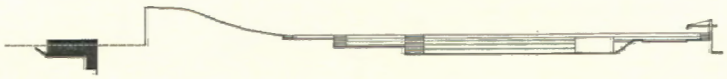
"... its funny — when you do this, you're always denying connections . . . and then you suddenly start seeing all of these connections. You can boil it all down to one building, and quit lying."

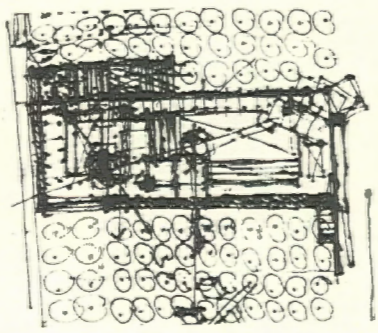
– Eric Owen Moss

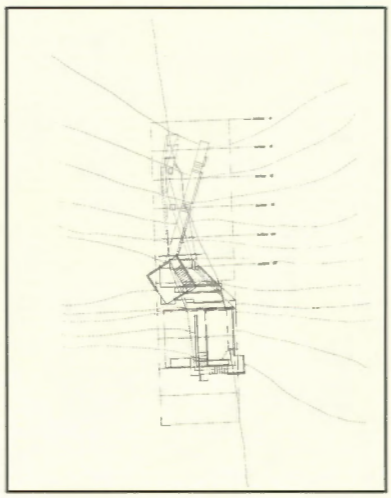






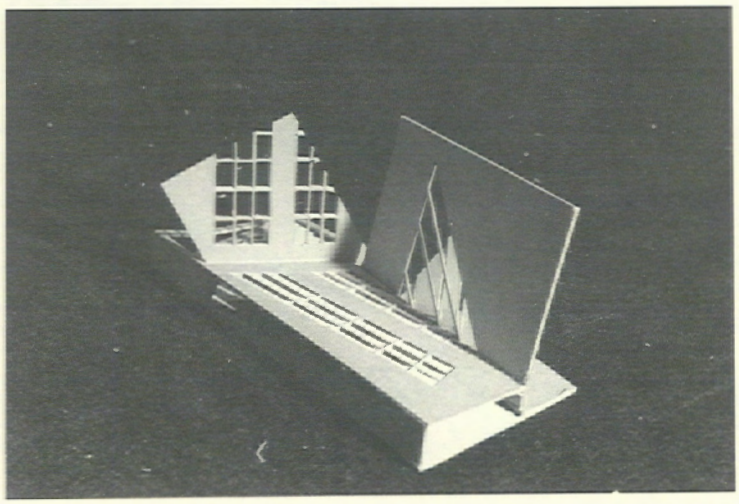


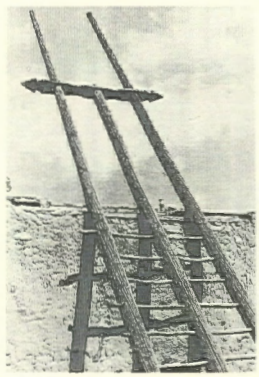




Michelle Filipiak
Year 3
Studio Critic:
Maria L. Santos-Munne

The first project required building a light "tool" based on observations of light within a built environment. These observations were translated into a solid form which was used to explore the synthesis of light in structures and to establish a horizon line. From this tool, another, with the ground plane in place, was created. It was used to observe movement, path, and horizon based on a specific light source. These studies eventually led to the design of a visitor center in New Mexico by examining the massive cast shadows and the penetration of light through the ground plane - in essence, building and excavating with light.



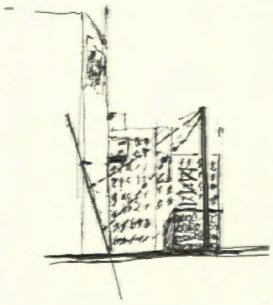


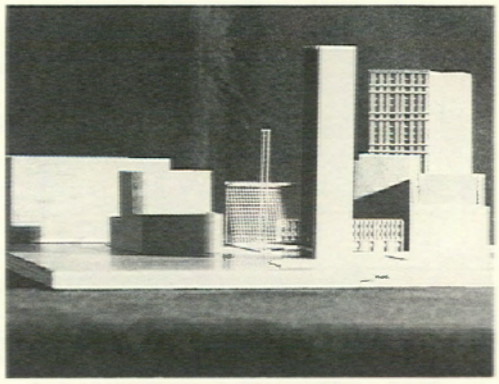
Laura Ann Church
Year 5
Studio Critic: Bradford Angelini

The project *focuses* on the creation of a public "place" to serve as the site of a civic ritual. The significance of the site is defined by the ritual, its relationship to Kennedy Square, the center of downtown Detroit, and Michigan Avenue. Historically, urban rituals such as the medieval carnival have served to temporarily abolish traditional societal barriers:

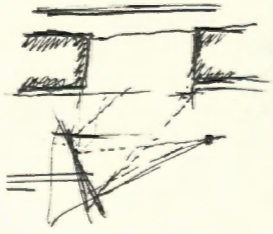
"Suspended first of all is hierarchical structure and all forms of terror, reverence, piety, and etiquette connected with it — that is, everything resulting from socio-hierarchical inequality or any other form of inequality among people . . . This is a very important aspect of a carnival sense of the world. People who in life are separated by impenetrable hierarchical barriers enter into free familiar contact on the carnival square.

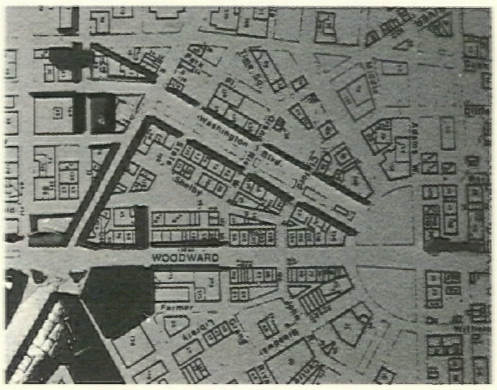
-Mikhail Bakhtin Problems of Dostoevsky's Poetics.

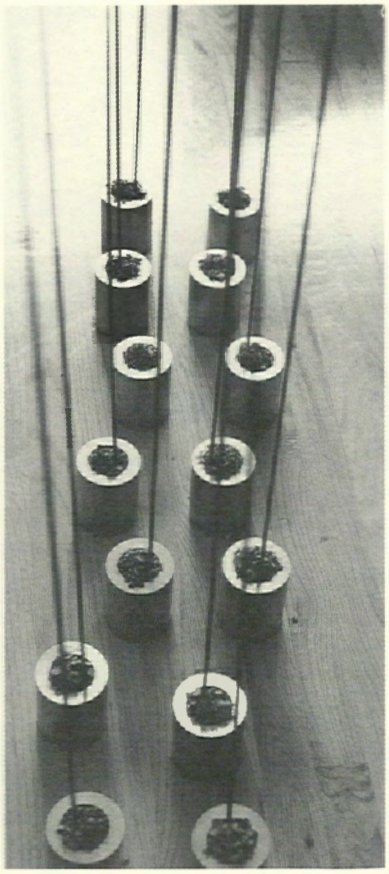


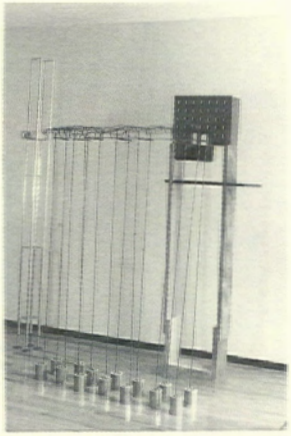


From the ideas of *carnival*, the site was developed as an urban theatre. Images are projected from the tower onto the screen and viewed from across Michigan Avenue. The triangular relation of tower, screen and seating, defined by lines of sight, reflect the form of Woodward's radial plan. The tower serves as a marker for the sight. It is the signifier, the projector of images, and the recorder of history. The screen is the surface upon which the memory of the city is inscribed.









Ana Henton, Jennifer Williams
Carrie Yoon, Jeff Etelamaki
Detroit Artists' Market Exhibit
Independent Project
Instructor: Laura M. Briggs

If the modern City were to concede to living with its ruins, perhaps in the way ancient Rome was and is actively a city of ruins, there might be a different attitude toward existing unused architecture and the act of building.

Our approach is a small gesture compared to the tremendous reality in which it is set. We hope to change, momentarily, the status of the ruin (Michigan Central Depot) and the tenuous nature of the buildings in use (the present Amtrak station). The method is to excavate and shift existing structures in the hopes of altering the momentum of history, the growth and now decay of Detroit, by realizing a wish. We hope to appropriate unused things to cultivate what is already there in order to bring out the quietness which exists like a still life.

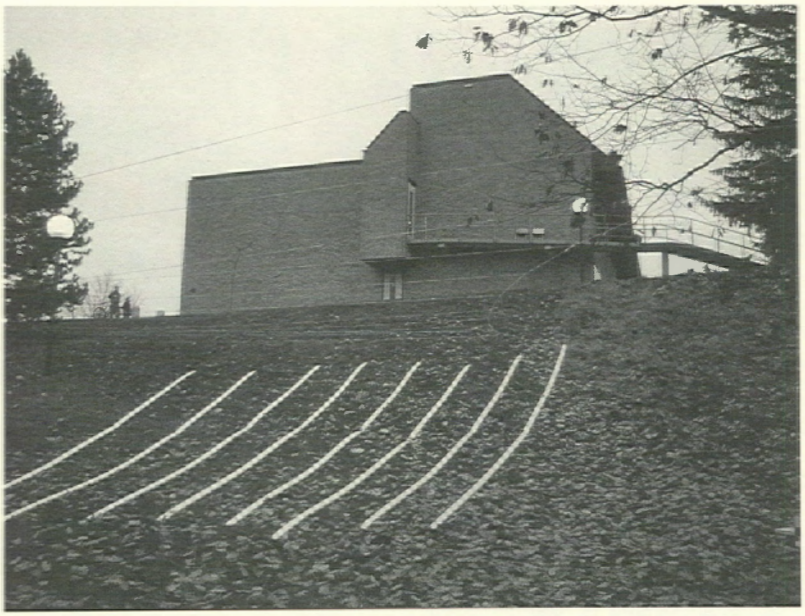
Our proposal creates a space in the new Amtrak station to offer wild flowers grown in the train shed. The old station, which remains a shadow, would be opened to the public in its present condition. The sheds become plates of light and dark, tracks and rows, as the fragments of peeling concrete form flower beds, water walls, catch basins and viewing platforms. The current train station, previously sealed and separated, becomes open, the flowers carried along existing tracks would fill the existing waiting room.

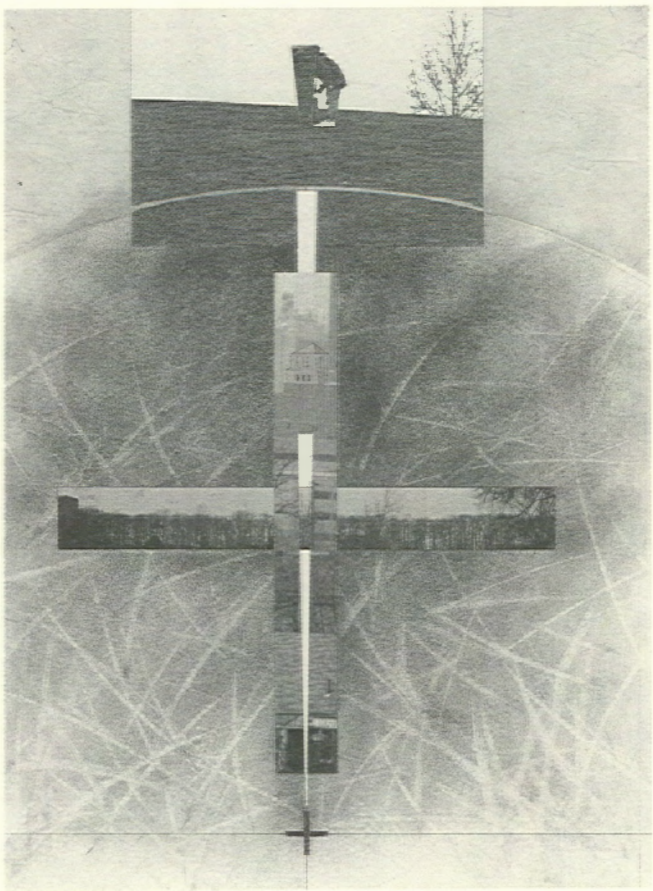
Site Engineering and Planning
Studio Critic: Peter Osler

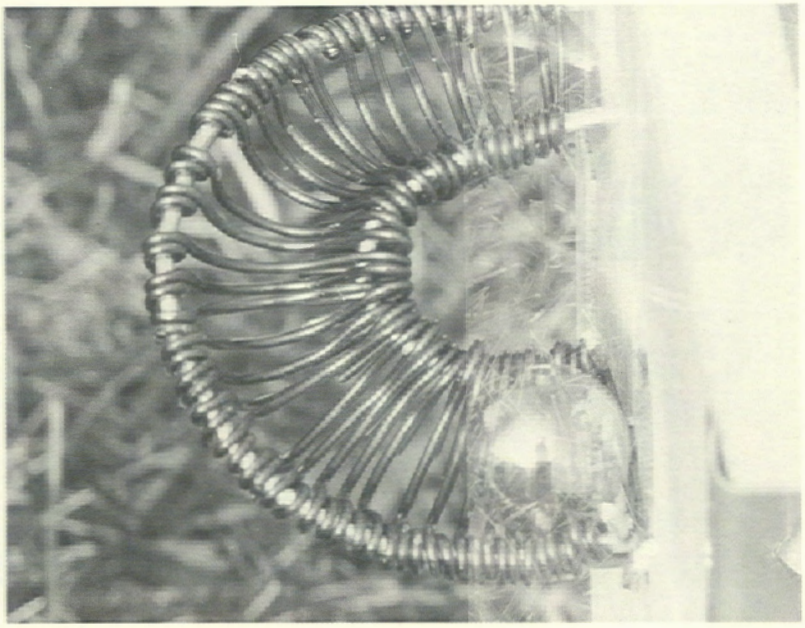
"Site Analysis: Marking, Measuring, Making"

The Genius Loci of any site is the result of a multiplicity of ingredients - static and kinetic, natural and man-made, permanent and evanescent, physical and metaphorical, historical and cultural, etc. The combination of these ingredients at varied levels of intensity can result in an identity that is at once conspicuous and subtle, visual and tactile, visceral and intellectual. The charge of this exercise was to access this elusive identity of an assigned site through constructions that marked, revealed, and measured its salient characteristics.

Above: Keith Stocker, Drew Laszlo, Brian Sherriff, Tom Vanatta
Below and Right: Scott Wood, Dave Huizenga, Janie Hart, Ken-Hui Liao



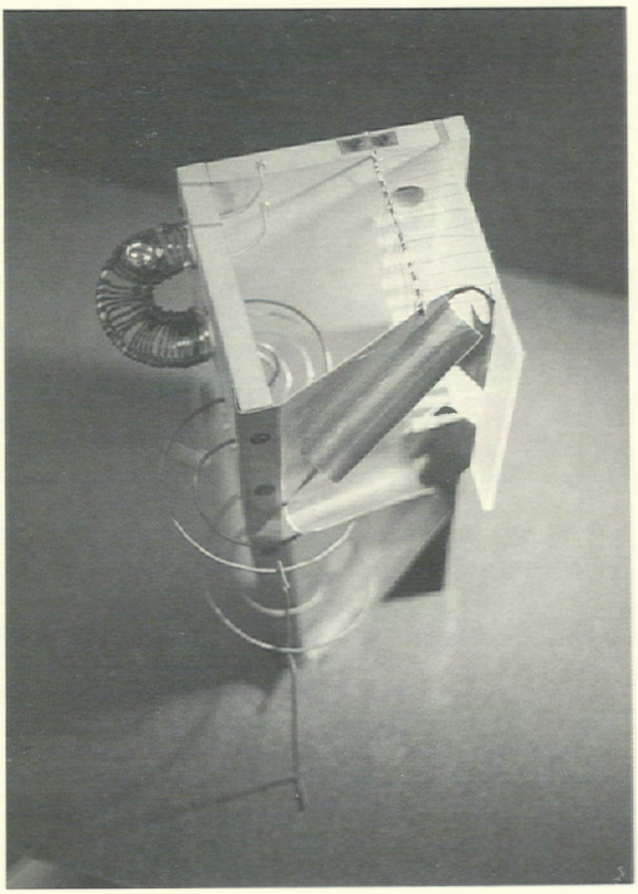


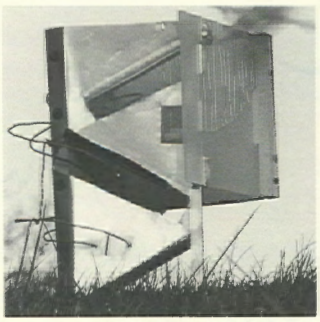


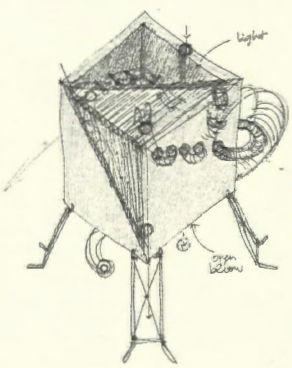
Suzanne Roach
Year 6
Studio Critics: Tomas Pauli
Wolfgang Hochmeister

The free nature of the studio allowed for self-development and guidance. This project focused on an investigation of structure, both physical; that which can be measured or gauged in some way, lending a sense of reality, and mental structure, which provides a kind of virtual reality.

The structure I chose to investigate was the structure of a laugh. The representational model and drawings try to make visible both the physical and mental structures - the real outburst of air and sound, along with the internal process of observation, perception, and reaction.

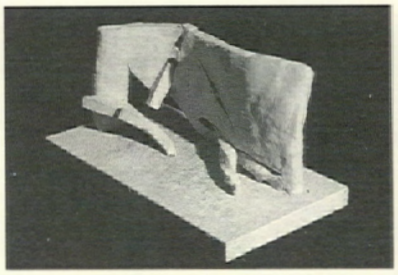


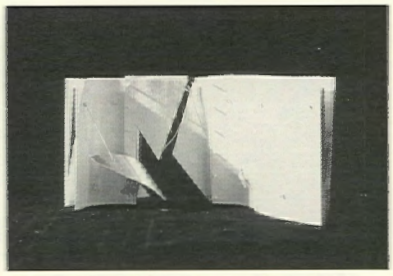


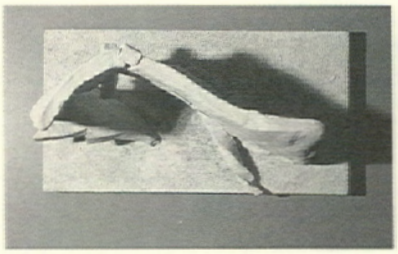


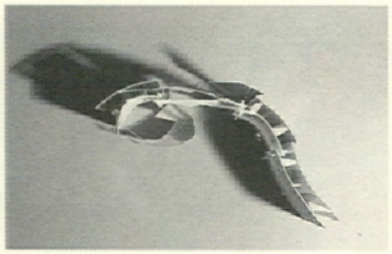
Leekyung Han
Year 3
Studio Critic: Laura M. Briggs

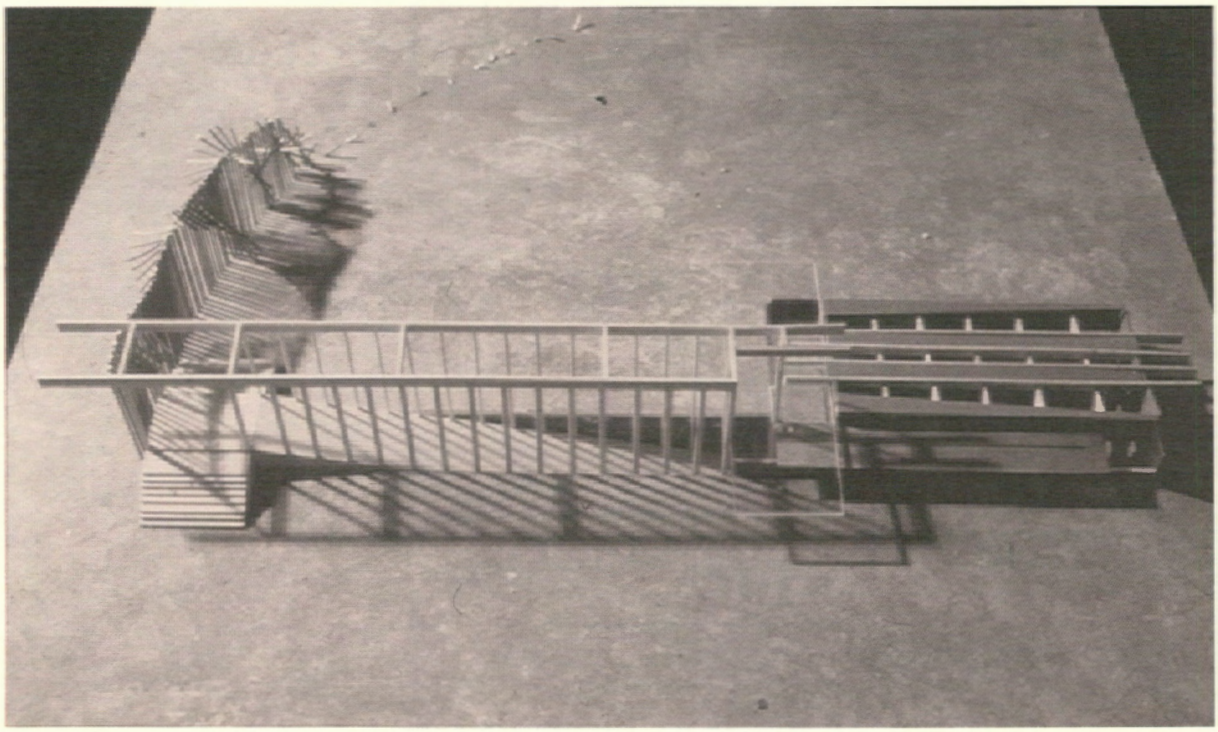
The first project involved the creation of openings, within different materials, which were a result of the application of four basic forces - tension, compression, shear, and torsion. The final project involved the design of two theaters. An indoor theater for an audience of 100 with a single performer was defined by the linear scheme outlined by the more formal, traditional nature of the program. The outdoor theater, on the other hand, was designed for an audience of 2 with 100 performers. A free-flowing, curved wall marks the boundary of this area, allowing the movement and activity of the participants to define the space.

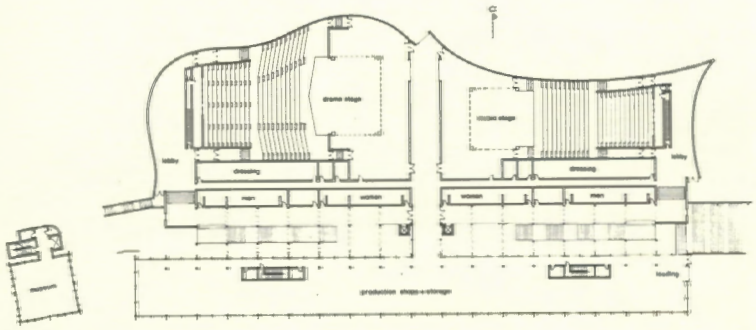


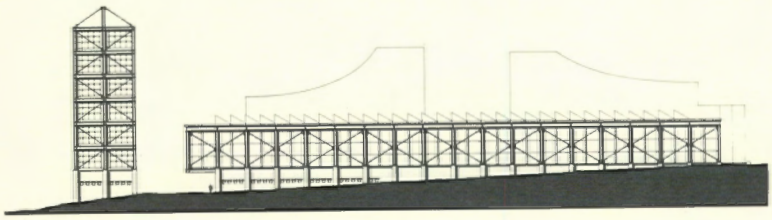








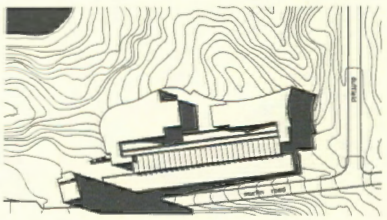


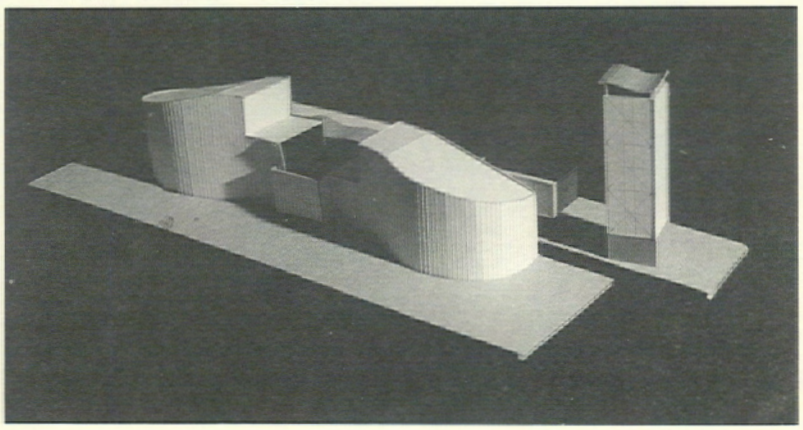


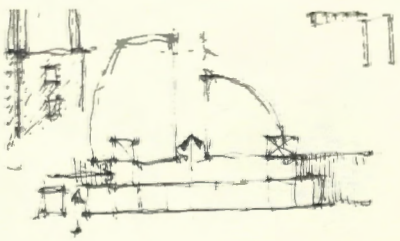
Dan Harmon
Year 6
Studio Critic: Henry Kowalewski

This project for a university and community performing arts center began with the desire to pull the production facilities out away from the actual performance spaces and to display them in the form of a steel and glass studio space facing the fronting street. The performance spaces are concrete shells which curve to resond to the topography and spatial qualities of the wooded area behind. The lobby was then formed in the space between.

A museum with archives is placed in a separate tower and pulled away from the main mass of the building to preserve an existing pedestrian path through the woods and to mark the primary entrance to the complex.





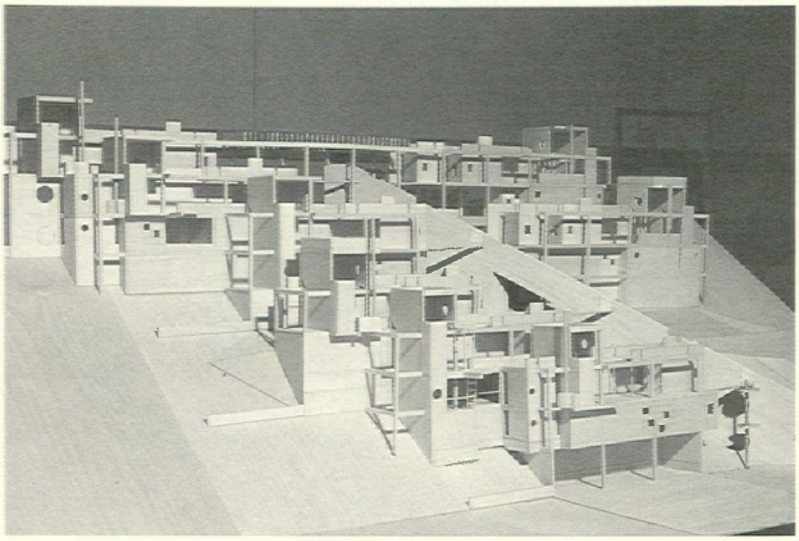


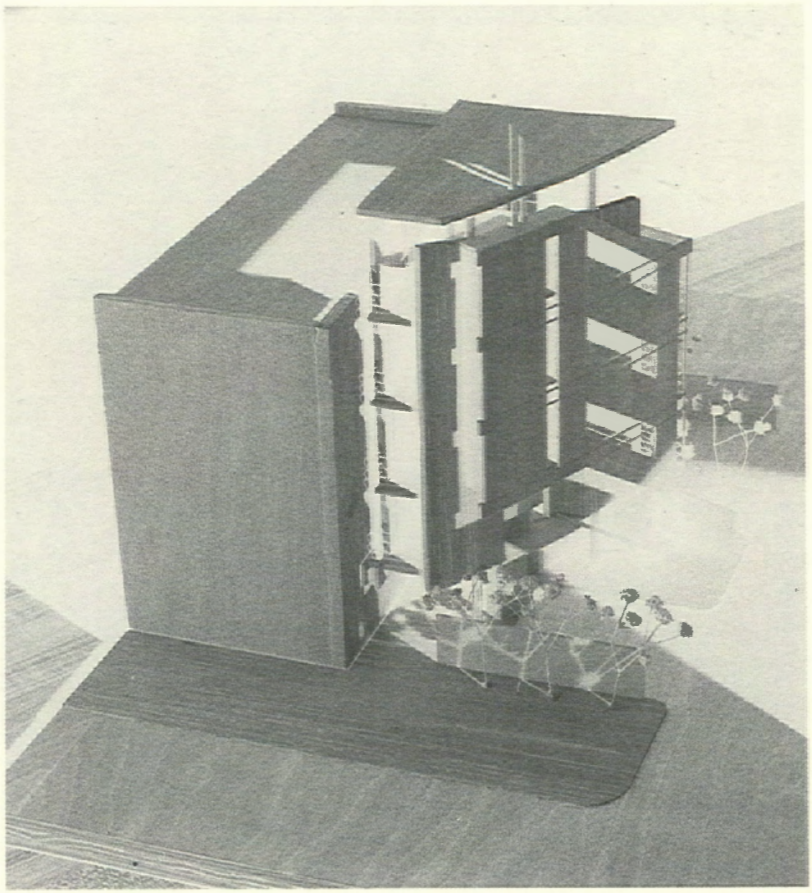
Studio Critic: R. Thomas Hille
Year 5 and 6

Use-Form Exploration: The Large-Small House Revisited

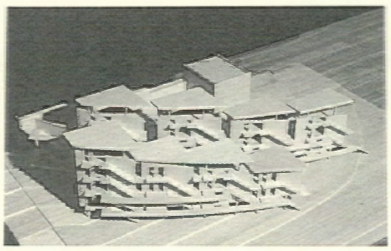
The objective of the studio was to explore the relationship between use and architectural form. We began with the conviction that inhabitation is a potentially powerful form determinant, and that architecture should somehow be reflective of the complexities of the human activities it houses. Starting with basic imperatives of livability as opposed to strict functional planning (form follows function), we concerned ourselves with the influence of the following on the formal expression of the built environment:

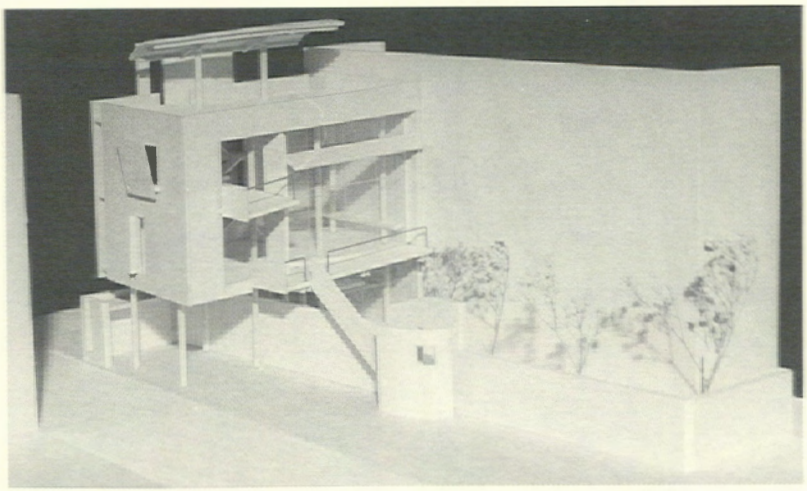
• Distinctions between public and private, formal and informal, service and living and access and territory



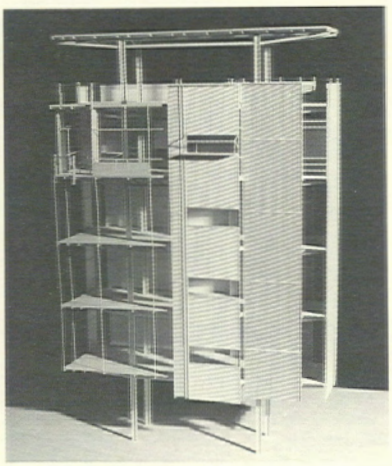


Brett Pudik

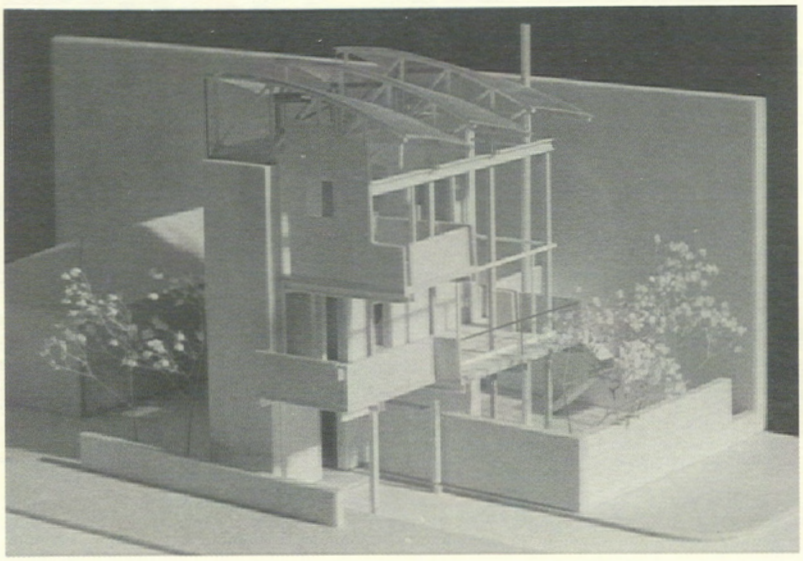




Chin Shui Chen



Curt Laitinen



Yun-Jen Lu

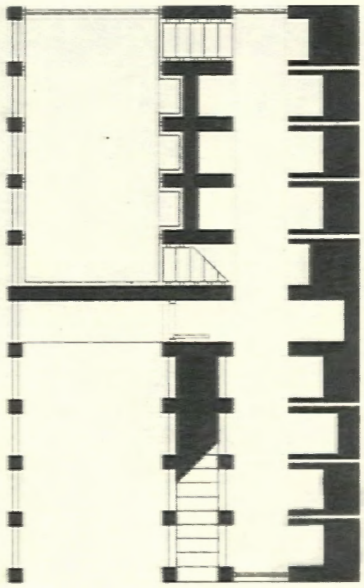
- Use associated spatial relationships such as size, scale, proportion and module
- Control; i.e., the relationship between collective and individual imperatives and the resulting formal tension between order and variety
- Tractability and the impli-cations of growth and change over time
- Form as function; i.e., the function of form
- Distinctions between infra-structure and infill.

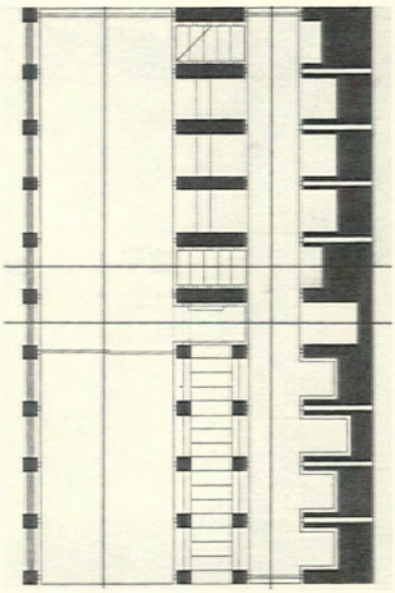
The vehicle for the exploration was housing, intentionally generalized to de-emphasize specific programmatic and site concerns. The large-small house was used to establish a minimum standard assuming the most from the least, with livability its primary measure of quality. Moving from the general to the specific, the project began with a design for a single house on a specific site. Removed from the constraints of its site, this house was then transformed through extension and repetition to make housing on a found or invented site.

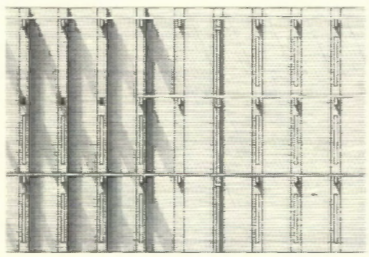
Daniel Tryles
Year 4
Studio Critic: Adam Yarinsky

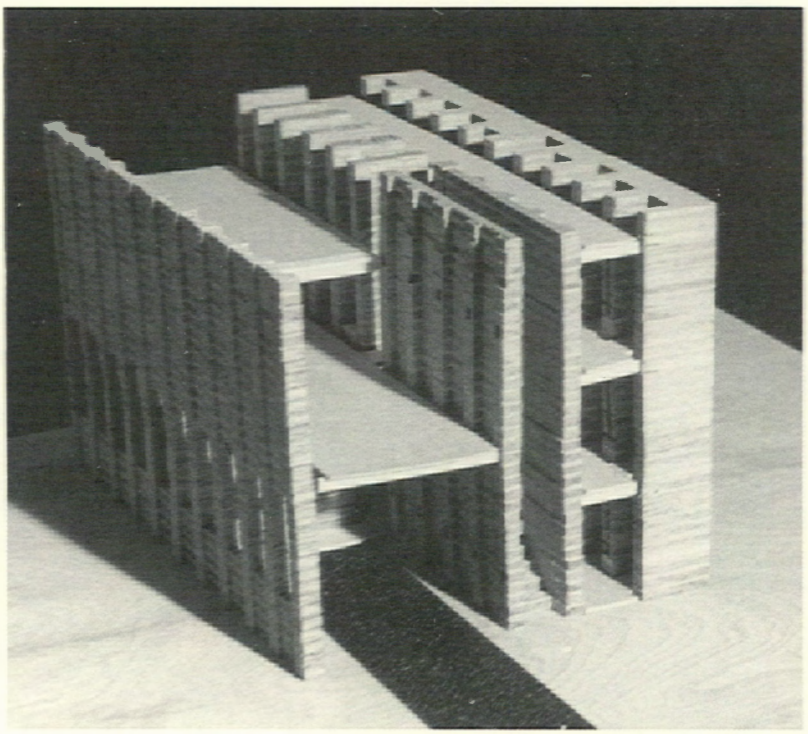
The program was to design a one or two person dwelling. The dwelling was to be located on a vacant block on Detroit's lower east side, situated between an assembly plant and a neighborhood of modest, decaying homes.

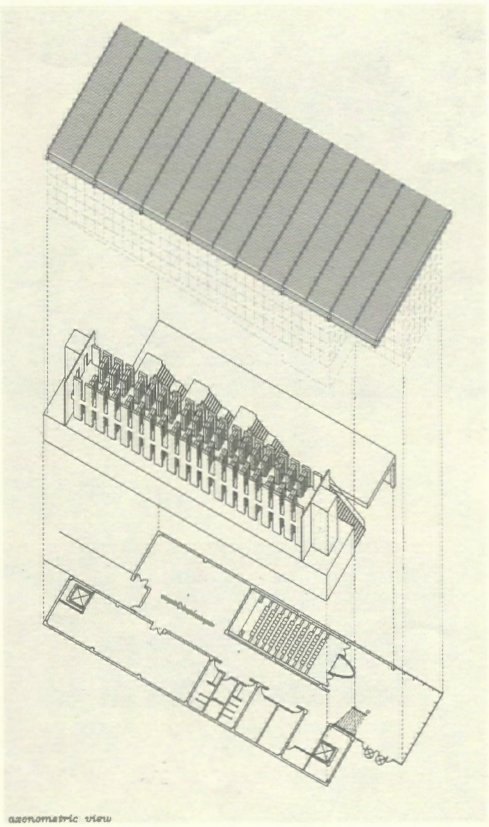
The north wall, 5' thick, is the generating element of the design. First, it acts structurally as a row of piers supporting the thin floors. It also defines space at the scale of the neighborhood, rendering a permanence of construction to an otherwise transient environment. At a smaller scale, it contains programmatic elements within its own thickness. Finally, it brings dramatic light into the interior through skylights at its top and slit windows on its side.

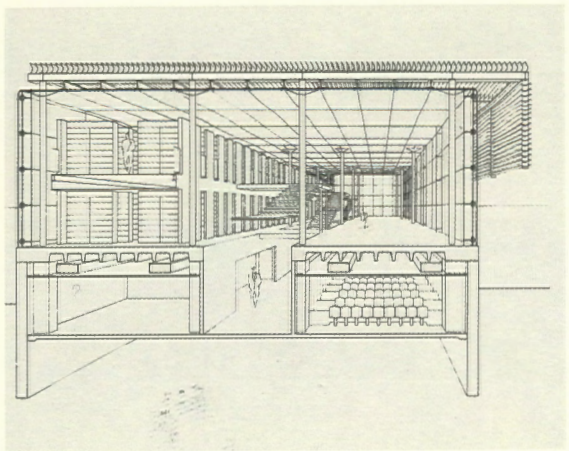


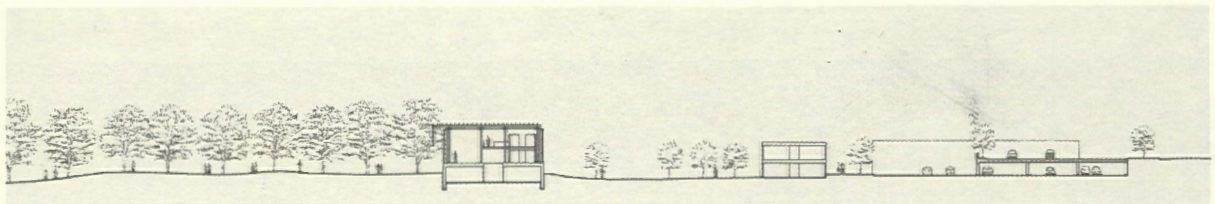








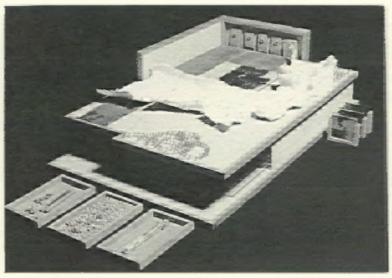


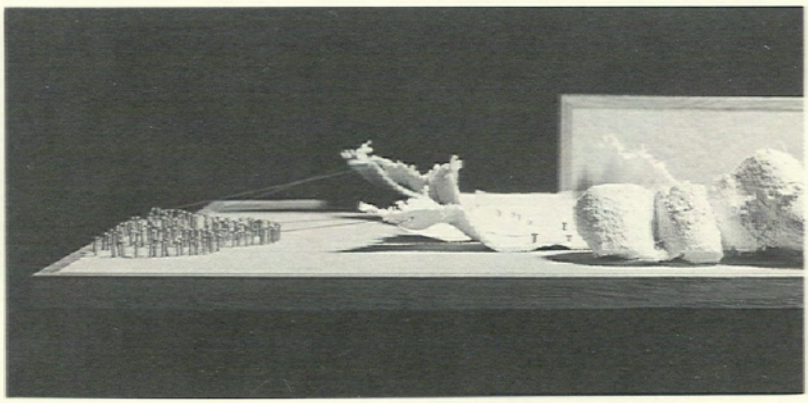


Rob Rose Jr.
Year 6
Studio Critic: William Bricken

The project involves the design of a center for civic activity in the historic town of Blacksburg, Virginia. The focus of the area is a town intersection - one corner of the original 16 square grid present in the original town layout. The goal was to generate an urban plan that weaves the existing properties into a significant place, using civic activity to add to a sense of town identity.

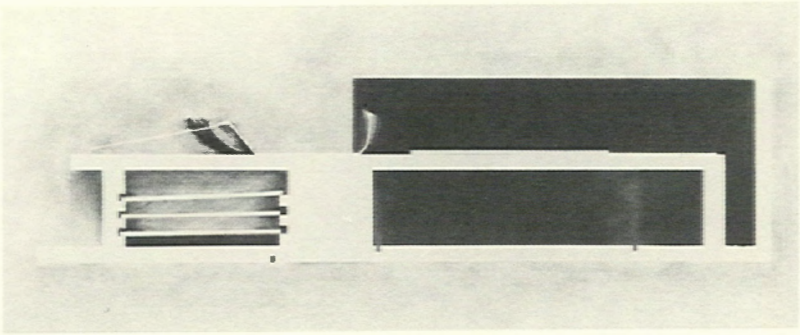
The design of a new library is the first building in the development of the plan. The library is designed as a directional device which defines the four corners of the area. The building is ordered by two linear bars with a circulation core running between. The entrance occurs at the shift between the two bars. In addition, two separate structural systems are used to accentuate the different amenities housed within. A glass enclosure is used to reinforce a connection between the library and its site. The stack space within the glazed enclosure then becomes a freestanding element with its own skin.

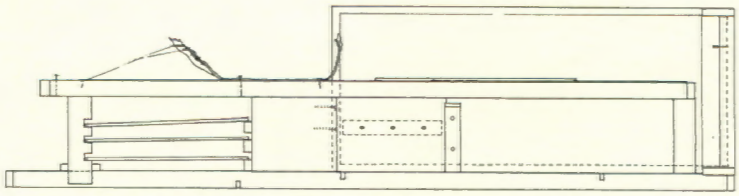


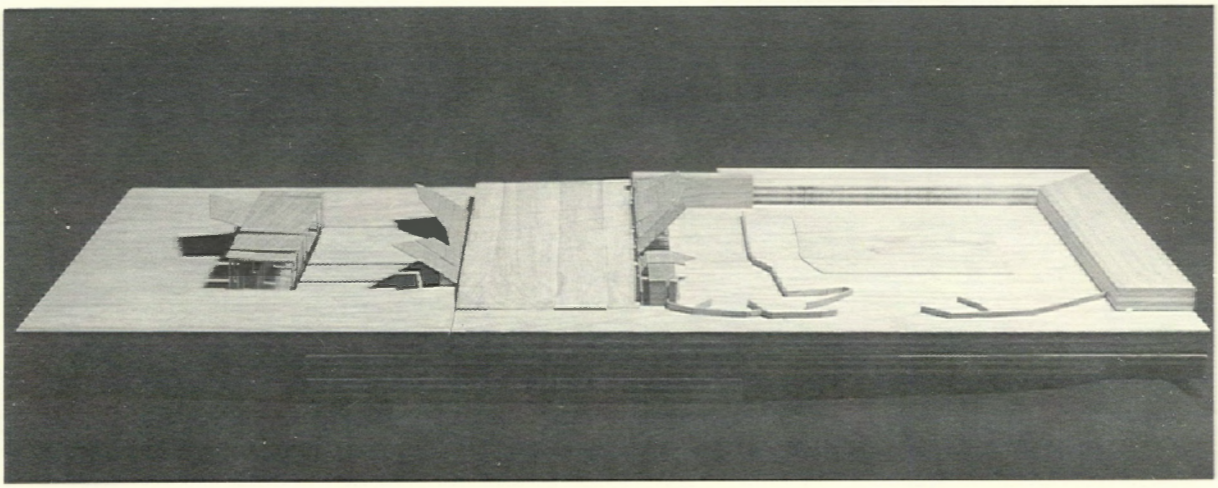


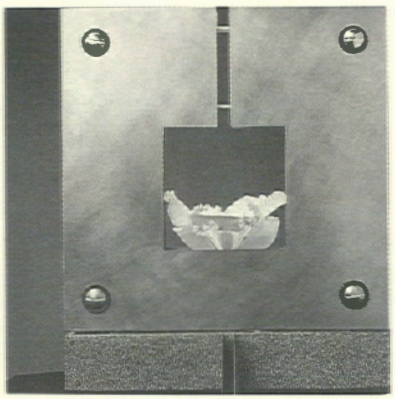
Lisa Kulisek
Year 4
Studio Critic: Charles Waldheim

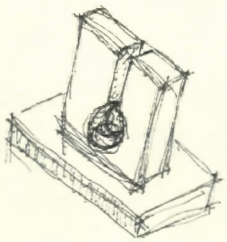
The focus of study in the studio was the human body and its relationship to architectural production. Through the use of constructed objects and drawings, a translation occurred between a specific site in Chicago and our own bodies in studio. This process began with a series of mappings and a search for some concurrence of the body and the landscape. From the original mappings, an object was constructed that was both a site model and, in this case, a container for a thought process. A series of drawings of the object were used as the basis for designing a public restroom and coffee house.





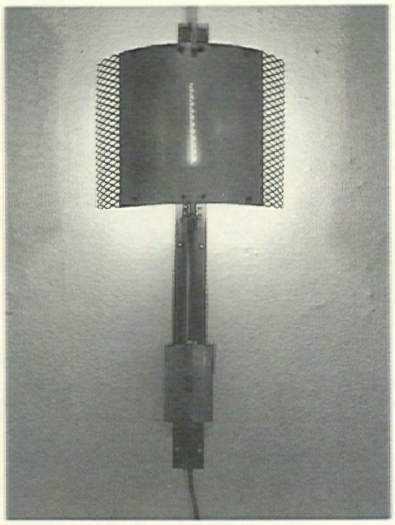


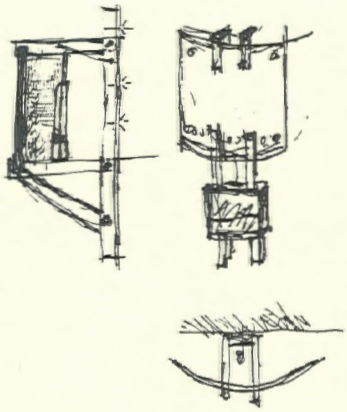




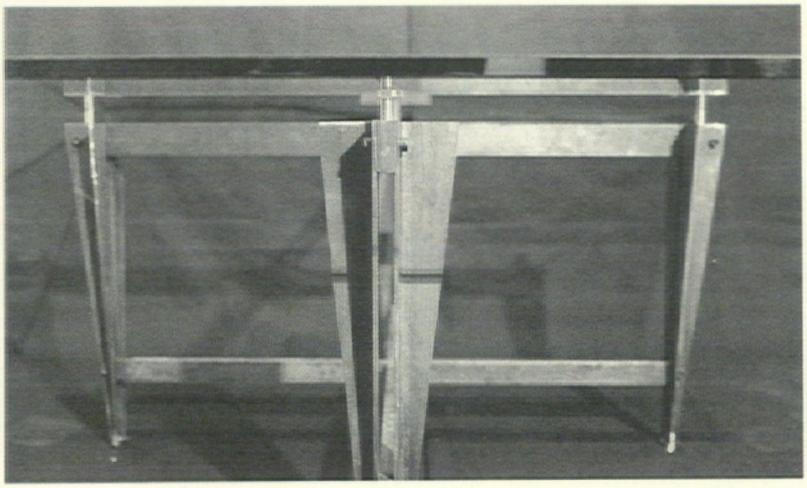
Steven D. Koop
Year 6
Architecture of Objects
Studio Critics: Colin Clipson
Shaun Jackson

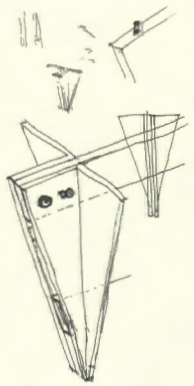
The projects in this course involved the design and construction of three objects; a vase, a lamp, and a piece of furniture. Focus was placed on the integration of design ideas and construction techniques through detail. The result involves a synthesis of form, materials, and connections.





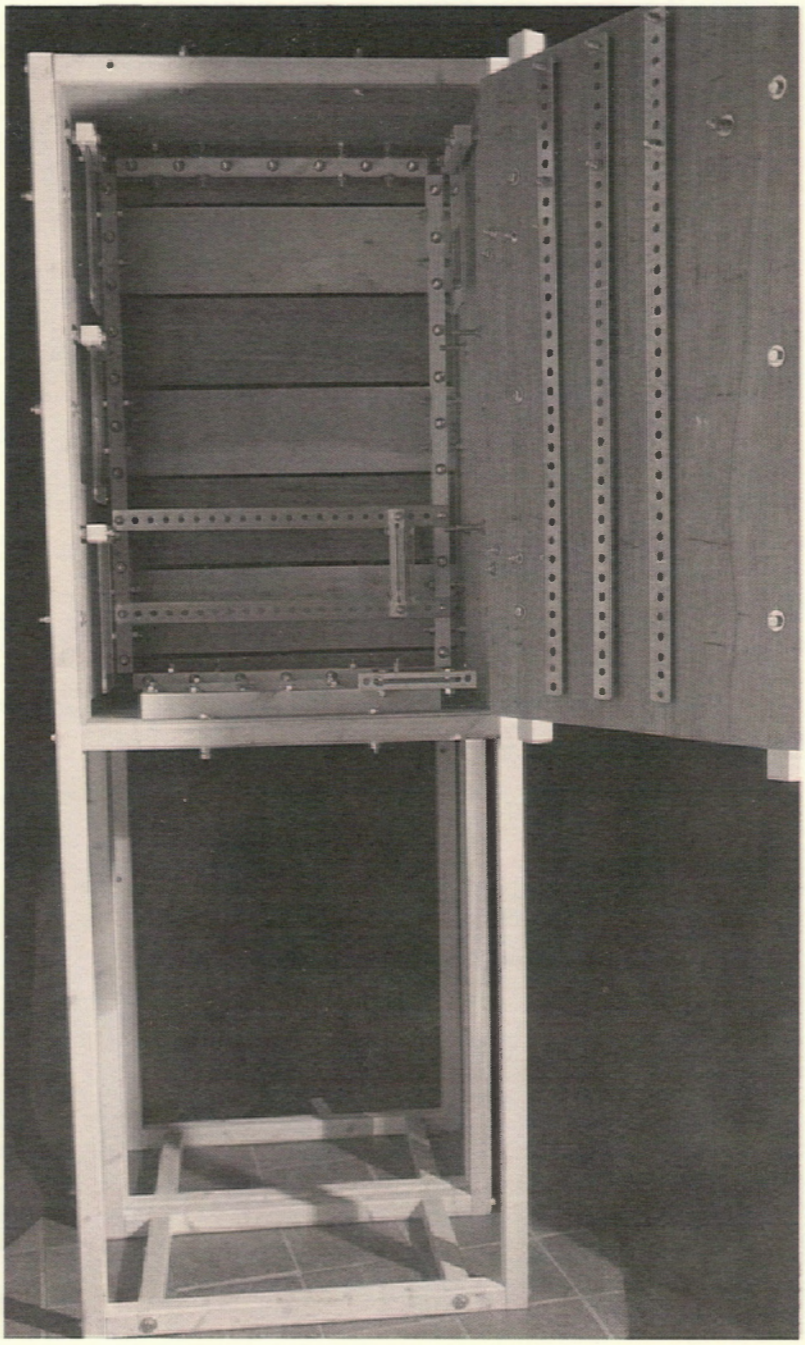
First, I devised a formal language which would be common to each piece, in order to create a continuity throughout the projects. The simplicity of form, emphasized by the use of minimalist materials and connections, was the language I established. Each stage, from diagramatic through the actual construction, became an exploration of form and its expression through detail. Each fastener was used to accentuate the strength of the materials and the elegance of the design.





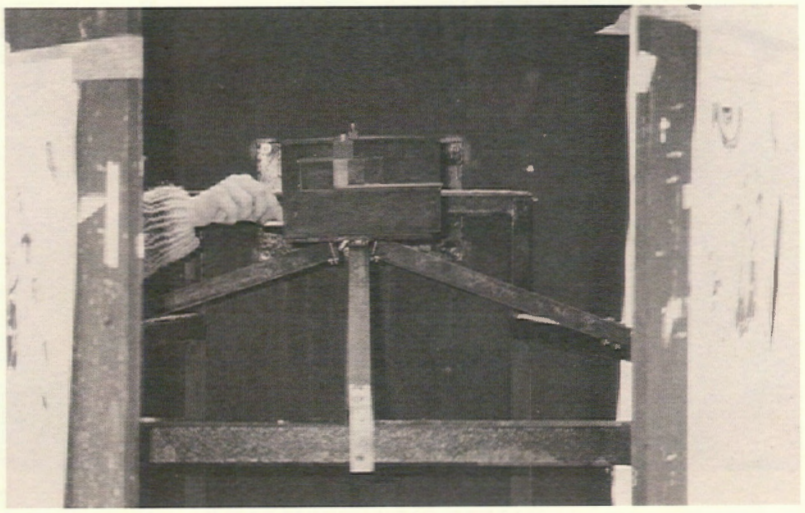
WALLENBERG COMPETITION

This year's Wallemberg Competition, open to students in Year 4, invovled the creation of a device for the transmission and storage of information between people on the Diag, the central public square on the University of Michigan campus.



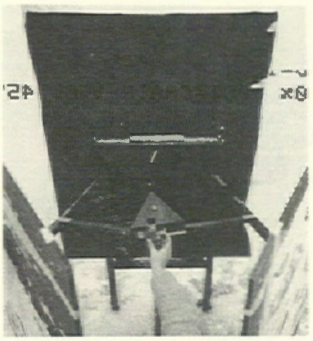
Eric Romano
First Prize

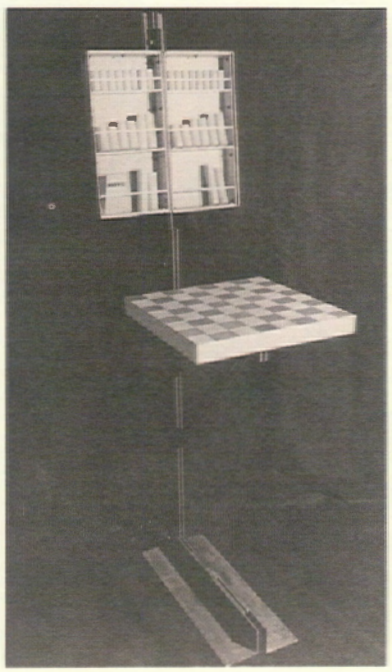
The design for a device to stimulate the transfer and storage of information must offer infinite possibilities for communication. Within the device, images are arranged on a grid system. One can arrange images for communication with the general public, or images can be passed through slits in the middle wall between simultaneous users.

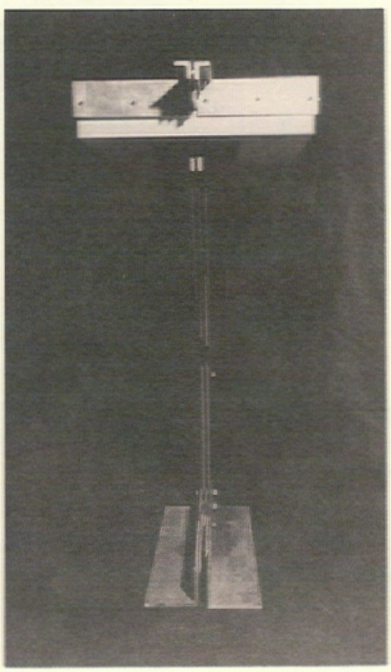


Ana Henton
Second Prize

The design was made specifically for members of an underground music club and is housed within an existing public announcement kiosk. Notes and meesages may be stored and passed inside the hidden structure.







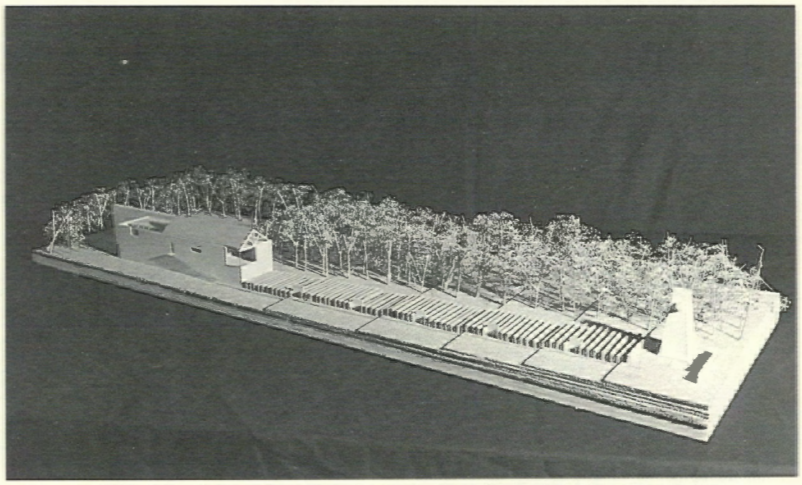
Mark Womble
Honorable Mention

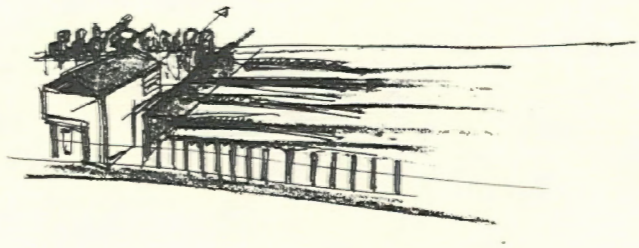
Because of the transitory nature of the site, the board is intended to be used by more than two players. Time permitting, a pedestrian stops, moves a piece, changes the turn of play indicator, and continues on to their destination. A record of their move is kept by the pieces on the board and those that have been returned to the cabinet. When a game is not in progress, the cabinet rotates to cover the board for protection against the elements.

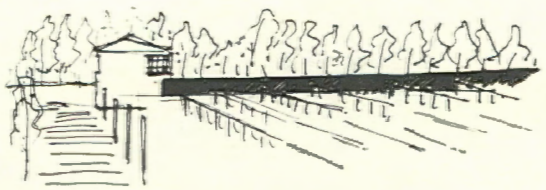
Michael Yung
Year 4
Studio Critic: Terrance Goode

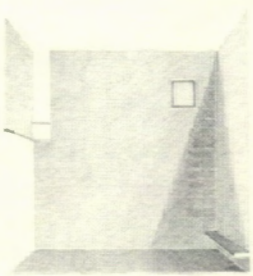
The project involved the site organization and architectural design of a winery and restaurant with a vineyard and outdoor gathering space. While the operation of the contemporary winery now benefits from current technology, the process itself is thousands of years old, responding to the natural rhythms of sun and rain, growth and harvest.

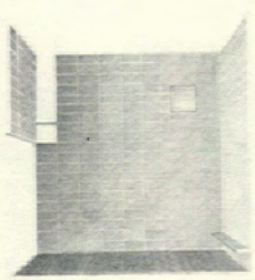
Of particular relevance to this project are issues of the nature of construction as mediator between the landscape and the body, the relationships of indoor and outdoor rooms and their means of construction, and the activation of a relatively large spatial field using relatively small interventions which choreograph the experience of a moving observer.

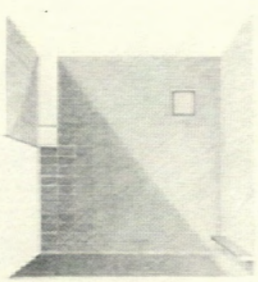


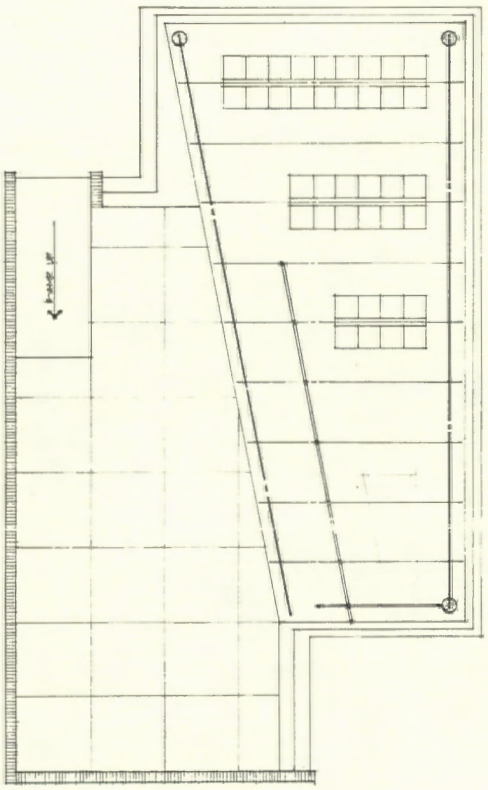








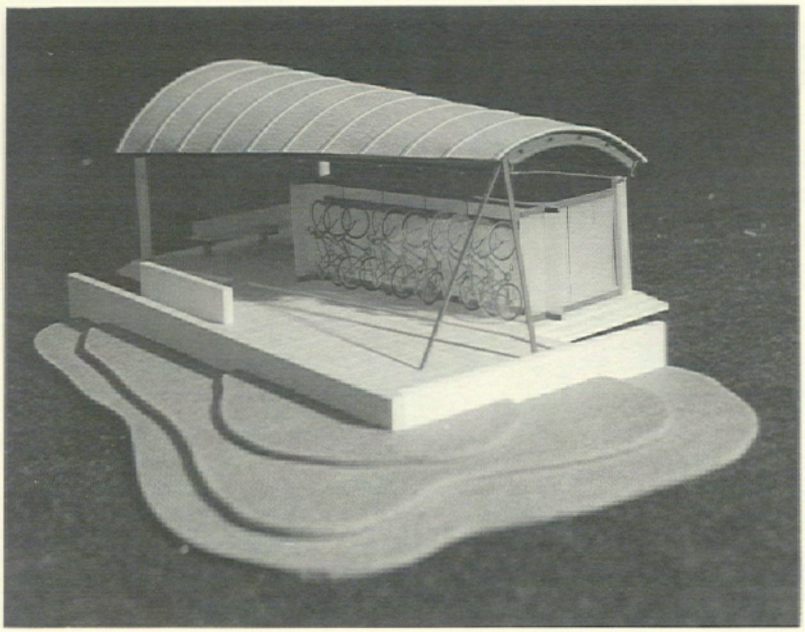


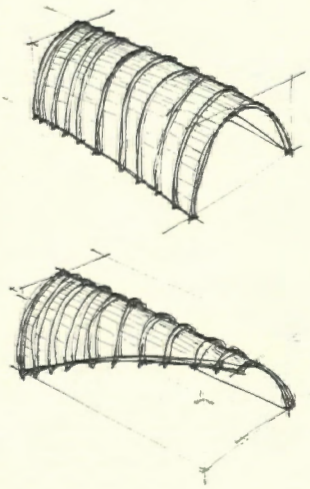


Scott Engstrom
Year 3
Studio Critic: Martin Schwartz

The project involved the design of a bus stop shelter for the University of Michigan campus. Program elements included covered and outdoor seating areas, bus schedule and events poster displays, bicycle racks, and a clock.

A simple barrel vault is used to house the variety of programs in a simple, elegant manner. A diagonal section is removed to reflect the movement occurring through the site, separating indoor and outdoor seating areas. Steel, fiberglass panels, and concrete are utilized within the structure, expressing the different functional elements.

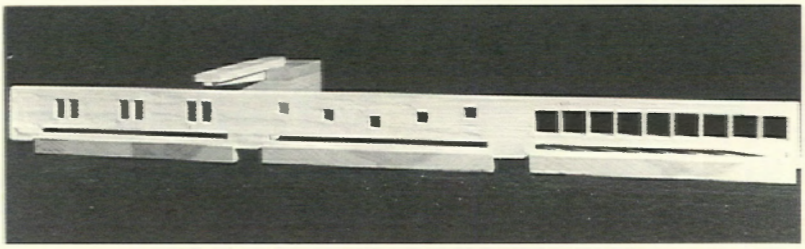


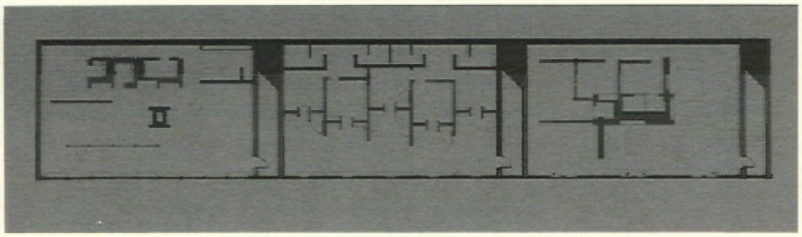


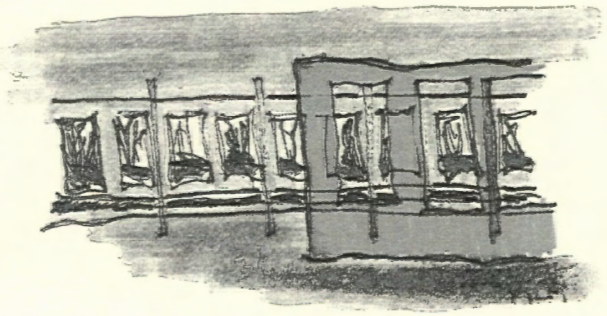
Dawn Finley
Independent Study
Critics: Laura Briggs
Betsy Williams

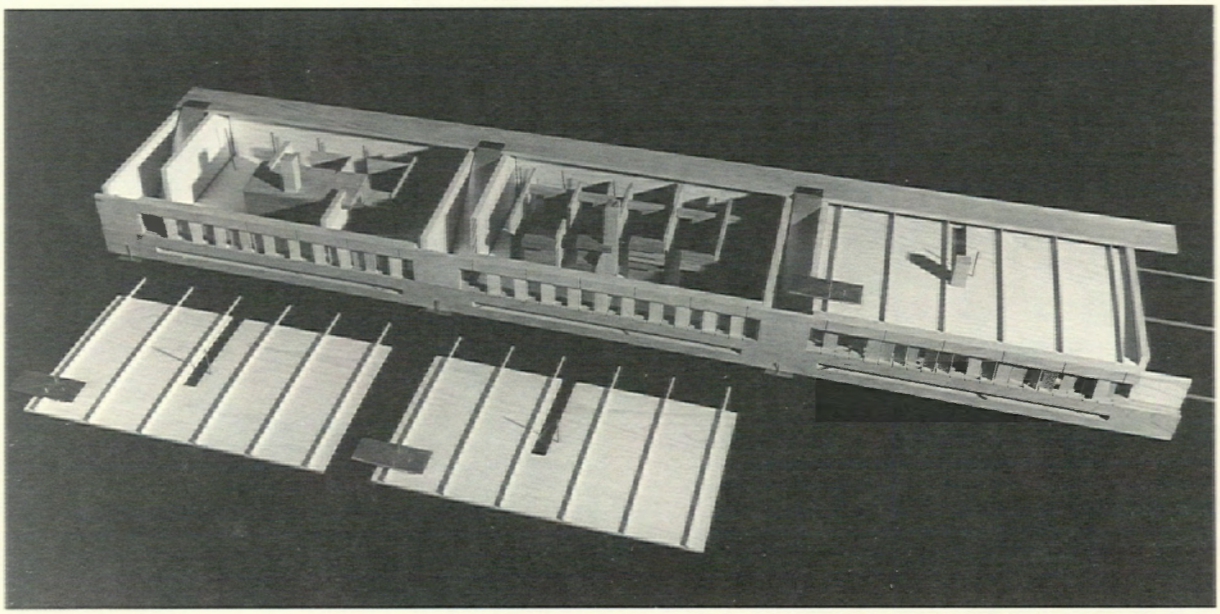
The program involved the creation of three dwelling types to house Ann Arbor migrants.:
1. One night: A group of five musicians
2. One semester: A scholar with a family of three
3. One year: A local independent filmmaker

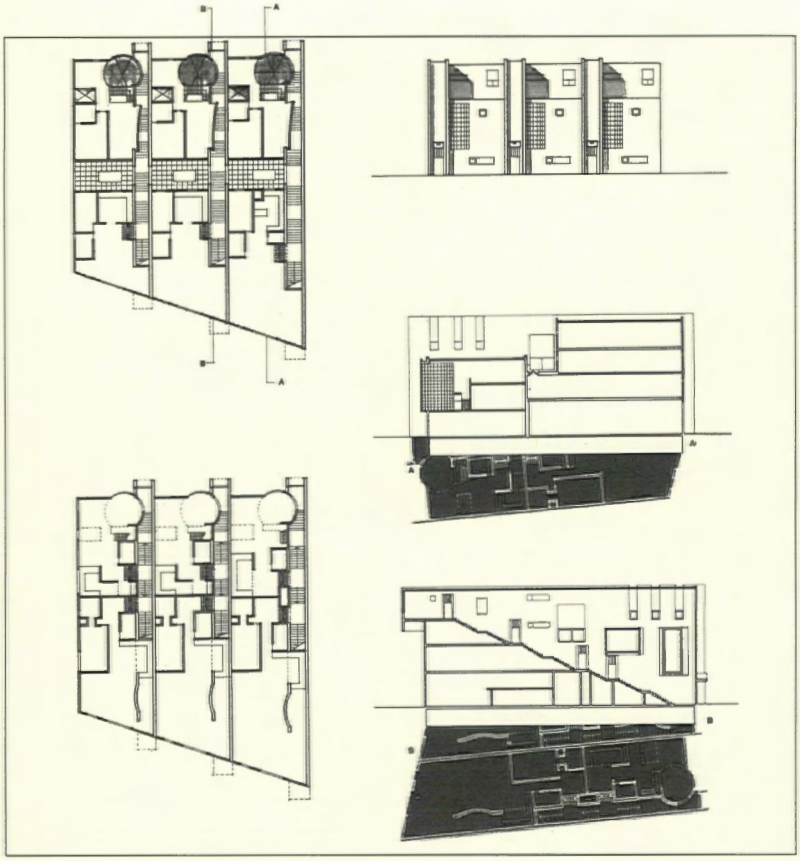
The dwelling itself is a series of repetitive shells linked through the roof, the path, and the entry. Adjustable window panels slide and rotate to allow variations in lighting and privacy. The facades are constantly changing, expressing the distinct occupants housed within. The model served not only as a representation, but as an exploration of materiality and connections. The shell serves as a "cabinet" which contains the delicate "objects" of its interior.

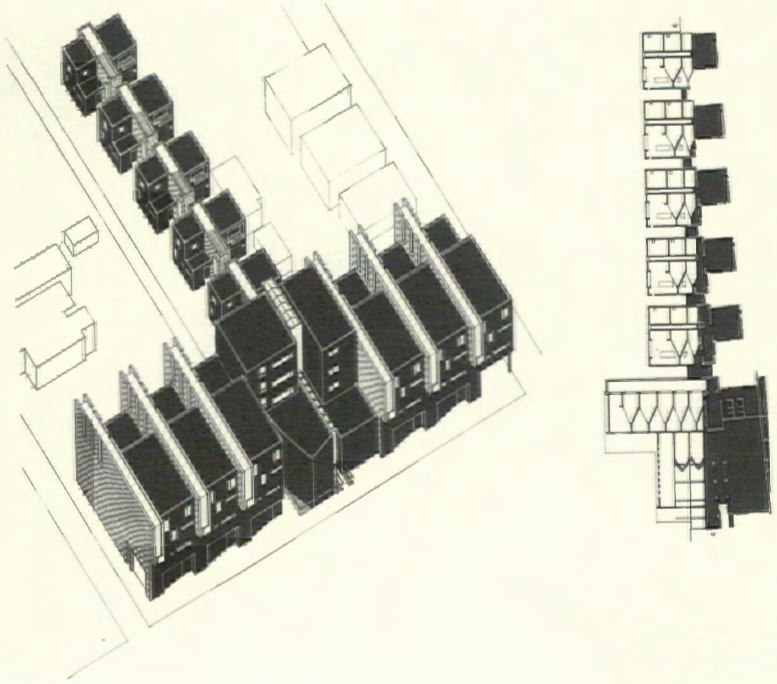












Junhee H. Lee
Year 6
Studio Critic:
Emmanuel-George Vakalo

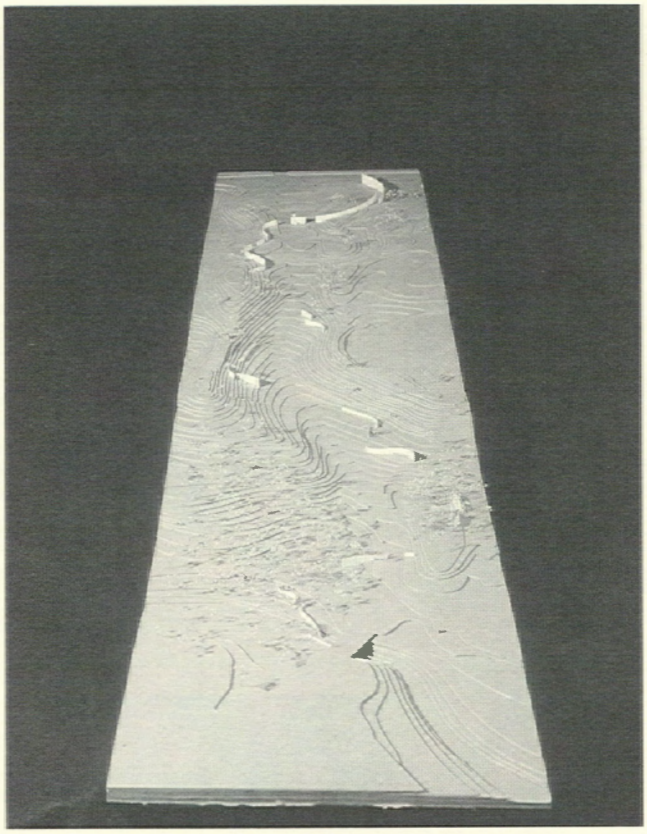
Housing on Toronto's Main Streets

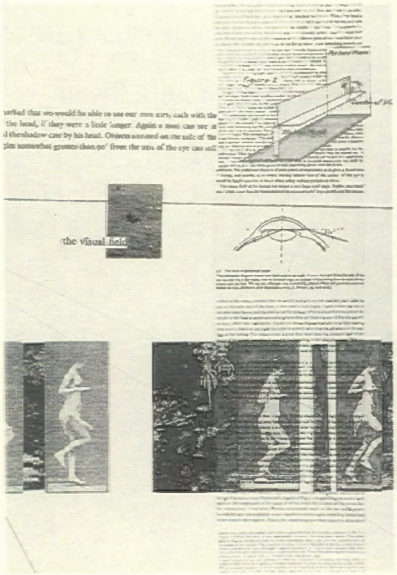
The design challenge was to develop an appropriate, mixed-use building prototype for Toronto's main streets. The prototype was to be designed so that the impacts of the required intensification of both use and form would minimally affect the adjacent single-family neighborhoods. Two site types (four specific sites) provide the context for testing the prototype.

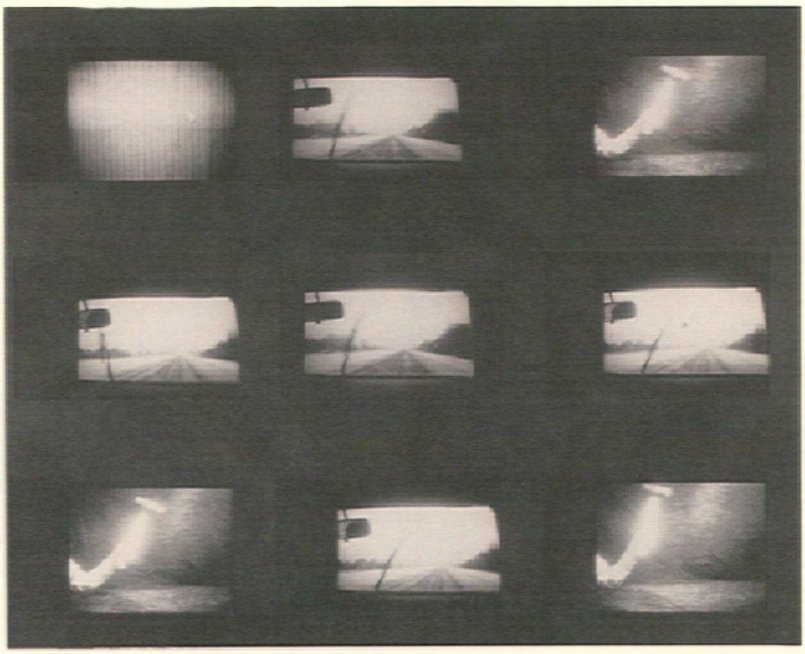
The form-making strategy of this solution is based on a reversal of the access relation between commercial establishments and housing that has traditionally characterized buildings fronting on Toronto's main streets or, for that matter, buildings fronting on major streets of many North American cities. Specifically, only commercial establishments are accessed from the street. This allows for the development of several different dwelling unit types and, more importantly, the placement of these units above commercial establishments in various combinations depending on the spatial conditions of each site.

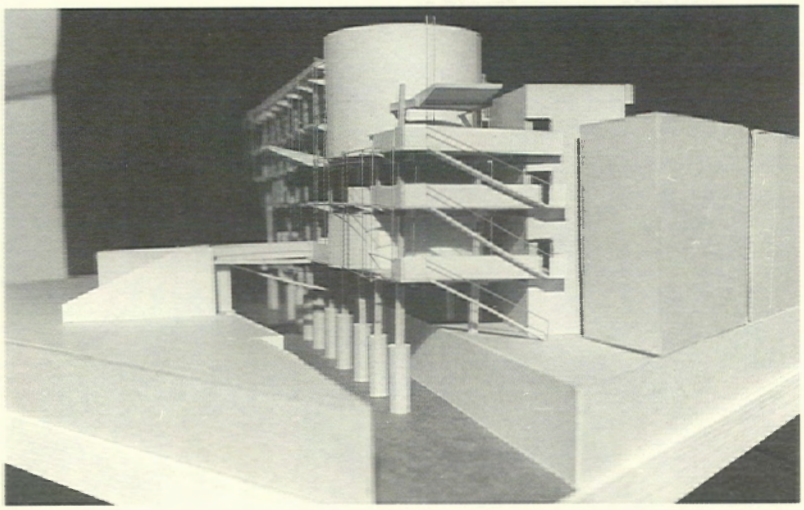
Laura King
Year 3
Studio Critic: Peter Osler

The studio challenged students to test their ways of working against two programs with opposing qualities of site, context, scale, materiality, and experience. The first project utilized the competition brief for a new gate at the Cranbrook Educational Community in Bloomfield Hills, Michigan. Each student developed a method of investigation that helped concretize an attitude toward the unique aspects of context - whether physical, historical, or ideological - inherent in each program.







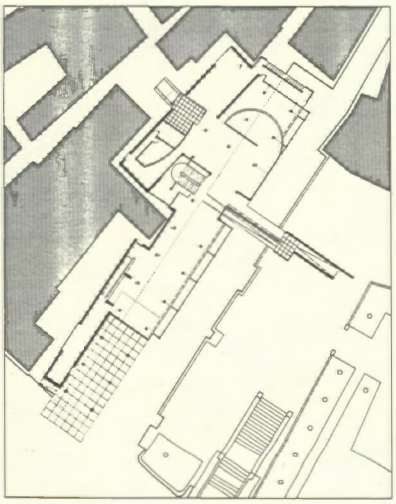


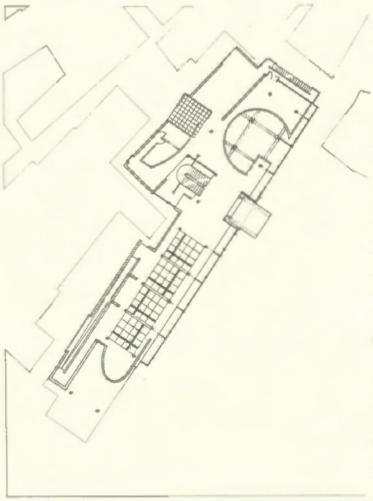
Brian D. Junge
Year 4
Studio Critic: Dean Almy III

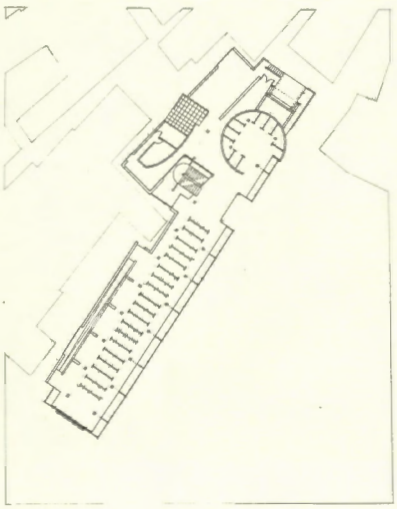
The Institute for the Visual Arts has as its primary purpose the advancement of knowledge of the history of Venice. It has facilities for the display of recent works of art, drama, painting, and architecture.

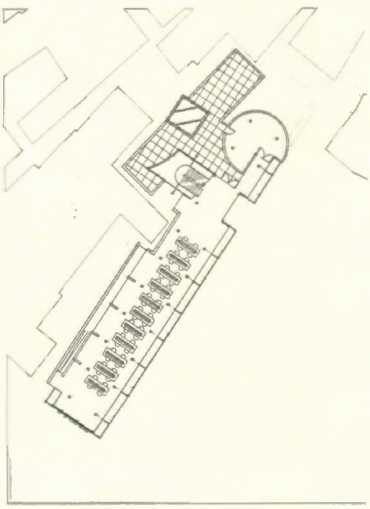
Hovering over the Grand Canal on stilts, the grid structure of glass encases four floors of program. The main stair threads through the height of the building while the ramp encourages a more leisurely ascension. The facade provides direct lighting to each level, while the projecting floor planes filter light into the gallery and stacks. Adjustable louvers provide diffuse light to the fourth floor reading room. A roof terrace provides a place to pause and view Venice.

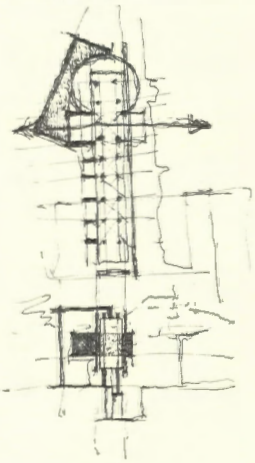
Constructed with the same attention to detail as the Academia Bridge, the building reflects the quality of Venetian shipbuilding masters complementing the presence of the bridge as a focal point in Venice.











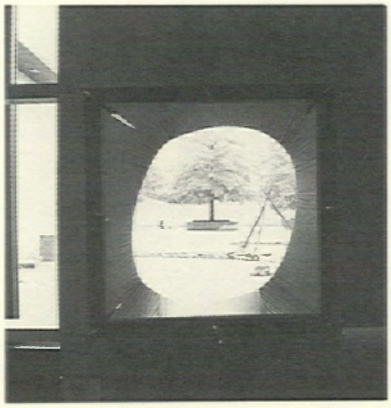
Architecture, Mass Production and Detail
Studio Critic: Laura Briggs

The students in this seminar were asked to design and build a prototype for a domestic scale "opening" set in a collectively built structure. The disruption of the wall became the key for individual research.

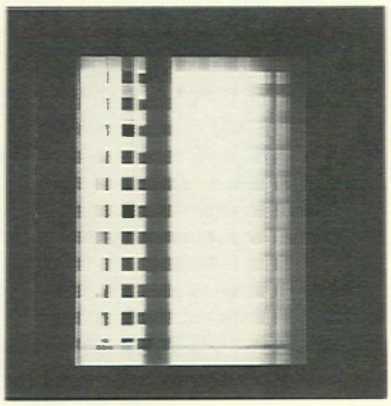
The work intertwined theoretical speculation with built speculation, by grounding a critical discourse of the construction industry in the psychological reality of making. The primary method involved empirical research on two scales. While building in the studio, we intermittently toured several assembly and fabricating factories. This approach brought to light certain conditions in which we work.

In the course of one project, individuals no longer fell trees, cut and plane lumber or draw nails. Rather buildings are assembled out of parts which are made at one location and then bartered for use at another. Assembly line prefabrication, in separating labor from work and in increasing the rate of reproduction, alters the nature of the original and therefore the quality of the artifact. The mechanical means of production, while having an emancipatory potential, also fragments and dehumanizes the situation of the worker and along with it the architect

The current tangle of the cycle of production and consumption has fostered other banalities. More than any change in the language of

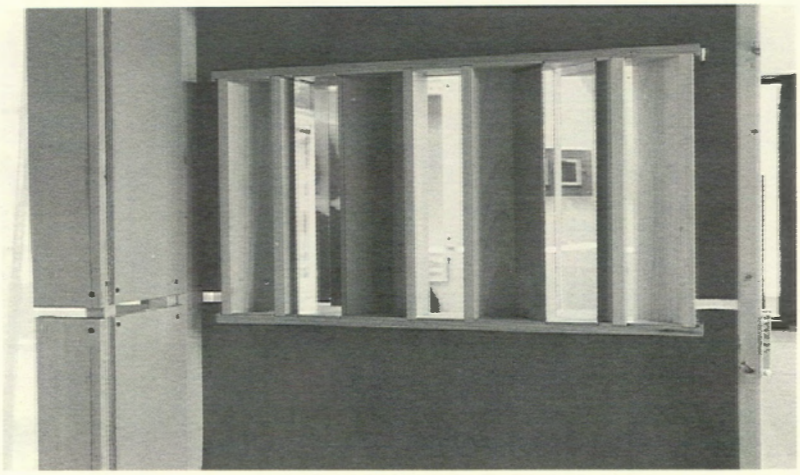


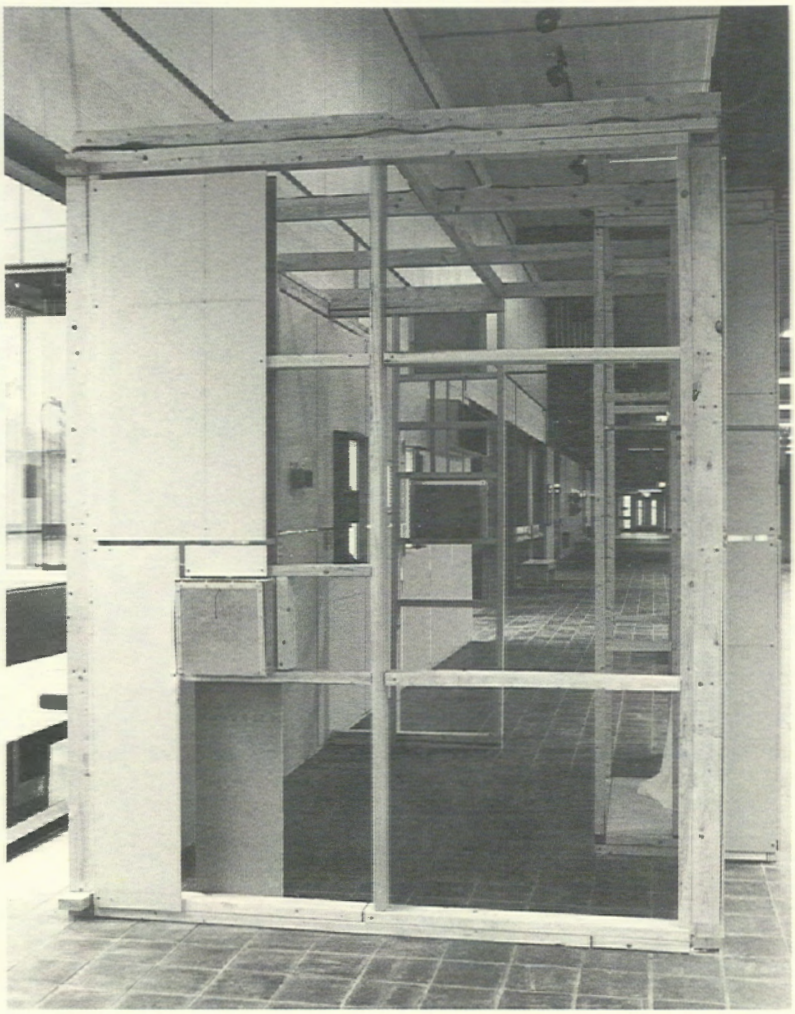
Susan Neumann



Nan Lake

Ross Kaplan

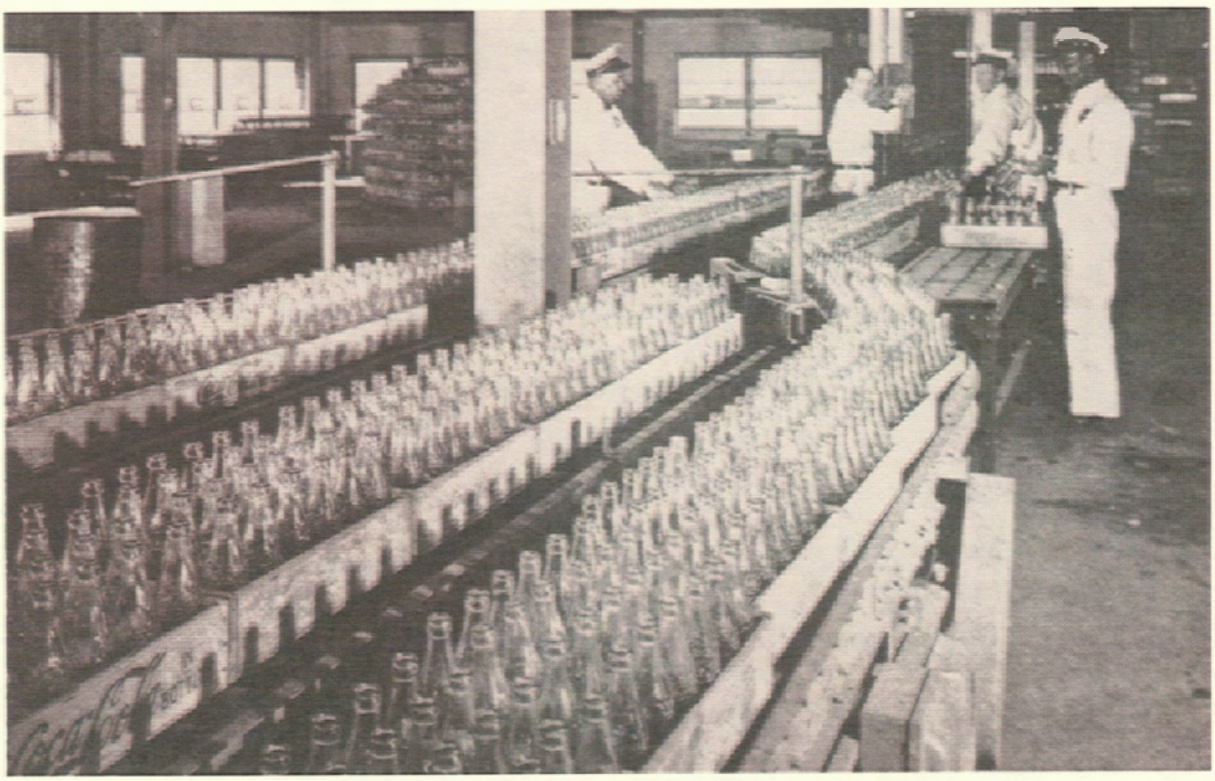




than any change in the language of architecture, the forces of political economy have altered the weight, means and appearance of building. Industry standards exist with a lack of precision and have a primitive means of differentiation. Current building techniques accept or even force a distance between the image and the actuality of the thing. The effects of the reproduction of this type of design and building process permeates across space without differentiation, forming a monolithic and placeless space between one highway and another.

As architects, we create individual works within the anxiety of increased production caused by mechanization and the organizational structure of capital. However, it may be possible to envision a reality that could redirect our productive capacity. Simple observations of phenomena become imbedded through the processes of making and subvert the fragmentation of production. The materials suggest other reasonings. The means of making and the observation of the maker both resides in the thing. The traces disclose potential societal relations.

In Eero Saarinen's introduction to the 1956 graphic standards, he speaks hopefully of " the dizzy speed and expanding horizons of architectural development and practice in our time." The hope for each project was to begin to expand those possibilities by pursuing everyday action even in the face of assumptions about the necessity of the "generic" in large scale production.



Colin Clipson is the Director of the Architecture and Planning Research Laboratories at the University of Michigan.

Silent, Robust, Predictable and Other Ways of Designing

Colin Clipson

There has long been a strong element of doubt lurking in the minds of students and practitioners of design about the divide which exists between how designers are taught to design in schools and how designers go about learning to design in practice. One is reminded of Peter Drucker's observations about the gap between the theories of medicine and the practice of surgery in the seventeenth century.[1] Academy-based doctors postulated theories and methods, relying very often on Latin as the preferred language of communication, while the practice of surgical intervention was carried out by barbers on the street with the varying degrees of skill of their trade. Though the line is not drawn as dramatically in design today, and there are certainly cross-overs between theory and practice, the substance of this divide has fueled research and speculation by theorists and practitioners (but mostly theorists) about how designing is and should be done.

Literature on design process and methods began to appear in profusion in the late 1950s and 1960s. Since that time, research activity and literature on designing has continued to grow subject to the influences of changing disciplines, emerging technologies, and funding sources. Design methodology researchers have speculated on the issues of growing complexity in the world of artifacts and services, and the inability of traditional design approaches to meet the needs of today's complex project demand and delivery. The strengths and weaknesses of various approaches, traditional and new, have been the subject of much of the research work of the past twenty years.[2,3] During this same time period, design education has remained faithful to the traditional 'design by drawing' core, with some fluctuation in emphasis in the subject matter around the core. By contrast, global, economic, technical, political and social conditions have changed dramatically, with deep and lasting implications for the practice of design in its various forms.

Changes in the ways of making things have accelerated the pace and problems of production over the past decade. Advances in materials technology, in concert with innovative fabrication and assembly processes have resulted in so-called 'lean production systems' that are forcing producers all over the world to take stock of how things are made. Developing and managing these production systems has focused attention not only on how things are made but on how they are designed. Therefore, practice of design in architecture, industrial design, manufacturing engineering, and visual communication are subject to extreme changes in demand, delivery and technology brought on by marketplace conditions; yet both design teachers and practitioners have been slow to react to these changes. Some observers of the situation have pointed to what they see as the increasing autonomy of theory, design, technology, and practice. Gutman focuses on the separation of architectural theories, teaching, and practice in his recent works, and emphasizes what he calls design theory grounded in a "rhetoric of alienation" that appears to relish the inability of architects to be more effective in dealing with contemporary building problems.[4]

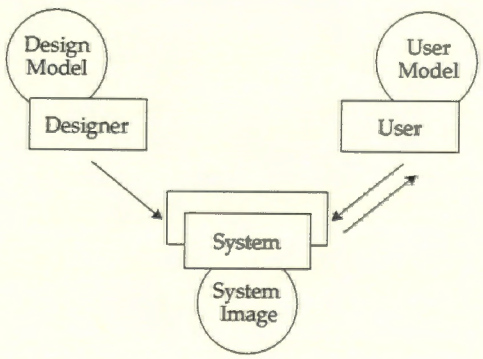
In most U.S. schools, the careful layering of design studios, technical courses, professional practice and design methods, with or without research activity supporting the educational program, almost guarantees that research, teaching and practice will continue in a semi-autonomous fashion. In the United States, studies supported by the Andrew Mellon Foundation more than ten years ago documented the lack of fit between architectural design education and the changing demands of practice and the market place.[5] According to these studies, students in schools of architecture received continuous and intensive training in form-making based on fictional programs which made little or no pretense at simulating the realities of practice and real world building, economic, and user problems. Design training was seen as a vehicle for the advancement of the teachers' architectural theories. "These involved the manipulation of built form based on selective 'high art' precedents. In all the examples, to a greater or lesser degree, this led to the independence of architectural form from building content."[6] In the same studies, practicing architects interviewed stated that their academic training had not prepared them sufficiently to deal with the diverse challenges of professional practice. Many of them had graduated without a working knowledge of the process of construction, the nature of materials, or the relationship between the building, its environment, and occupants. In other words, without an appreciation for a comprehensive design process and supportive methods.

In 1987 an evaluation study[7] of British design schools and their relationship to other disciplines and industry identified similar problems stemming from the autonomy of design culture. The report pointed to the effects of the particular "professionalization of designers" and the consequent tendency for them to put boundaries around their expertise, thus

inhibiting expertise from flowing to and from other parts of the development enterprise. One major criticism lay in the lack of integration of design training with economic, technical and social disciplines; the marginal role of engineering disciplines and knowledge of technologies being seen as a serious weakness.

Since 1970 there has been steady growth of doctoral programs in architecture in the United States, and as many as thirty schools claim to have research programs doing research on a wide range of topics including design methods, building and environmental technology, environment and behavior, history/theory, and management issues. However, these recent institutional developments in doctoral education and research have not had any significant impact on the prevailing methods of teaching design in professional programs. Furthermore, few schools of industrial or graphic design have research programs or offer doctoral degrees in design studies so that the crucial links between research, education, and practice in design are missing, resulting in seriously disfunctional professional activity.

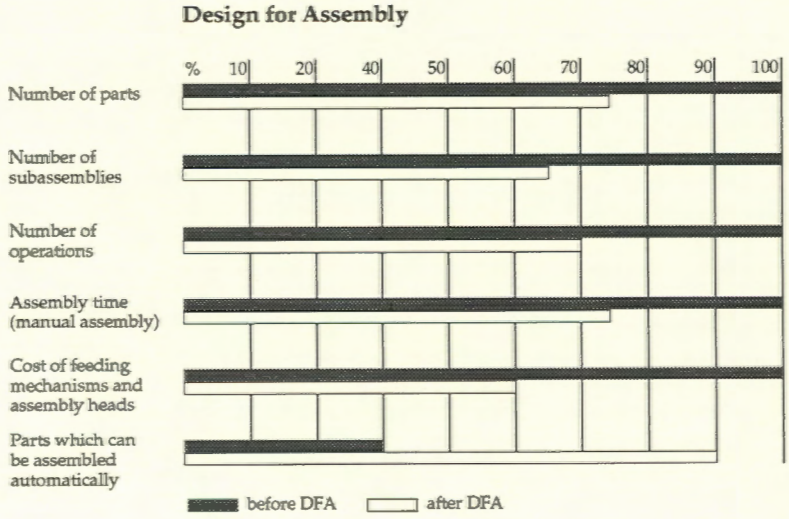
In recent years the study of the process of design has been receiving much attention from business and management schools, manufacturing engineering, computer science and cognitive science. The convergence of many issues – technical, economic, social -- has made the design process the center of attention in a number of different fields. The result is a fresh set of design research issues to be considered and a new group of researchers making an impact on the study of design methods and processes. Interest in designing has moved off the pages of design journals and on to the pages of the business press and even the popular press. Fortune[8], Business Week, the Harvard Business Review and other monthlies have begun to pick up on the results of research and practical industrial application that designing, in one or other of its forms, is key to product innovation, is critical in developing high levels of quality and performance, and will be a major force in differentiating products and services in highly competitive markets of the future.



Donald Norman[9], a cognitive scientist, sees design at the root of all decisions about making things work for and with people. "The designer must develop a conceptual model that is appropriate for the user, that captures the importance of the operation of the device, and that is understandable to the user... three different aspects of the model must be distinguished: the design model, the user's model, and the system image. The design model is the conceptualization that the designer has in mind, the user's model is what the user develops to explain the operation of the system. Ideally, the user's model and the design model are equivalent. However, the user and designer communicate only through the system itself: its physical appearance, its operation, the way it responds, and the manuals and instructions that accompany it. Thus the system image is critical: the designer must ensure that everything about the product is consistent with and exemplifies the operation of the proper conceptual model."[10]

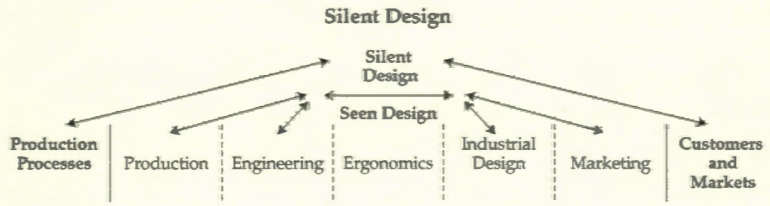
Current practices in co-determination, co-designing, co-visioning, serve to emphasize the importance of designing as a ubiquitous activity in which many actors may play significant roles and must be considered as sources of expert knowledge alongside professional designers. The research of Von Hippel[11] documents the role of users as the originators of many innovations from household products, to computers, to medical electronics. Building the user into the design process has received periodic attention in design research but has not received the research integration it deserves in educational design programs.

During the 1980s there was a massive international investment in developing processes and tools to improve quality, performance and cost of both artefacts and services. Initially inspired by such researchers as Deming and Juran and culminating in what has been called in Japan



and elsewhere, 'The Quality Movement', this investment is resulting in the "re-engineering" of all types of enterprises. Research on the control of manufacturing and process engineering identified design as the cause of over 60% of the quality defects in manufactured goods; a significant attribute whichever way you look at it. New production systems have been developed by researchers like Shigeo Shingo,[12] in collaboration with Japanese manufacturers, in which design processes play a strategic role. Multinational corporations like Philips of Eindhoven have radically "redesigned themselves" (in the words of Philips managing director of design Robert Blaiche) to develop a product cycle, and product quality that is as competitive as Sony or Sharp. Studies of Philips Design for Manufacturing and Assembly processes demonstrate the critical importance of using design processes as strategic tools for improving product quality and performance. Redesign at Philips has resulted in the reduction of some product cycles from 14-16 months in 1980 to 7 months in 1988. Much of the research behind these changes is of course proprietal and we can only speculate on the impact of these powerful forms of designing on other sectors, but it is safe to assume that such experience will have a profound effect on our view of design processes and methods.

The way in which industry understands and organizes design can have a profound impact on its performance and ability to innovate. Business researchers are beginning to see special roles for managers as essential "silent designers" who have far reaching responsibilities for choosing and integrating the various types of design and other resources into an effective product development process. Dumas and Mintzberg in "Managing the Form, Function and Fit of Design" (1991)[13] outline four models, each of which describes a design process with particular methods for integrating and phasing the design activity. In one of their models, entitled 'Cooperative Design,' they spell out the roles for engineering and industrial designers, but also for what they call 'silent designers.' Silent designing is the responsibility of those who deal with the function and fit of the whole process from inception of the idea to the



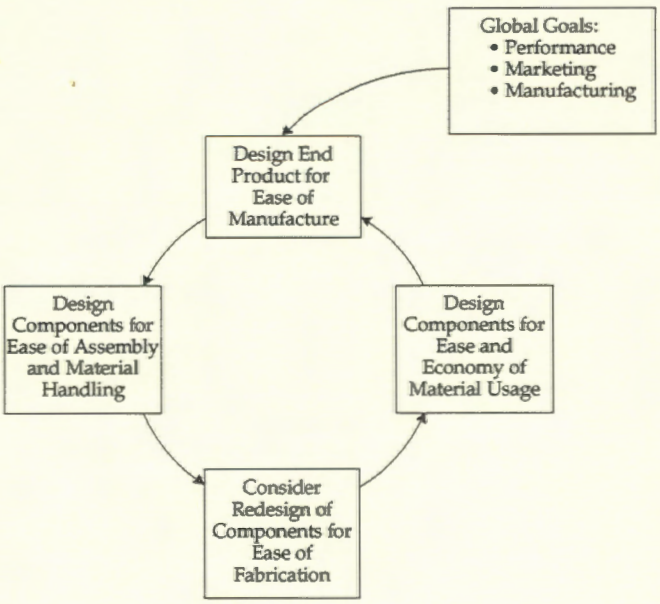
customer. In the view of Dumas and Mintzberg (and other researchers like Peter Gorb) 'silent designers' have a responsibility to establish a design reality which is as important to success of the enterprise as the work of architects, industrial designers and engineers. Thus managers practice 'silent design' to control the many decisions taken to integrate all the resources of a project (no matter how unaware the form designers may be of their impact). These researchers point to examples from automobiles to kitchen products, department stores, museums, and discotheques that are developed by 'silent design' as the 'umbrella' for the other form-making ways of designing.

While a great deal has been written about flexible and predictable manufacturing by design, **robust design**, or the development of adaptable product design families has received less attention, though it is as important from a design process and methods viewpoint. Rothwell and Gardiner (1985)[14] studied the performance of products and categorized them as **'robust'** and **'lean'** designs. Robust designs are those which result in products that can be continuously modified to accommodate market changes, and flexibility in use over a long product life; such products are described as having a great deal of "stretch." Lean designs on the other hand, are less adaptable, less able to accommodate new demands, and thus are less adaptable as subjects for incremental innovation and reuse. Aircraft, cars, machine tools and many other products may be categorized as having robust or lean designs, and this attribute will have an impact on their success in the marketplace. Robust design may be achieved by developing product design families which allow design variations of a product to be developed within an open ended modular concept, with flexible response to changing user requirements or sudden market shifts. Robust design through product families emphasizes the need to develop design attributes which afford adaptable features and assemblies while maintaining high performance and quality. Robust design has been much in evidence in volatile, highly competitive markets.

Research and practice in industry over the past decade suggest some potential benefits of new attention to the design process. According to research by Whitney[15] in studies of the manufacture of automobile components at General Motors, 70% of the cost is determined by the design stage. At Rolls Royce, design determines 80% of the final production costs of 2000 components. While managers used to think of 5% improvements in costs as being good, industry leaders have goals today for slashing costs by 30% to 50%, and design plays a crucial role whether by intention or default. New design tools like mechanical computer-aided engineering design systems (MCAE) permit design teams to simulate and test designs before they are built so that they can improve quality, reliability, and performance through design variations. The key to this approach is **Designing for Predictability**. In manufacturing terms, a well-designed product is a predictable product,

and one that presents no surprises or problems during fabrication, assembly, and use. MCAE systems reduce the number of design trials and prototypes by reducing the complexity of the design, reducing the number of parts, simplifying sub-assemblies, and simplifying types of fasteners and manual finishes. Backed by expert systems which evaluate the best solutions from a manufacturing process and cost viewpoint, the process of **Design for Predictability** will have a significant influence on all types of architectural and industrial design.

To look at these design tools in terms of architectural design methods is difficult at the present time because we do not know how many architects use computer aids for the simulation of conceptual design or use computer models to test the producibility of their designs and the environmental impacts of their building forms. It is more clear that computer-aided design and computer-aided engineering are being used widely to detail the lower level design functions and to detail structural and construction information. We can expect that this type of project automation will begin to have a real impact on the management of design-construction processes. Project delivery may be managed through an integrated project design database which could include cost estimating, scheduling, material selection and control, architectural programmer checks, reductions of change orders, and specification verifications.



Earlier, I noted that traditional schools of design—architecture, industrial design, visual communications, have settled for a traditional design core of 'design by drawing' and model making surrounded by a periphery of technical and other subjects. I am now suggesting that another design core is emerging, one which includes 'design by drawing,' but combines the traditional design approach with an array of production and management techniques, implemented by new types of designers.

Much of what is still being taught about design today in schools of architecture and industrial design may be due either to a lack of awareness of the new ways of making things, or to the still widely-held belief that designers practice a semi-autonomous art. Whatever the reason, there is a critical need to study and evaluate both traditional and new methods of designing in our field. Thirty years of research into design methods and processes has shown that while traditional design methods may be too simple to handle today's complex problems, designers are reluctant to adopt new methods until they are proven successful and user-friendly. Design researchers have yet to do much research that satisfies these last two requirements.

In his textbook on Design Methods (1970)[16] Chris Jones asked the following questions: What is designing? In what ways are modern design problems more complicated than traditional ones? What are the interpersonal obstacles to solving modern design problems? Why are new kinds of complexity outside the scope of traditional design process? These remain crucial questions about traditional design methods, as well as emerging new methods, and are still worthy of a great deal of study.

Notes

[1] Drucker, P.F., *The Practice of Management* (New York, 1954).

[2] Jones, J.C., *Design Methods* (London/New York, 1970).

[3] Cross, N. (ed.) *Developments in Design Methodology* (New York, 1984).

[4] Gutman, R., "Architectural Practice and Design Excellence," *Search of Design Excellence. A Vision 2000 Publication*, No. 1, AIA (Washington, DC, 1989).

[5] Andrew Mellon Foundation, *Architecture Education Study*, Consortium of East Coast Schools of Architecture, Vol. I, 1981.

[6] *Ibid.*

[7] CNAA: Council for National Academic Awards, *Managing Design*, Report #26, 1990.

[8] "Fortune," January 1991.

[9] Norman, D., *The Psychology of Everyday Things* (New York, 1988).

[10] *Ibid.*

[11] Von Hippel, E., *The Sources of Innovation* (New York, 1988).

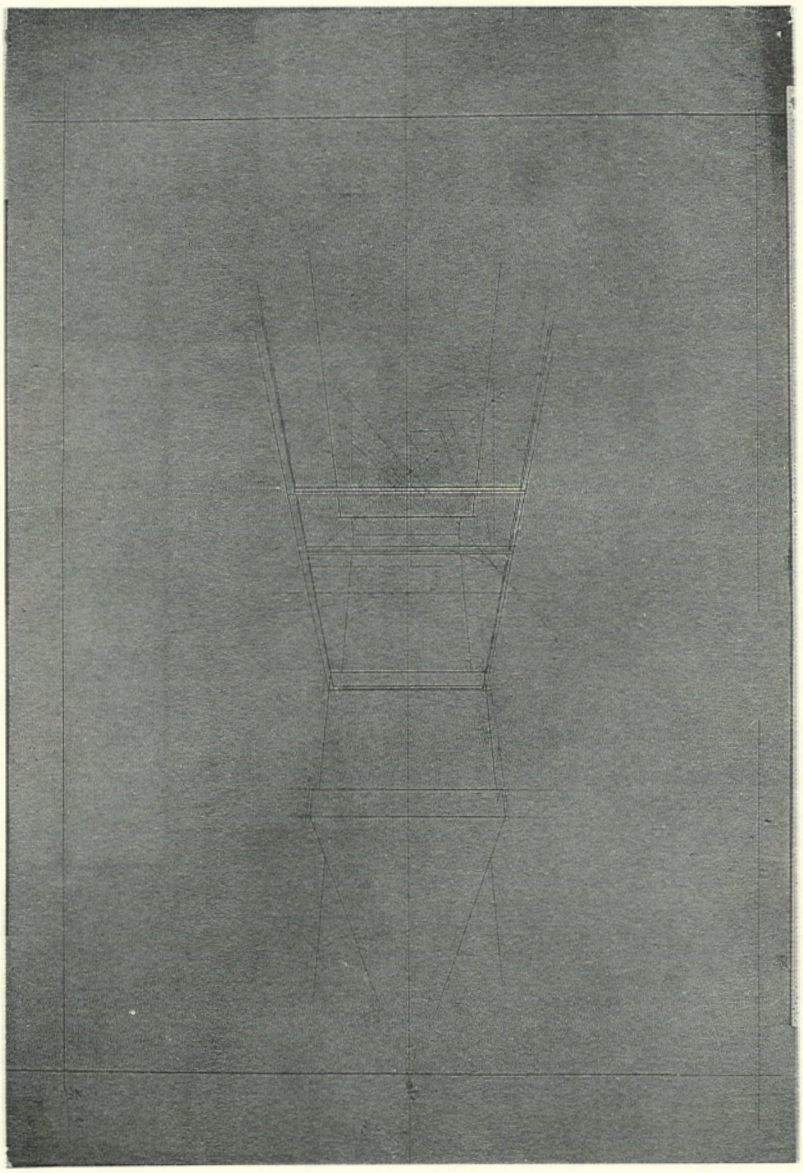
[12] Shingo, S., *A Study of the Toyota Production System* (Cambridge, 1989).

[13] Dumas, A., and H. Mintzberg, "Managing the Form Fit and Function of Design," *The Design Management Journal*, Vol. 2, No. 3, 1991.

[14] Rothwell, R., and P. Gardiner, "Innovation: A Study of the Problems and Benefits of Product Innovation," Design Council London, 1985.

[15] Whitney, D.E., "Manufacturing by Design," Harvard Business Review, July-August, 1988.

[16] Jones, J.C., *Design Methods* (London/New York, 1970).



Randall Ott was the Muschenheim Fellow at The University of Michigan in 1984-85 and is now an Assistant Professor at the University of Arkansas.

The Horizonal Symmetry of Mies van der Rohe

Randall Ott

Mies van der Rohe was fascinated with both symmetry and the horizon. The roles of these two elements in his work have received considerable analysis from scholars. But despite much attention, questions still linger about Mies' use of both symmetry and the horizon. Answers may lie in considering the two elements together as a "horizonal symmetry."[1]

Symmetry has long been a prominent topic in studies of Mies. Kenneth Frampton noted how Mies' evolution from "informal asymmetry to symmetrical monumentality" contributed to his popularity among America's corporate clientele.[2] His American buildings, with their "Palladian" bilateral symmetry, re-introduced the vertical axis into post-war architecture, initiating what Colin Rowe has called a "Neo-Classicism."[3] Yet questions of how—and more importantly why—axiality made this seemingly abrupt mid-career appearance in Mies' work are largely unanswered.

The horizon was no less fundamental to Mies' aesthetic than symmetry. Colin Rowe described Mies' buildings as "characterized by a neutral equality of section," and coined the term "sandwich volume" for the Miesian single-story space composed of vast horizontal roof and floor planes.[4] This volume's silhouette parallels the horizon, channeling the view outward horizontally in all directions towards that distant line. Dan Hoffman wrote that "the space between the roof and the plinth [in Mies' spaces] makes us realize that architecture can be interpreted as the inhabitation of the horizon line itself, that we exist within the bounds of the horizon."[5] Mies would have probably agreed; he underlined the following sentence in a copy of Oswald Spengler's *Decline of the West*: "In analogizing the horizon with the future, our age identifies itself with the 'third dimension' of experienced space."[6] Yet, despite these many observations, we still have less than a full understanding of why Mies chose the "sandwich volume" as his specific way of embracing the horizon, let alone understanding what eventually led him to interject the vertical axis of bilateral symmetry into these essentially horizontal spaces.

Fig. 1 Hubbe House. Magdeburg, Germany. 1935. (Unbuilt). Mies van der Rohe, Ludwig. Interior perspective. Pencil on tracing, 21 1/1 x 32 1/2". © Mies van der Rohe Archieve, The Museum of Modern Art, New York. Gift of Ludwig Mies van der Rohe. (Rotated 90 degrees).

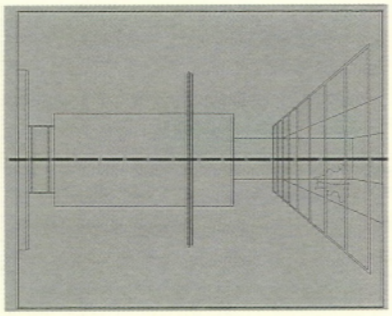


Fig. 2 Barcelona Pavilion. (Author's Drawing after Mies' original).

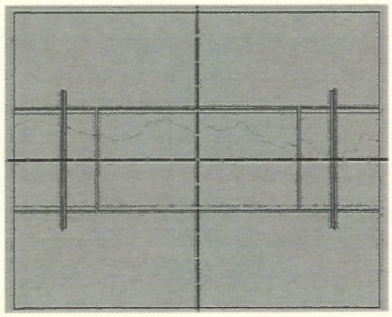


Fig. 3 Resor House. (Author's Drawing after Mies' original).

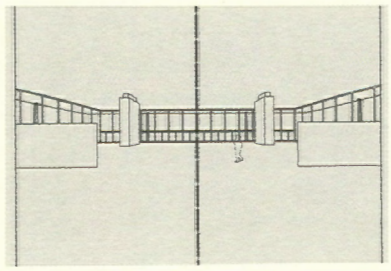


Fig. 4 New National Gallery. (Author's Drawing after Mies' original).

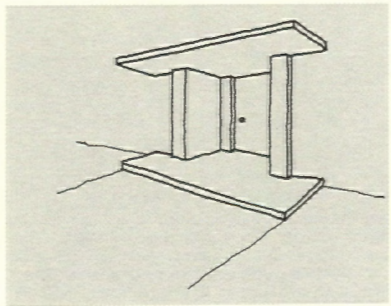


Fig. 6 Municipal Housing Developement. (Author's Drawing after Mies' original).

Visualizing Horizonal Symmetry

Turned on its side, a Mies drawing reveals the depth of the linkage of the horizon and symmetry in his work *(Fig. 1)*. In this image, Mies mirrored up and down, rather than left and right, creating "horizonal symmetry." The lone difference between top and bottom in this sketch is the slightly enlarged dimension of the kick plate on the glass wall. In place of the more familiar bilateral axis, Mies made the horizon line a horizontal axis controlling all the elements of his composition. Isolated glimpses of the existence of this peculiar symmetry have started to enter Miesian studies, but the initiation of this axis, its chronological development, and its interaction with the vertical axis remain unexplored. Such an exploration sheds light upon many remaining questions about Mies' attitude toward both symmetry and the horizon.

Previously, Mies' use of symmetry helped scholars divide his mature career into two distinct phases. Mies' German work was characterized by "an asymmetrical dynamic," while his post-war American period showed "a more formal, symmetrical plan that remains in repose."[7] But recognition of how Mies used a horizontal axis forces a revision of this analysis. Mies preferred the horizontal axis while in Germany and the vertical axis while in America. Instead of changing from asymmetry to symmetry, he rotated from an unusual axis to a more traditional one. And it was at precisely the time of his emigration in 1938 that he worked with both these symmetries simultaneously *(Figs. 2-4)*.

Beyond tracking this chronological reciprocity of axes in Mies' work, it is important to explore if Mies' use of a horizontal axis alters his relationship to Modernism in general and the Dutch de Stijl movement in particular. Critics have often noted the resemblance between Mies' and de Stijl's planar compositions.[8] Horizonal symmetry has a particular relevance in assessing this relationship because critics usually cite the pronounced horizontality of Mies' sandwich volumes as the most noteworthy difference between Mies and de Stijl.[9] Comparing Mies and de Stijl within the context of horizonal symmetry can help probe the scope and meaning of this difference.

Horizontal Versus Horizonal

Mies' initial efforts at horizonal symmetry were tentative. Twice, during his early avant-garde phase, Mies made drawings that suggest a horizontal axis. The first instance occurs on a letter where he made two sketches for his 1922 Concrete Office Building *(Fig. 5)*. Beneath a sketch showing the composition from a pedestrian's viewpoint, Mies redrew the same forms, raising the horizon line to the building's midpoint and framing both the ground and sky with identical borderlines. The

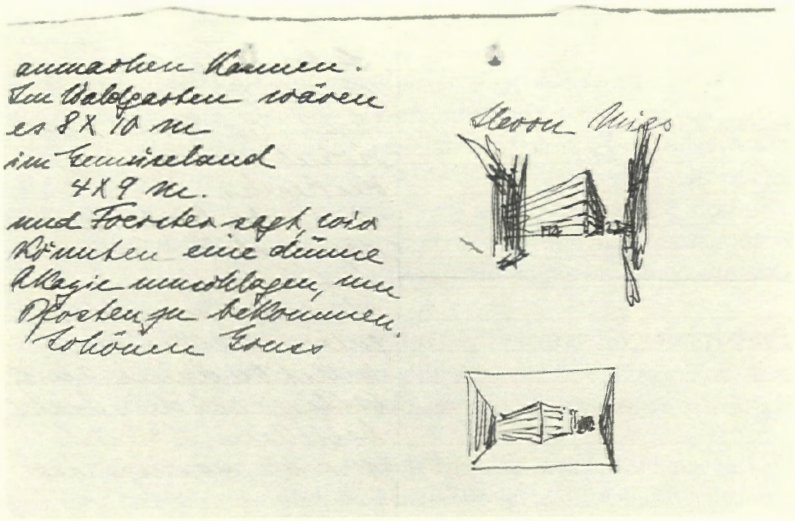


Fig. 5 Concrete Office Buiilding. 1932. (Unbuilt).
Mies van der Rohe, Ludwig. Letter with two perspectives. Ink on lined note paper, 5 1/2 x 8 3/4". © Mies van der Rohe Archive, The Museum of Modern Art, New York. Gift of Ludwig Mies van der Rohe.

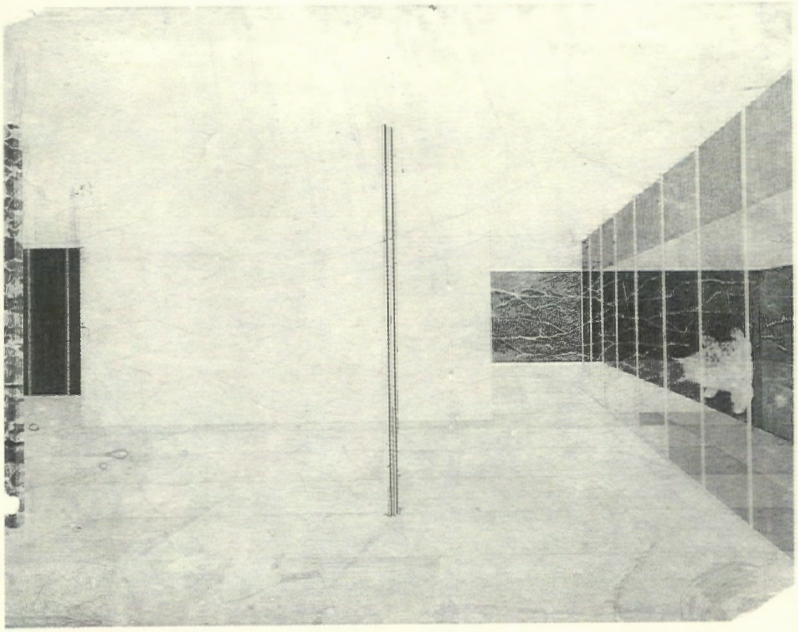


Fig. 7 German Pavilion at International Exposition, Barcelona, Spain. 1928-29.
Mies van der Rohe, Ludwig. Interior perspective. Pencil, conte crayon on cream colored board, 39 x 51 1/4". © Mies van der Rohe Archive, The Museum of Modern Art, New York. Gift of Ludwig Mies van der Rohe.

resulting image, if turned over, remains unchanged. A second instance occurs in an entryway sketch of his 1926 Municipal Housing Development *(Fig. 6)*.[10] There Mies paired horizontal slabs of identical shape and equal yet opposite displacement from the horizon line—his first attempt at a sandwich volume. Only the doorknob, necessarily located more than halfway down the door, deviated from this sketch's horizontal axis.

Both these impressions of symmetry are nothing more than artifacts of the drawings. They could be called examples of *horizontal* symmetry, but not *horizonal* symmetry. The perceptual difference is considerable. In both drawings, the horizontal axis would not coincide with a standing observer's actual optical plane when physically walking on site. At the Concrete Office Building, the viewer would have to levitate many stories above the street due to Mies' unrealistically high horizon; at the housing entryway, the viewer would have to kneel because the centerline's height is established by a seven foot tall door. The symmetrical pattern in these early projects remains a non-experiential formalism rather than a perceptual reality.

The 1929 Barcelona Pavilion and 1930 Tugendhat House made the symmetry perceivable. Mies' drafted interior perspectives of both these projects show a space twice the height of a viewer's optical plane *(Figs. 7 & 8)*. *Horizonal* symmetry appeared. In the

Barcelona perspective Mies did not actually draw the horizon line, but he did physically marked the horizon. As if to underscore its connection with our eye, he used a pedestal to raise a sculpture's head to this line. Mies made the Tugendhat living level 3.2 meters high (10'-5"), and the Pavilion 3.1 meters (10'-2").[12] Inverted and actual photographs demonstrate that, with ethese dimensions, interchangability of up and down becomes an experiential reality *(Fig. 9)*.

Paired photographs make this symmetry easy to visualize. In the actual space, however, the effect is difficult to consciously detect. Rudolf Arnheim disecussed the hidden quality of horizontal axes *(Fig. 10)*:

. . . compare the look of a symmetrical object, a violin, when it is placed first vertically, then horizontally. We know from daily experience that symmetry is more readily observed in the upright position than in the reclining one. The vertical axis conforms to the dominant axis of space, and all elements of the symmetrical pattern are seen in the proper relation. But when the instrument is lying on its side, we may respond at first to the approximate upright symmetry suggested by the two lateral concavities at the waist. The principal symmetry is inferred rather than truly perceived. . .[13]

The effects of a horizontal axis are probably felt only subliminally. The lack of an immediate, conscious perception may explain why this unusual axis has been rarely attempted in the history of architecture, much less discussed.

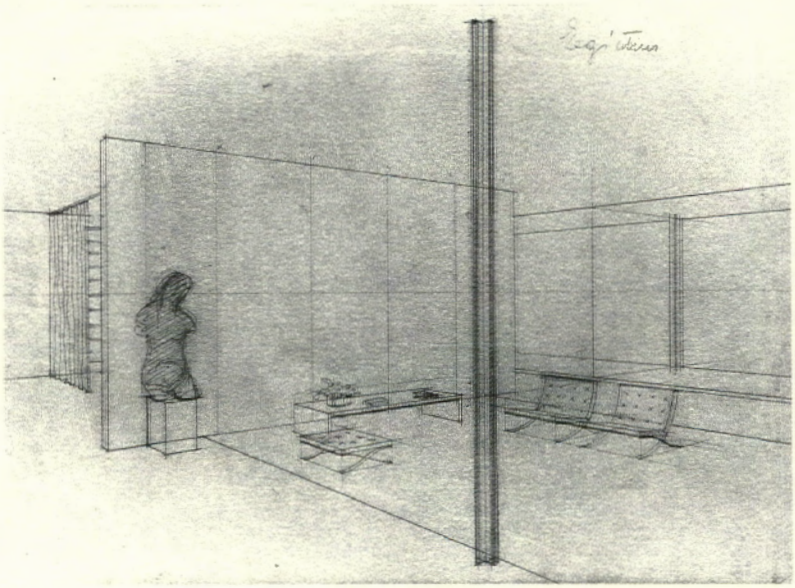


Fig. 8 Tugendhat House. Brno Czechoslovakia. 1928-30. Mies van der Rohe, Ludwig. Interior Perspective of living room. Pencil on tracing paper, 13 x 8 3/8". © Mies van der Rohe Archive, The Museum of Modern Art, New York. Gift of Ludwig Mies van der Rohe.

But Mies was not totally alone. Other modern architects occasionally experimented with a horizontal axis. Karsten Harries noted that International Style practitioners made facades displaying "a look of invertibility".[14] Many of Le Corbusier's early elevations, for example, could be flipped over. At his *Maisons Loucher* proposal, Le Corbusier reinforced the horizontal centerline through the ribbon fenestration and the strip panels at the top and bottom of the facade *(Fig. 11)*.[15] But such facades create only a billboard-like, exterior sensation. When held aloft, the symmetrical pattern lacks any relationship with the height of a walking person's optical plane. Thus, a viewer's motion can have only a detrimental impact. These invertible facades are best appreciated statically and from a great distance, where the eye's relatively low position and perspectival distortion will least disrupt the flat pattern. Again, the difference is that of a graphic *horizontal* symmetry versus a true *horizonal* symmetry. By linking his axis with the viewer's optical plane, Mies evokes a more spatially dynamic and perceptually interactive sense of visual inversion. Mies cast his symmetry into three-dimensions. As a viewer walks within Mies' spaces, elements foreshorten symmetrically while receding. Instead of two-dimensional *tableaux vivants*, Mies created volumes in which the viewer's moving vantage point constantly regenerates the symmetry with every glance. Inversion envelops the viewer from all sides.

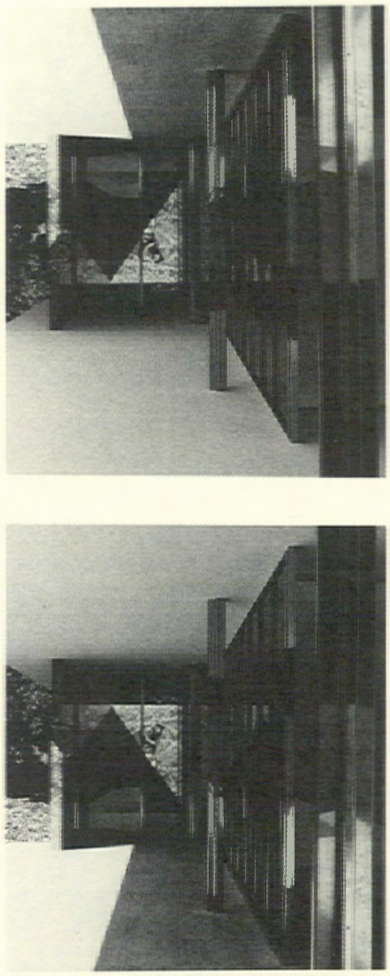


Fig. 9 Barcelona Pavilion. (Top image mirrored from bottom image, Photo: Paul F. Carr).

The Miesian Planar Matrix

Mies accepted extreme compositional restrictions to achieve this sense of envelopment. True horizonal symmetry proved incredibly constraining—much more so than traditional bilateral symmetry. When any axis organizes a space, all movements no longer have equal value. With bilateral symmetry, movements forward, upward, or downward along an axis maintain the symmetrical pattern, but movements to either side disrupt it. In contrast with horizonal symmetry, movements forward or to the sides maintain the pattern, but vertical movement cannot. Both symmetries reward some motions at the expense of others. Yet horizonal symmetry is ultimately more constraining since, if the pattern is to be perceptually maintained, it induces solely level motion. Horizontal activity is the only option, and this causes horizonality to dominate the composition, as it did inside Mies' buildings. Horizonal symmetry may lie at the root of what Adrian Gale has called Mies' "exclusive concern for horizontal space."[16] Jose Quetglas also touched upon Mies' horizontal obsession when he wrote:

In all Mies' architecture the first trace on the paper is horizontal. The formal definition of space is produced always and only by horizontal planes. Vertical planes come only later, once the scene has been set.[17]

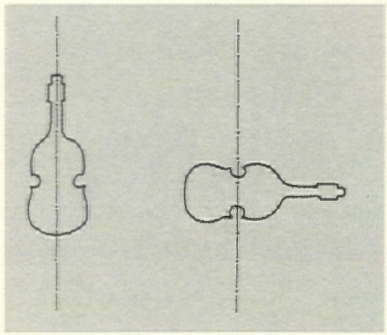


Fig. 10 (Author's Drawing after Arnheim's original).

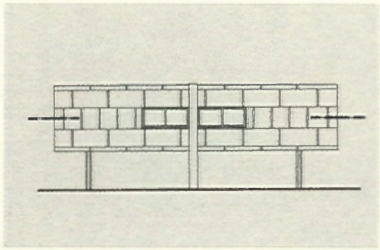


Fig. 11 Maisons Loucher. (Author's Drawing after Le Corbusier's original).

The distinctive planar matrices of Barcelona and Tugendhat clearly illustrate these results of horizonal symmetry's restrictions.

Inside both the Pavilion and the Tugendhat living space, Mies limited himself to just two horizontal planes, each expansive and unbroken. Maintaining a constant height for an observer's optical plane required a continuous level floor upon which the observer could stand. Reflecting the floor across the axis required an equally continuous flat ceiling above. Mies allowed no other horizontals. It was not that more could not have been reflected--certainly a ceiling recess, for example, could have been matched with a depression in the floor. But an observer who ventured down into the depression would stray off axis. Interior staircases likewise would lead an eye from the centerline, and Mies consequently suppressed them.[18] On the Tugendhat living level, Mies tucked the stair out of sight. At Barcelona, steps occurred only at the podium's perimeter. These restrictions made the "sandwich volume" into Mies' signature.

Fig. 12 Kolbe sculpture, Barcelona Pavilion. (Top image mirrored from bottom image, Photo: Paul F. Carr).

Unbroken expanses of floor and ceiling were difficult to achieve with a real site and real structure. For the continuous floor plane, the problem was topographic. "Mies always remained embarrassed by sites that were not flat . . . ," remarked Adrian Gale.[19] If the land sloped, the sandwich volume could only be maintained by ignoring the grade. Tugendhat, a two-story villa lodged on a hill, contains no sectional modulation. Level ground, as at Barcelona, made the sandwich volume seem less forced. All that was necessary, then, was a podium to define the limits of the zone of horizonal symmetry. For the continuous ceiling plane, the problem was structure. If floors and ceilings were to be visually equated, no supporting beams could be exposed on the ceiling's inner surface without prompting a hopeless desire to somehow recreate these beams' appearance on the floor. Fortunately, the domestic scale at Barcelona and Tugendhat meant that each building's horizontal support structure was shallow and could be submerged within the depth of the roof slab, leaving the ceiling as continuous as the floor. Later, though, the beamless ceiling would become a more difficult effect for Mies to achieve in his larger American structures.[20]

Obviously horizonal symmetry has the greatest intensity where the coverage of both horizontal planes is identical. At Barcelona, the fit was still loose, and only the court with the Kolbe sculpture came close. There, the roof and floor edges stop at exactly the same position. A recessed pool calibrates across the axis with the unroofed area of the court, formally and poetically linking sky and water *(Fig. 12)*. The horizontals achieve better overall registration in the slightly later Tugendhat House. The floor and ceiling of its main level cover largely the same area throughout. In addition, Mies more closely matched the surface

articulation of the two planes at Tugendhat. Both buildings have a seamless white plaster ceiling, and Tugendhat's white sheet linoleum floor provides a closer twin than does Barcelona's travertine podium.

In the vertical orientation, Mies' pursuit of horizonal symmetry necessitated rules which, while different from those governing the horizontals, were no less restrictive. Again Barcelona and Tugendhat show the results. After Mies had set the broad composition with the floor and ceiling, his verticals had to fit within a sharply reduced zone. His upright planes might have unlimited length, but their constricted height did not allow them to match the scale of the two horizontals. They became subordinate. Continuity was as crucial for the verticals as for the horizontals, but was proscribed by different specifics. If Mies placed his partitions on the floor, horizonal symmetry necessitated that they also touch the ceiling. Any low dividers, dropped fascias, and other fragmentary vertical surfaces probably could not be easily mirrored across the axis. Planes of glazing also rose full-height and lacked horizontal mullions that might create unanswered lines. Doors, too, went slab to slab. Mrs. Tugendhat's recounting of Mies' reaction when challenged about his proposed full-height doors shows the depth of his commitment to horizonal symmetry:

When . . . my husband raised an objection about the fact that all of the doors were to extend clear to the ceiling, having been convinced by so-called experts that such doors would easily warp, Mies retorted: 'Then I won't build.' Here an essential principle of the structure had been put into question, and in such a case he wouldn't budge.[21]

The columns at Barcelona and Tugendhat provide yet another example of continuity in the verticals. Of constant cross-section, they were simply sheared off at the ends. Kenneth Frampton wrote:

. . . the fact that the chromium columns lack any kind of conceptual fixity in relation to the floor and the ceiling (there is not even a vestigial capital or base) establishes a strange state of equivalence between those two parallel layers, despite their superficial differences.[22]

In the same way, Mies' handling of every vertical element at Barcelona and Tugendhat emphasized the mirroring of the floor and ceiling.

Such were the specific rules of the different orientations comprising the Miesian planar matrix. His desire to make horizonal symmetry a perceptual reality meant that his spaces had to consist of a broad pair of horizontals which abruptly contained and constrained an extruded field of verticals.

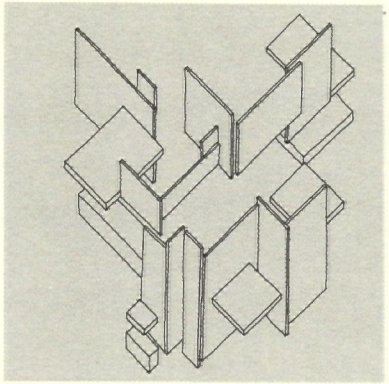


Fig. 13 Counter Construction. 1923. (Author's Drawing after Theo van Doesberg's original).

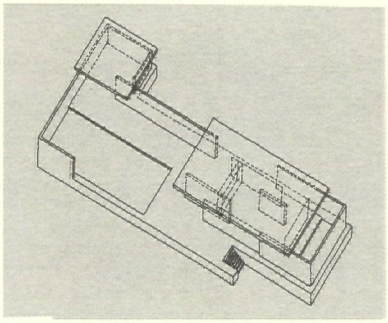


Fig. 14 Barcelona Pavilion. (Author's Drawing).

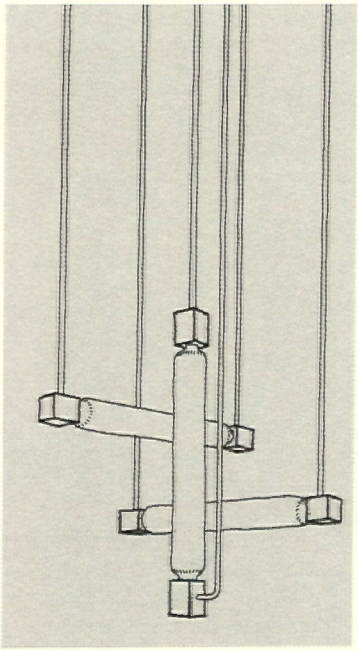


Fig. 15 Rietveld Lamp. (Author's Drawing).

Mies and de Stijl: Axiality and Isotropism

Mies' distinctive planar matrix has been exhaustively referenced to the compositions of the Dutch de Stijl Movement. But Mies firmly denied any influence from de Stijl.[23] If we compare an axonometric of Barcelona to one by Theo van Doesberg, the founder of de Stijl, the resemblances are so apparent as to make Mies' denial seem unpersuasive *(Figs. 13 & 14)*. Mies had reasons, though, to claim a distance between himself and de Stijl. In 1924, as Mies began to explore horizonal symmetry, van Doesberg wrote:

. . . the new architecture has eliminated both monotonous repetition and the stiff equality of two halves--the mirror image, symmetry . . . In place of symmetry the new architecture offers a balanced relationship of unequal parts . . . *The equality of these parts rests on the balance of their dissimilarity, not their similarity. Furthermore, the new architecture has rendered front, back, right, left, top, and bottom, factors of equal value.*[24]

Van Doesberg rejected not only symmetry, but any distinction of horizontal and vertical. Mies wanted up and down to be the same, but horizonal symmetry meant they could never be equivalent to front and back, left and right. The axonometrics show that Mies horizontally squeezed his space while van Doesberg allowed his to isotropically expand. No matter how strongly an isolated Miesian plane resembles one from de Stijl, in multiple deployments the planes followed dissimilar sensibilities. These differing spatial emphases appear in even the smallest of details. For example, the de Stijl architect Gerrit Rietveld designed a light that equally stressed all three Cartesian coordinates *(Fig. 15)*, while Mies designed a light for the Tugendhats that placed a cylindrical globe on his horizontal axis *(Fig. 16)*.

The different drawing processes of Mies and de Stijl may explain some of this contrast in their spaces. While the Barcelona axonometric shows Mies compressing his space horizontally, it cannot show why. Axonometry always silhouettes a building against a continuous field of ground or sky, banishing the horizon. Without this axis line, horizonal symmetry evaporates. While de Stijl favored axonometrics, these projections "were never regarded by Mies as adequate to represent his architecture."[25] Mies created a fundamentally new spatial matrix by viewing his planes through the window of perspective drawing, which always begins with the horizon line. Had Mies and the de Stijl architects drawn in similar ways, their differing attitudes toward the horizontal and vertical might never have evolved.

Miesian horizonal symmetry and de Stijl isotropism may produce quite similar spatial effects. Neither emphasizes the gravitational uniqueness of the downward spatial vector, and both discount the importance of weight. Van Doesberg wrote that his architecture:

. . . achieves a more or less floating effect (in so far as this is possible from the constructional standpoint--this is a problem for the engineer!) which operates, as it were, in opposition to natural gravity.[26]

Similarly, Mies wrote:

We took all the unnecessary weight out of the buildings to make them as light as possible. It is often thought that heaviness is synonymous with strength. In my opinion it is just the opposite.[27]

Fig. 17 Schroeder House. (Photo: Brian Zybura).

Yet near as these two intents appear, a subtle yet deeply experiential distinction exists: Mies' weightlessness has an ambiguity which de Stijl's lacks. De Stijl buildings create an omni-directional, deep-space environment having none of the horizon's effect of orientation *(Fig. 17)*. Because the vertical and horizontal grains seem identical in de Stijl spaces, the more definitive, vertically-registered distinction of a gravitational "weighting" of up versus down is not even anticipated, let alone missed. In contrast, when we enter the Barcelona Pavilion the space directs us only horizontally, as if it were necessary to follow the path of least gravitational resistance. By discriminating between horizontality and verticality, Mies alludes to physicality and weight. Yet having taking this penultimate step towards a visually weighted space, he then confounds our expectations by invoking horizonal symmetry, making up and down indistinguishable. The peculiar "weightlessness and poise"[28] within Mies' spaces results from his balancing between a weighted traditional space and the orientationless modern space of de Stijl.

This distinction between Mies and de Stijl is best illustrated by Mies' cruciform columns at Barcelona and Tugendhat. These vertically oriented shafts resemble traditional point supports, yet lack entasis or any other downward expression of force. They oscillate between readings of tension and compression *(Figs. 8 & 9)*. The floor and ceiling's equivalence deepens this ambiguity. Given that visual forces emanate both upward and downward from the axis of horizonal symmetry, we could easily read the floor and ceiling as repelling one another like similar magnetic poles. Rather than compressed pegs, the columns become tense straps lashing the two together. The thinness of the supports only encourages the mixed reading. Horizonal symmetry's subliminal quality adds inexplicability, further deepening the ambiguity of this weightless display. We enter Mies' spaces anticipating a visual expression of gravity and upon finding none, cannot readily explain why. De Stijl, with its isotropic denial of horizontality versus verticality allowing its columnar-like strips to move in all orientations, cannot simultaneously imply, yet deny, gravity in this way.

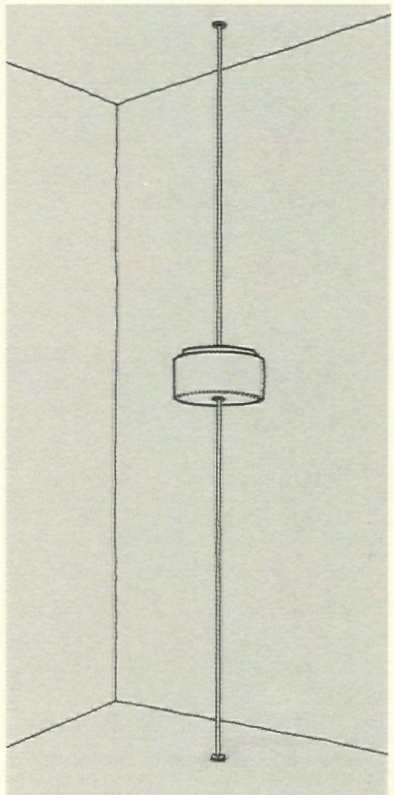


Fig. 16 Tugendhat Lamp. (Author's Drawing after Mies' original).

There is a final point to explore in this juxtaposition of Mies and de Stijl: how the human body relates to their spaces. Again this is an issue that

suggests both linkages and distinctions between these two spatial aesthetics. Obviously, an observer's physical form cannot become visually "weightless" as either de Stijl or Miesian spaces can. In a de Stijl space, the downward pull of the human body's weight is fully alienated from the surrounding isotropism. The observer's foot pressure on the floor seems anomalous. For Mies, too, the observer's body functions only as a foil within his chosen system. In his drawings, the body often provides the sole indication of up versus down. The anthropomorphic sculptures Mies placed in Barcelona and Tugendhat highlight the fact that the human body resists horizontal inversion *(Figs. 8 & 12)*. This contrasts with the empathic relationship between a bilaterally symmetrical space and the human body's own reflection of left and right. Mrs. Tugendhat sensed the conspicuous otherness of human figures inside her Miesian home:

. . . just as one sees each flower in this room in quite an uncommon way, and every piece of art seems more expressive (for example, a piece of sculpture standing in front of the onyx wall), so too a person appears, both to himself and others, to be more clearly set off from his surroundings.[29]

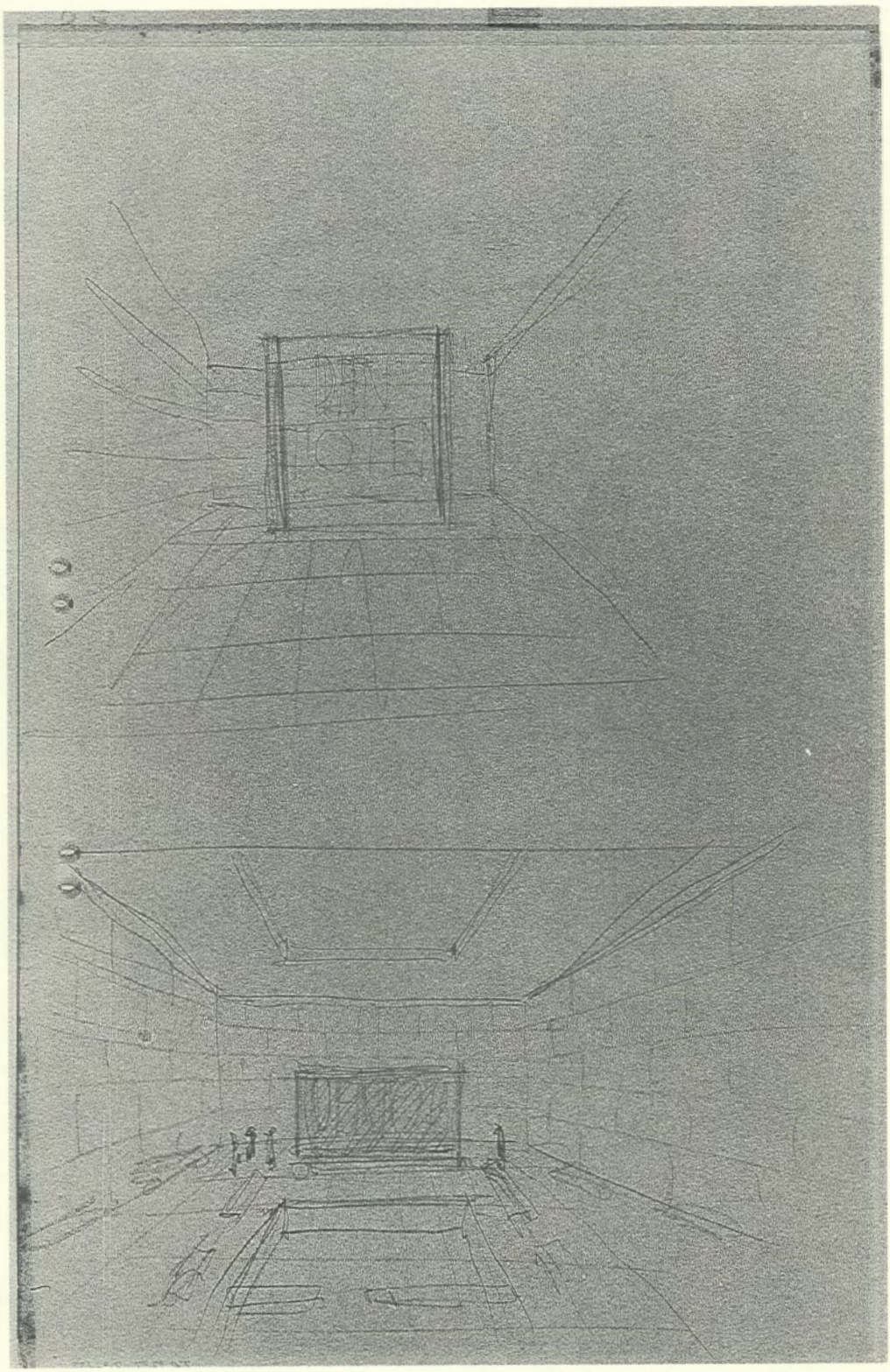
All of the elements she mentions visually resist inversion.

Ironically, by using the physicality of the human body's eye height to conjure horizonal symmetry in a space, Mies created a disjunction of body and space. Thus, Mies and the de Stijl architects are both similar in creating spaces that alienate the downward pull of the human body's weight. But there is again a subtle distinction to note: Mies' method strikes with greater poignancy. In a de Stijl space, we are merely detached observers to the weightlessness surrounding us; in a Miesian space, the use of our eye's height makes our body into a direct, physical participant in the very mechanism of separation.

Politics and the Bilateral Axis

After developing horizonal symmetry's rules at Barcelona and Tugendhat, Mies reiterated the system in numerous designs (mostly left unbuilt) during his professionally lean period of the 1930's. His proposed Gericke, Lange, and Hubbe *(Fig. 1)* houses, as well as his Krefeld Country Club project and his completed Berlin Exposition House were all sandwich volumes, with appropriate interior dimensions for horizonal symmetry.[30] While beginning these projects, Mies assumed the Bauhaus directorship, and, not surprisingly, encouraged his students to draw using this symmetry as well.[31] Mies allowed the axis to become so pervasive a tool that he even considered imposing it upon a project where it made no sense. In the 1930 competition to renovate Schinkel's Neue Wache as a War Memorial, Mies encountered a tall, nearly cubical

Fig. 18 War Memorial. Berlin, Germany. 1930. (Unbuilt).
Mies van der Rohe, Ludwig.Two Interior perspectives. Pencil on tracing paper, 13 x 8 3/8". © Mies van der Rohe Archive, The Museum of Modern Art, New York. Gift of Ludwig Mies van der Rohe.



existing space. In an early sectional study, he tried introducing a low ceiling that negated half of the existing height. Dozens of his interior perspectives of this idea show horizonal symmetry.[32] Ultimately Mies came to respect the height of the War Memorial, although even then he did not fully abandon his axis. In sketches for his final proposal, his horizon line instead rose unrealistically *(Fig. 18, bottom image)*. It was a return to a purely formal, non-perceptual, *horizontal* symmetry. In this drawing, he actually did balance a ceiling opening with a depression in the floor.[33]

This War Memorial drawing, however, contains two touches which proved prophetic. First, Mies added a richly veneered commemorative slab that breaks free of his horizontal axis. Second, Mies followed the existing shell's bilateral symmetry, giving left and right as much equality as up and down. In fact, given that the slab obeys the vertical axis while ignoring the horizontal, the vertical axis is stronger. This is first time since the derivative *Schinkelschüler* works of his immature youth that Mies used bilateral symmetry. It cannot be argued that this traditional axiality arose solely from the direct confrontation with Schinkel, for the War Memorial's bilateral symmetry did not long remain an isolated case. Mies again introduced the bilateral axis in the Reichsbank Competition of 1933 and in the Brussels Pavilion Competition of 1934.[34]

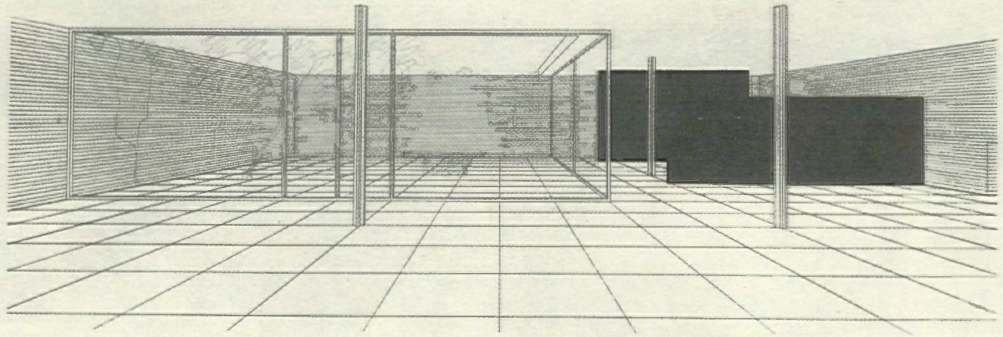
All three of these successive competitions were run by the German government. The fact that Mies used the vertical axis in these even as horizonal symmetry continued unabated in his domestic work suggests that political considerations generated this new trend and ultimately lie behind the reciprocal shift in his use of horizontal and vertical axes. As Elaine Hochman has pointed out, the year of the War Memorial Competition, 1930, was when "the Weimar government began to falter," and elements in the Nazi Party fueled attacks on the avant-garde.[35] By 1933-34, the time of the Reichsbank and Brussels competitions, Hitler was in power.[36] The *Fuhrer*, with his preference for bilateral symmetry's monumentality, was himself involved in deciding both the Reichsbank and Brussels contests.[37] Mies, if he wished to ever build more than private homes, could hardly avoid "yielding somewhat" to what Franz Schulze has called "the classicizing, symmetrizing trends of the day."[38]

The irony here is that horizonal symmetry probably eased the approach of its replacement. With an axis already present, Mies no doubt initially felt that these politically engendered uses of bilateral symmetry were just minor variations on a trusted theme—probably the easiest compromise he could make to the new official taste. But this accommodation mattered little. In a cultural climate where the pitched roof was being touted as "the German roof," and where an article under the title "Flat Roofs, Flat Heads" would complain of the "swinishness" of the flat roof,[39] bilateral symmetry hardly compensated for these competition project's horizontal profiles.[40] They did not win.

Fig. 19 Row House with interior court. 1930. (Unbuilt).
Mies van der Rohe, Ludwig. Perspective. Pencil, wood veneer on illustration board, 30 x 40". © Mies van der Rohe Archive, The Museum of Modern Art, New York. Gift of Ludwig Mies van der Rohe.

Mies was left to occupy himself with only his theoretical Court House Studies until his emigration to America in 1938. Drawn purely for himself, these enclosed and, almost, defensive quadrants contained as much horizonal symmetry as ever. Mies' rough sketches from this time became so invertible that they have occasionally been flipped by mistake during publication.[41] In the drafted presentation drawings, Mies' brick walls, columns, and glazed partitions are all bisected by the horizon *(Fig. 19)*.[42] But into this exacting axiality, Mies purposefully cast two collaged wood veneer planes—one full height and one dropping low. These clearly echoed the richly veneered slab of his War Memorial. With this pair of wood planes Mies deliberately questioned horizonal symmetry. Doubts about his use of the horizon as an axis had entered Mies' most private works.

The dismal nature of Mies' personal fortunes prior to his emigration offers some additional explanation. When he conceived the Court Houses, his life had reached its lowest ebb. Having been linked with



Communists and having witnessed his Bauhaus being stormed, ransacked, and sealed by the Gestapo, Mies finally felt forced to contemplate posts abroad.[43] By 1938, he had accepted a position at Chicago's Armour Institute, later to become Illinois Institute of Technology. His estranged wife and daughters were left behind in Germany.[44] Such unnerving circumstances inevitably affected him artistically. At a time when he had to reevaluate everything, could horizonal symmetry have escaped this questioning?

The Rotation

In his first American commission, the unbuilt Resor House of 1938, Mies made one final improvement in his system of horizonal symmetry and simultaneously focused his attention specifically on the relationship of the horizontal and vertical axes. The improvement resulted from a fortuitous site peculiarity. The client requested that Mies reuse some existing foundations that stood within a stream.[45] Mies proposed lifting the entire house aloft, carrying it across the water on the existing piers. The floor plane, uprooted and wholly exposed, registered exactly with the ceiling. With space now flowing as freely below the house as above, horizonal symmetry finally possessed a convincing exterior expression. The sandwich volume reached its ultimate state. Yet with this advance, the epochal moment had nonetheless come for horizonal symmetry. In his final collage of Resor, Mies showed the horizontal and vertical axes in precise parity (Figs. 3 & 20). His attention thus focused, Mies made his choice. Hereafter, he would lean toward reflecting left and right rather than up and down. The axis had rotated.

Fig. 20 Resor House. Jackson Hole, Wyoming. 1937-38. (Unbuilt).
Mies van der Rohe, Ludwig. Interior perspective of living room (view through north glass wall). Pencil, photograph on illustration board, 30 x 40"

Resor contained one additional change. Instead of ten feet clear, Mies made the living level twelve feet high.[46] Only a very tall person could see the space as his drawing promises. Horizonal symmetry's hold on the scale had relaxed.

In his American commissions for huge, clear-span spaces following Resor, Mies gave up any pretense of linking his horizontal axis with an observer's optical plane. The domestically scaled space of horizonal symmetry could not accommodate vast institutional or corporate programs. Even so, the basic scaffold of two continuous horizontal planes persisted throughout his American career. Mies' sketches of his 1942 Museum for a Small City show the horizon line again rising unrealistically.[47] This recalls his War Memorial sketch, with its high axis of *horizontal* symmetry rather than *horizonal* symmetry. If anything, though, Mies' retention of the sandwich volume *parti* in his largest American projects only made them seem at times impractical. For example, Mies' beamless ceiling, so easily achieved in the domestic scales of Barcelona, Tugendhat, or Resor, necessitated elaborate exoskeletons in the huge volumes of his late spaces like Crown Hall, the Mannheim Theater, or the Home Federal Savings and Loan Building.[48] In these large buildings, the preciously clad vertical partitions often come out of the symmetrical suspension and, like bits of precipitate, settle downward in the space.

Lacking a perceptually convincing horizontal axis, Mies enhanced the vertical axis. Symmetry contributed stability, rather than the ambiguous and poignant weightlessness. The symmetricality found in his late works now resembled the bilateral reflection of our own bodies, establishing an empathy between the space and human physicality. Near the end of Mies' American career, Vincent Scully could go as far as to anthropomorphize Mies' work, writing that a Miesian building "can stand upon its legs, symmetrically placed behind its plaza, as a sculptural body..."[49] Mies' desire for symmetry, which once created a disjunction of body and space, returned transformed to link body and space.

The Farnsworth House, designed in 1946 and completed in 1951, represents the sole exception to these trends in Mies' American career *(Fig. 21)*. The domestic scale allowed Mies to again link a horizontal axis with the horizon.[50] It would be his last taste of horizonal symmetry. He seized this opportunity to actually build a space with an equivalence of horizontal and vertical axes, as was promised in his Resor rendering. But that is not all he achieved here. With a pair of masterstrokes, Mies simultaneously torqued each symmetry. With both his terrace slab and his wood core (the last so reminiscent of his Court House veneered planes) he played against both the horizontal and vertical symetries in equal ways and to proportionate degrees *(Fig. 22)*. Symmetry, in all its permutations, has never been manipulated with greater skill.

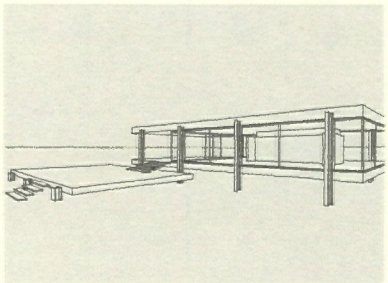


Fig. 21 Farnsworth House. (Author's Drawing).

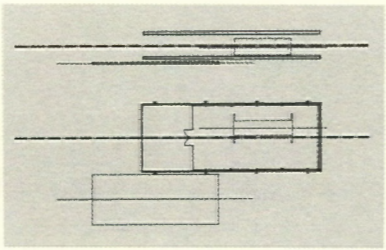


Fig. 22 Farnsworth House. (Author's Drawing).

Mies' last building, the 1967 New National Gallery in Berlin, embodies the final steps in the reversal between the axes *(Figs. 4 & 23)*. Mies gave the Museum's columns abstracted capitals and a downward batter, thus eliminating any remaining ambiguity of tension and compression. More importantly, he increased the overall intensity of the vertical symmetry by making the building square. The Museum's structural canopy shows an identical vertical symmetry on every facade, calling to mind Palladio's Villa Rotunda *(Fig. 24)*. As Colin Rowe has remarked, only the persistence of the vast horizontal roof and floor keeps such a building from becoming a fully centralized, vertically-oriented *parti*. Rowe described Mies' American buildings as "able to equilibrate both an outward pull and a centralizing moment".[51] The two remnant planes of horizonal symmetry within the centralized spaces of Mies' late work are responsible for this unusual effect.

A Reassessment

By the end of his career, symmetry had led Mies far from the weightless, non-empathic, and isotropic ideals of Modern spatial systems like de Stijl. While horizonal symmetry placed Mies firmly within the dynamic character of the Twentieth century, the shift to the bilateral axis linked Mies to the ways of other, much earlier centuries. Kenneth Frampton's characterization of Mies' output as a constant tension between between "*prospective* and *retrospective* references"[52] could be extended to Mies' work with symmetry. Mies' Janus-faced balance between tradition and modernity is his foremost legacy to scholars who seek to locate Modernism within the context of history.

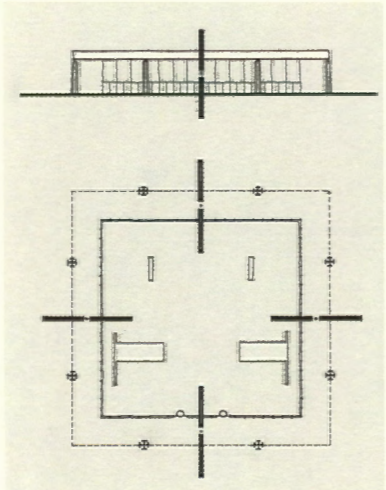


Fig. 24 New National Gallery. (Author's Drawing).

Not only will recognizing the continuous axiality of Mies' *oeuvre* change how we relate him to Modernism, but it will also change how we relate him to himself. Rather than viewing symmetricality as solely a later career phenomenon in Mies' work, we could better view it as a pair of related indices. One, that of horizonal symmetry, moves upward quickly, then tapers. The other, that of bilateral symmetry, shows virtually no incidence in his avant-garde phase but then rises. The two intersect with equal value at the time of Resor. The slopes of these indices are not necessarily equal and erratic motions occur, but the broadly reciprocal trends are nonetheless visible.

It is essential, though, to end by remarking that while symmetry is an element of continuity in Mies' career, it may still ultimately do more to dramatize—at least from a perceptual standpoint—the apparent differences between his early and late works. This discussion of Mies' use of symmetry has established only the persistence of a formal pattern. The different permutations of any formal pattern not only alter its spatial effects, but also any meanings the pattern may convey. There could be

no better example of this than symmetry in Mies van der Rohe's career. As horizonal symmetry contributed weightlessness and as bilateral symmetry contributed empathy, each represented more than just a spatial choice. Horizonal symmetry created a schism between the human body and space, while bilateral symmetry linked the two. These variations of the same formal pattern give diametrically opposed meanings to how we inhabit architecture. That Mies van der Rohe could within a single lifetime and within a single pattern cross so vast a divide proclaims his artistry.

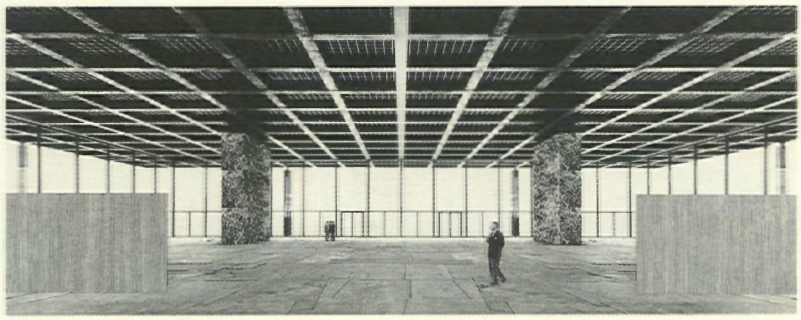


Fig. 23 New National Gallery. Berlin, Germany. 1962-1968.
Mies van der Rohe, Ludwig. Interior perspective. Photomontage with marbleized paper, wood veneer, 15 1/2 x 41 3/4". © Mies van der Rohe Archive, The Museum of Modern Art, New York. Gift of Ludwig Mies van der Rohe.

Notes

[1] Isolated observances of a peculiar symmetry of this sort in a drawing or space of Mies' have been previously described as examples of a *horizontal* symmetry. Given the differences I want to illuminate between Mies' use of reflection about a horizontal axis versus the attempts of other modern architects, and also given the way I would like to relate this device for the first time to Mies' career as a whole, I feel that *horizonal* symmetry is the more specific, technical, and appropriate term. My own interest in Mies' use of "horizonal symmetry" began in a number of drawing seminar talks I gave at Columbia University in 1985. This led to a series of correspondences with the Mies van der Rohe Archive in 1986, and lectures on the topic at the University of Michigan in 1990 and the University of Tennessee in 1993. I would like to acknowledge the assistance of Paul F. Carr, who helped clarify many early drafts during 1988 and 1989.

[2] Kenneth Frampton, *Modern Architecture: A Critical History* (London: Thames and Hudson, 1981), p. 231,
[3] Colin Rowe, *The Mathematics of the Ideal Villa and Other Essays* (Cambridge: M.I.T. Press, 1976), pp. 120-121 and p. 140.
[4] *Ibid.*, p. 143 and p. 148.

[5] Dan Hoffman, "In Response to Sight and Site: From the Edge of the Horizon—Considerations Upon the Work of Mies van der Rohe," *Site Work/Sight Work Documents* (Waterloo: University of Waterloo, 1992), not paginated.

[6] This quote from Spengler is noted in Franz Schulze, *Mies van der Rohe, A Critical Biography* (Chicago: The University of Chicago Press, 1985), p. 116.
[7] Adrian Gale, "Mies van der Rohe: An Appreciation," *Mies van der Rohe, European Works* (London: Architectural Monographs and Academy Editions, 1986), p. 98.
[8] Juan Bonta, *An Anatomy of Architectural Interpretation* (New York: Rizzoli, 1979), p. 161.

[9] See, for example, Reyner Banham, *Theory and Design in the First Machine Age* (Cambridge: M.I.T. Press, 1960), p. 322.
[10] For an illustration of Mies' actual sketch, see Frank Russell (Editor), *Mies van der Rohe, European Works* (London: Architectural Monographs and Academy Editions, 1986), p. 43.

[11] For another discussion of this particular drawing, though with conclusions very different from my own, see Robin Evans, "Mies van der Rohe's Paradoxical Symmetries," *AA Files 19* (London, The Architectural Association, 1990), p. 64.

[12] These heights are shown in drawings in Arthur Drexler, *An Illustrated Catalogue of the Mies van der Rohe Drawings in the Museum of Modern Art* (New York: Garland, 1986), volume 2. Some small scale drawings of the Tugendhat House list a height of 3.4 meters, but the large scale shop drawings of the onyx wall clearly suggest that the final height was 3.2 meters (the onyx wall was cut to 3.17 meters).

[13] Rudolf Arnheim, *The Dynamics of Architectural Form* (Berkeley: University of California Press, 1977), pp. 37-38.

[14] Karsten Harries, "Thoughts on a Non-Arbitrary Architecture," *Perspecta 20* (Cambridge: M.I.T. Press, 1983), p. 17.

[15] Le Corbusier's lodge at the Villa Savoy would be another good example of this horizontal facade symmetry. For a discussion of a very different notion of rotation about the horizontal in Le Corbusier's work, see: Colin Rowe, "The Provocative Facade: Frontality and Contrapposto," *Le Corbusier, Architect of the Century* (London: Arts Council of Great Britain, 1987), p. 28.

[16] Gale, *op. cit* , p. 96.

[17] Jose Quetglas, "Fear of Glass: The Barcelona Pavilion," *Revisions 2: Architectureproduction* (New York: Princeton Architectural Press, 1988), p. 133.

[18] Gale, *op. cit.*, pp. 96-98.

[19] *Ibid.*, p. 96.

[20] Colin Rowe has also addressed the lack of interior ceiling beams in Mies' buildings, and has offered another explanation related to the "free-plan" of Modernism. His remarks explain much about the broad tendency in the International Style toward "flatness of silhouette," see Rowe, op. cit., pp. 143-144. As Rowe later suggests, Mies' desire for "conceptually immaculate" distinctions between columns and walls may have resulted in his becoming the greatest exponent of flat ceilings. While not detracting from the explanatory powers of Rowe's analysis in the larger context of Modernism, I must remark that it does not explain why Mies' floors were also uninterrupted horizontal surfaces. To fully grasp a Miesian space, we must give as great an emphasis to the floor as the ceiling.

[21] Wolf Tegethoff, *Mies van der Rohe, The Villas and Country Houses*, (New York: The Museum of Modern Art, 1985), p. 91. The doors in the exterior glass walls of the Tugendhat House did in fact receive a transom, probably for technical reasons. The solid doors of the main entry and those of all the interior spaces rose full height; see drawings in Drexler, *op. cit.*, vol.II.

[22] Kenneth Frampton, "Modernism and Tradition in the Work of Mies van der Rohe, 1920-1968," *Mies Reconsidered* (New York: The Art Institute of Chicago and Rizzoli, 1986), p. 43.

[23] Tegethoff, *op. cit.* (Note 21), p. 50.

[24] Theo Van Doesberg, "Towards a Plastic Architecture," *Programs and Manifestoes on 20th-Century Architecture* (Cambridge: M.I.T. Press, 1980), pp. 79-80.

[25] Ludwig Glaeser, *Ludwig Mies van der Rohe, Drawings in the Collection of the Museum of Modern Art* (New York: The Museum of Modern Art, 1969), Introduction, unpaginated.

[26] Van Doesberg, *op. cit.*, p. 79.

[27] Peter Carter, *Mies van der Rohe at Work* (New York: Praeger, 1974), pp. 8-9.

[28] Wolf Tegethoff, "From Obscurity to Maturity: Mies van der Rohe's Breakthrough to Modernism," *Mies van der Rohe, Critical Essays* (New York: The Museum of Modern Art and M.I.T. Press, 1989), p. 83.

[29] Quoted in Tegethoff, *op. cit.* (note 21), p. 97.

[30] The Krefeld Golf Club height was 3.4 meters; the Gericke, Lange, Hubbe, and Berlin Building Exposition houses were 3.0 meters.

[31] See, for example, Rolf Achilles (Editor), *Mies van der Rohe: Architect as Educator* (Chicago, Illinois Institute of Technology, 1986), p. 75 and p. 77.

[32] See War Memorial drawings in Drexler, *op. cit.*, vol. III.

[33] It is interesting to note here that the competition requirements stated that the volume was to have an opening to the sky. Mies argued that this was impractical, and in his final proposal the ceiling covers the entire space. The difficulty of handling such ceiling

openings in horizontal symmetry may have played a role in his disregarding this requirement. See: Drexler, *op. cit.*, vol. III, p. 2. Most of the jurors criticized the lack of light in Mies' proposal, and this apparently cost him the competition. See: Richard Pommer, "Mies van der Rohe and the Political Ideology of the Modern Movement," *Mies van der Rohe, Critical Essays* (New York: The Museum of Modern Art and M.I.T. Press, 1989), pp. 114-115.

[34] For an illustration of bilateral symmetry at Brussels, see Schultze, *op. cit.*, p. 201. Another project which Mies actually succeeded in having realized by the Nazis was his Mining Exhibit at the *Deutsches Volk/Deutsch Arbeit* exhibition of 1934. Here, the flowing planes reappear, but the basic organization is again bilaterally symmetrical. For illustrations, see Pommer, *op. cit.*, p. 124.

[35] Elaine S. Hochman, *Architects of Fortune, Mies van der Rohe and the Third Reich* (New York: Weidenfeld & Nicholson, 1989), pp. 75ff. See especially the opinions of Paul Schultze-Naumberg. Also, this was the time when Alfred Rosenberg, the early theorist of Nazi architecture, began praising bilateral symmetry in his writings, see Robert R. Taylor, *The Word in Stone, The Role of Architecture in the National Socialist Ideology* (Berkeley: University of California Press, 1974), pp. 55-62.

[36] For a full and penetrating discussion of Mies' projects for the Nazis, including commentary on his use of asymmetry versus bilateral symmetry, see Pommer, *op. cit.*, pp. 114-131.

[37] In his writings, Albert Speer has reproduced a number of Hitler's own architectural sketches. All of them show bilateral symmetry. For the judging, see Hochman, *op. cit.*, p. 201 and p. 228.

[38] Schulze, *op. cit.*, p. 200.

[39] Barbara Miller Lane, *Architecture and Politics in Germany, 1918-1945* (Cambridge: Harvard University Press, 1968), p. 135.

[40] As for Mies' Berlin Building Exposition House of 1931—the only publicly sponsored building of this period showing powerful horizontal symmetry and not even a glimmer of bilateral symmetry—the Nazis labeled it a "horse stable," see Hochman, *op. cit.*, p. 75.

[41] For an example of this see Drexler, *op. cit.*, vol. IV, p. 65.

[42] The final drawings were no doubt drafted in America as they are on standard 30" x 40" American stock.

[43] Hochman, *op. cit.*, p. 9 and p. 122.

[44] *Ibid.*, pp. 255-264 and pp. 306-307.

[45] Tegethoff, *op. cit.* (note 21), p. 127.

[46] Tegethoff, *op. cit.* (note 21), Illustration 20.9.

[47] For illustrations of this, see Glaeser, *op. cit.*, Plates 20 and 21.

[48] For a very different interpretation of the genesis of these exoskeletons, see Rowe, *op. cit.*, p. 148. I want to note that Rowe's analysis does not explain why Mies insisted on lifting his "building as a single structural cell" aloft. Only the desire for a look of invertibility related to horizonal symmetry seems to explain this. Again, as regards the vast horizontal planes of Mies' work, our focus must remain on both the floor and the ceiling, not just on the ceiling alone.

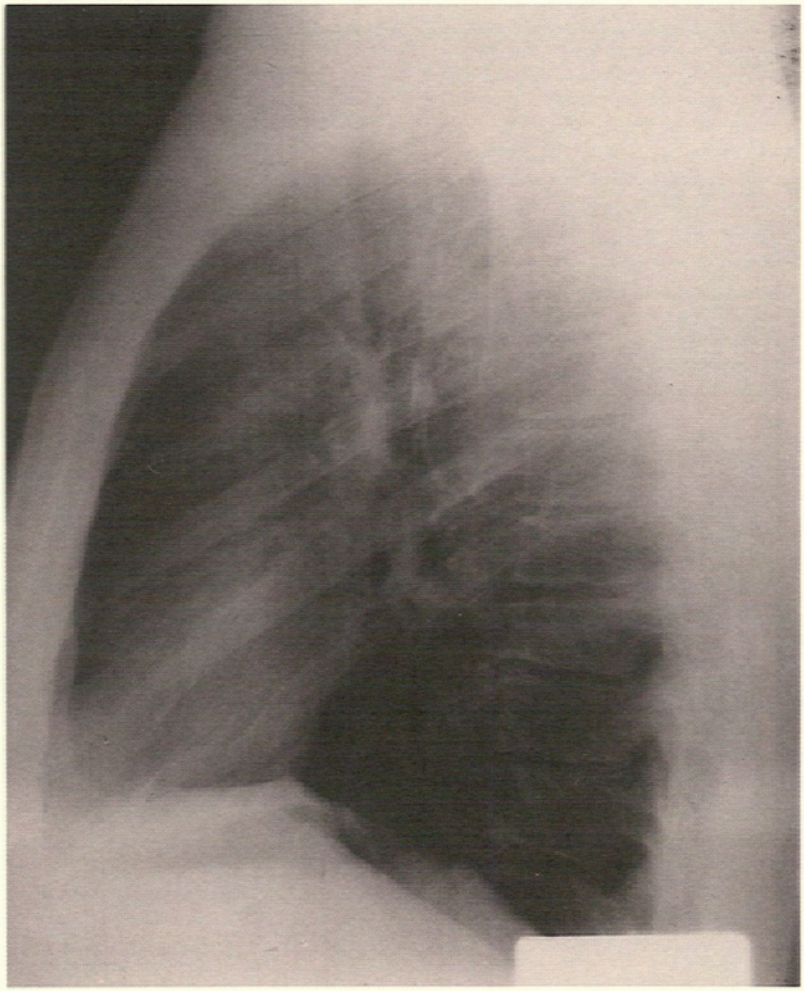
[49] Vincent Scully, *Modern Architecture* (New York: Braziller, 1974), p. 34.

[50] Farnsworth's interior height was 2.9 meters (9'-6").

[51] Rowe, *op. cit.*, p. 150.

[52] Frampton, *op.cit.* (note 22), p. 50.

Abraham's Collapsed Lung



Douglas Darden is a fellow of the American Academy in Rome and a lecturer at the University of Colorado.

Oxygen House

Douglas Darden

Dear Mr. Darden:

Today, my nurse, sister Jewel, and I went down from the hamlet, following the path as good as she could push me on my rolling chair. It was my third visit to the place where I was almost killed three years ago. Anyone watching us from the bluffs could have seen Jewel's straw-colored hair blowing more than a full head above my own in the dust.

You can still see the faint depression of the wash baked brick-hard by the heat , which undermined the tracks. The tracks run straight as a plumb line, crossed by the wash. I can now look calmly at the break in the line. My chest no longer goes chuck-chuck. I am doing the right thing to purchase this plot for my house.

Close to the break, in the center of the plain, is an old blockhouse. A path now circles the house at four soft right angles and goes on across the plain again. The blockhouse is square, with a broken roof set at a single pitch; it leans in empty dilapidation in the sunlight with a single broad window in two opposite walls giving onto the approaches of the tracks. You should have seen Jewel step through the window in a single stride while I took in the shimmering willow beyond.

Jewel tells me that there once was a spring next to the willow. Even from the foot of the bluffs you can see its branches move as gracefully as Addie's curtains. Mostly all that is here is this tree, the tracks and the sand.

You have asked me to share with you my thoughts about death. Now is not the time for this. I have lived for too many months thinking in fury that I had only a few days—sometimes only a few hours—to live. I was a bubble.

I can only say that death no longer threatens me. It runs like soft gold between the shadow space, a diagonal vein passing through my life. Even though I hardly ever emerge from my tent, this vein gives me an enduring sense of sound movement, of amazement, and of privilege. Let's go on and build the house.

Yours sincerely,

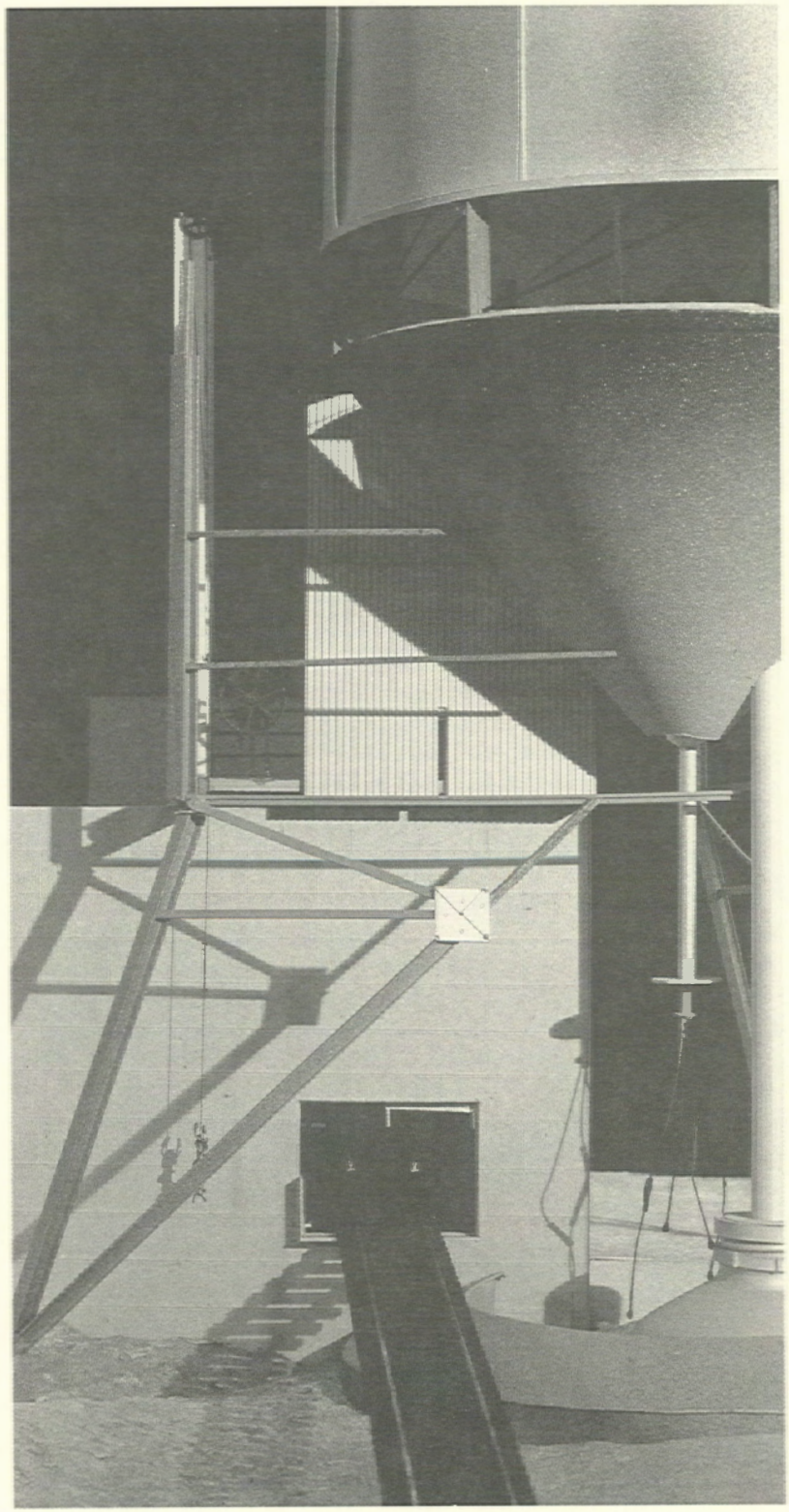
Burnden Abraham
July 6, 1979

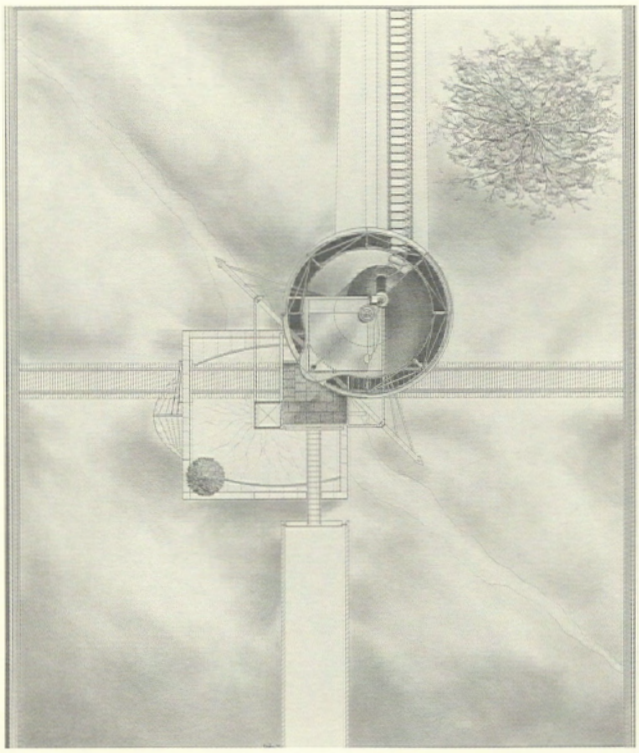
A house is for living
A house for dying

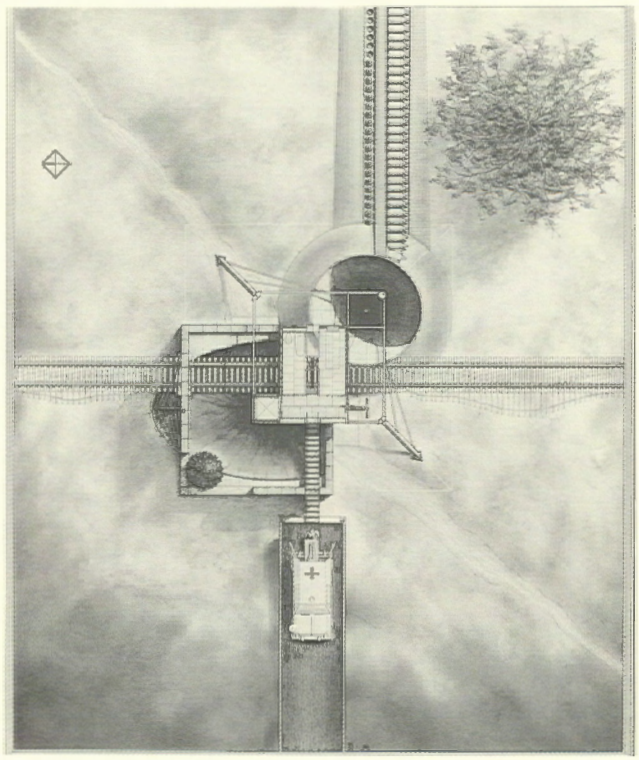
Oxygen House is perched on a depressed flood plain north-northwest of Frenchman's Bend, Mississippi. The structure is designed for Burnden Abraham, an ex-train signalman, who must live in an oxygen tent.

In the early Spring of 1979, after torrential rains, the railroad tracks on which Abraham worked were flooded. They were never fully repaired. That following Summer during a routine operation, Abraham suffered a collapsed lung when a train jumped the track and sent metal debris flying, which punctured his right lung.

Three years later the railroad company put the property up for sale. Abraham purchased the plot where once he had worked. He requested that his house be built over the scene of his near-fatal accident. Abraham also requested that he finally be entombed in the house.







Instruments

Life Lines

Diagonal: Evergreen, lift, bed, and willow (vertical)
Orthogonal: Visitor's tar road and finite oxygen stockpile (ascending from center, West/East)

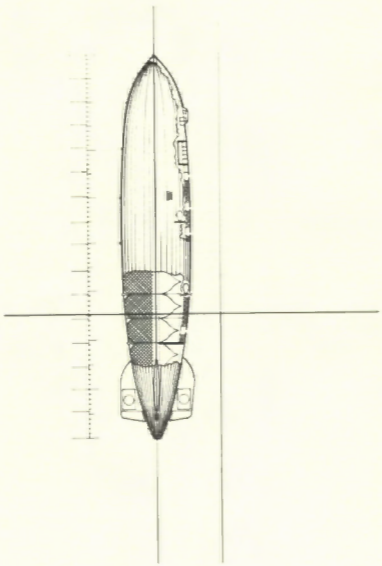
Death Lines

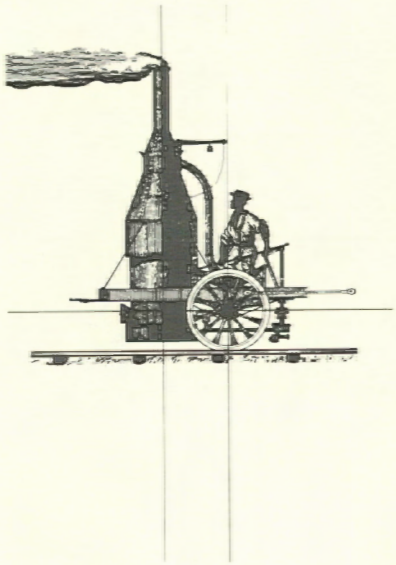
Diagonal: Dried-up wash (horizontal)
Orthogonal: Broken tracks (descending from center, North/South)

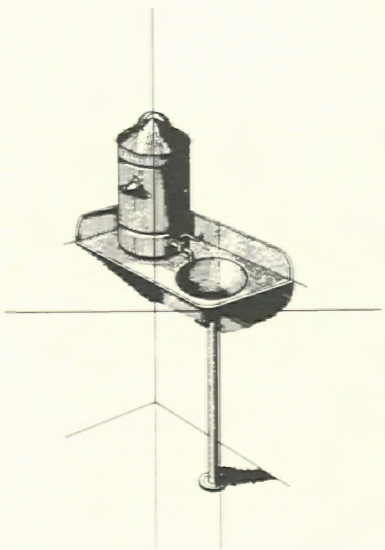
Mediating Lines

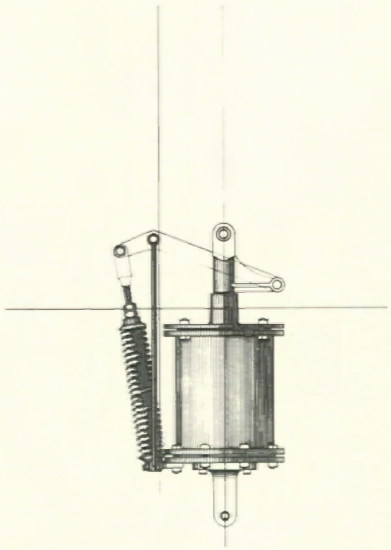
Diagonal: Live-in nurse's station (vertical/horizontal)
Rotational: Nurse's shutter-gate/Visitors' stair (view down/access up)

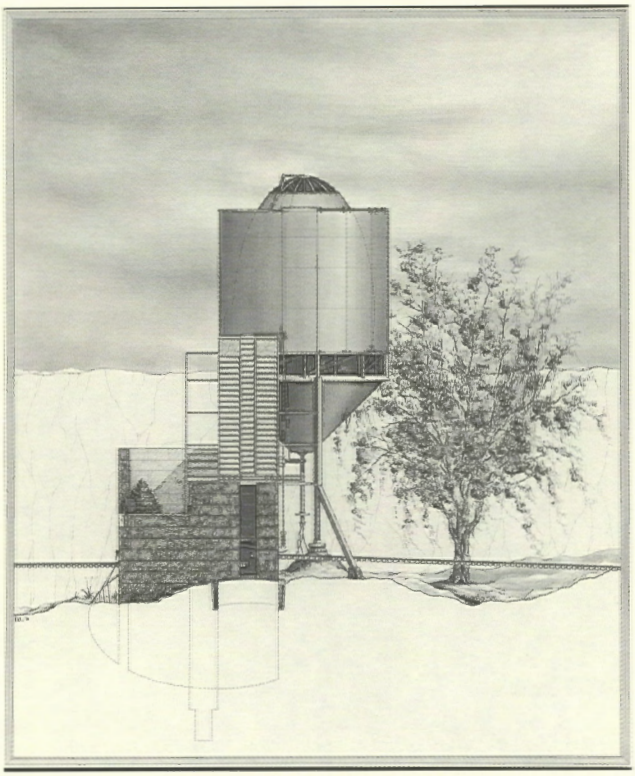
OXYGEN HOUSE
A Near Triptych on the Act of Breathing
Frenchman's Bend, Mississippi



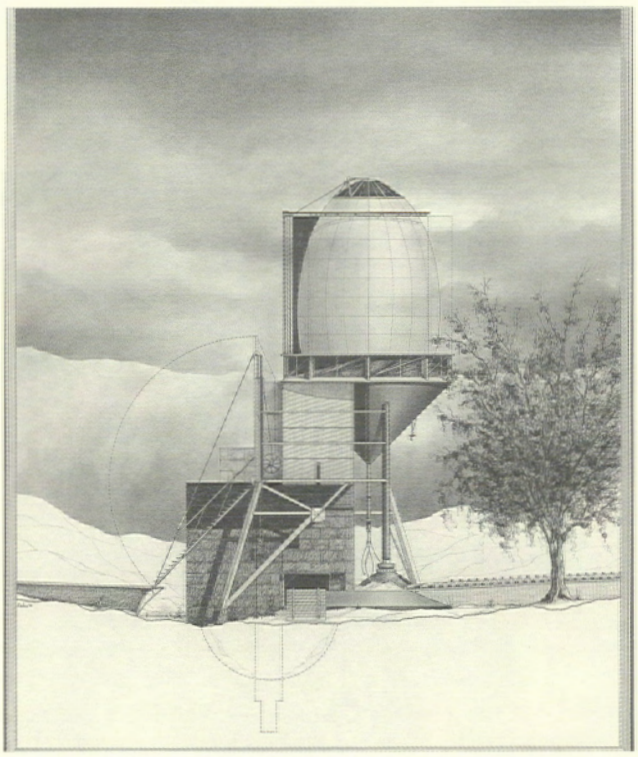


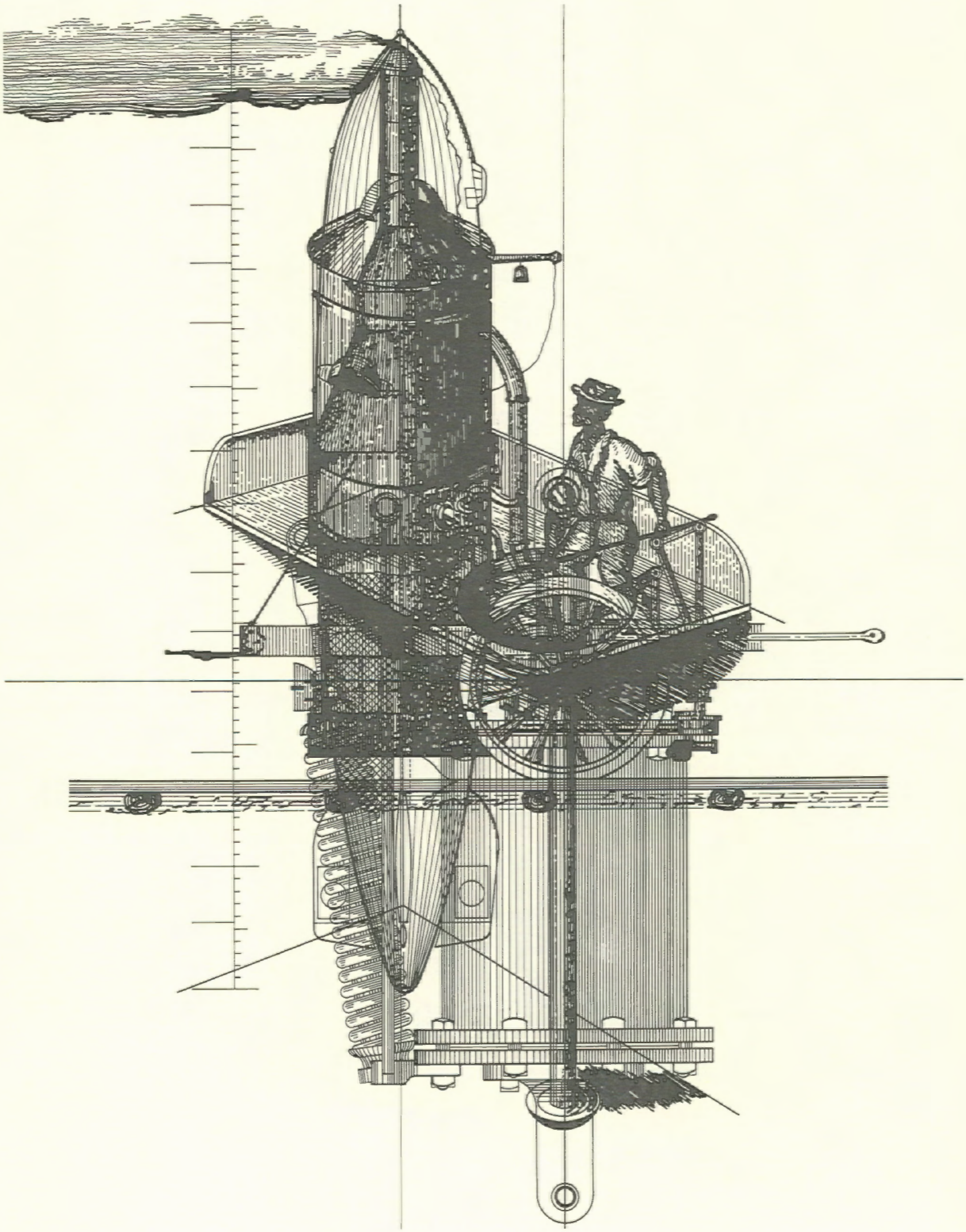


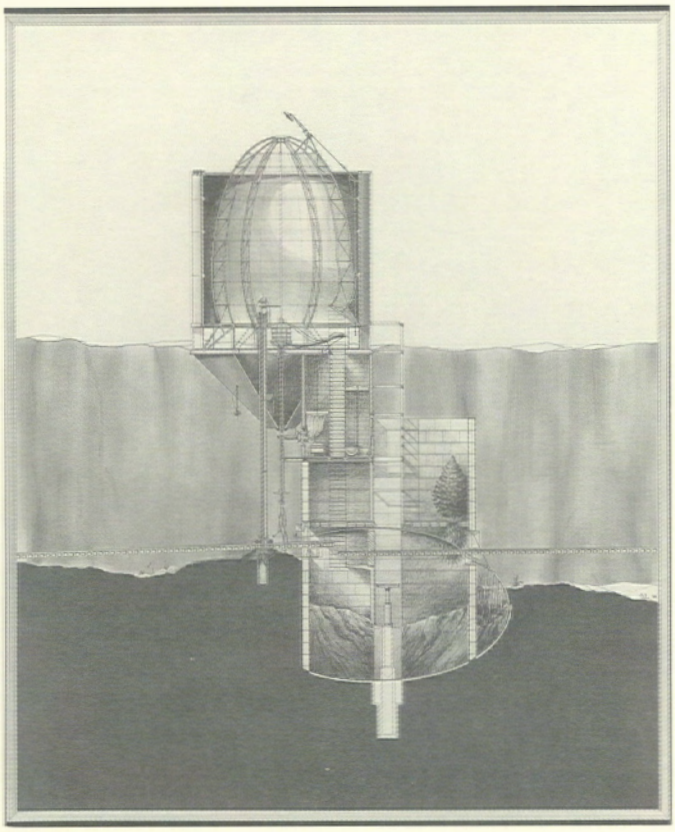




Elevations



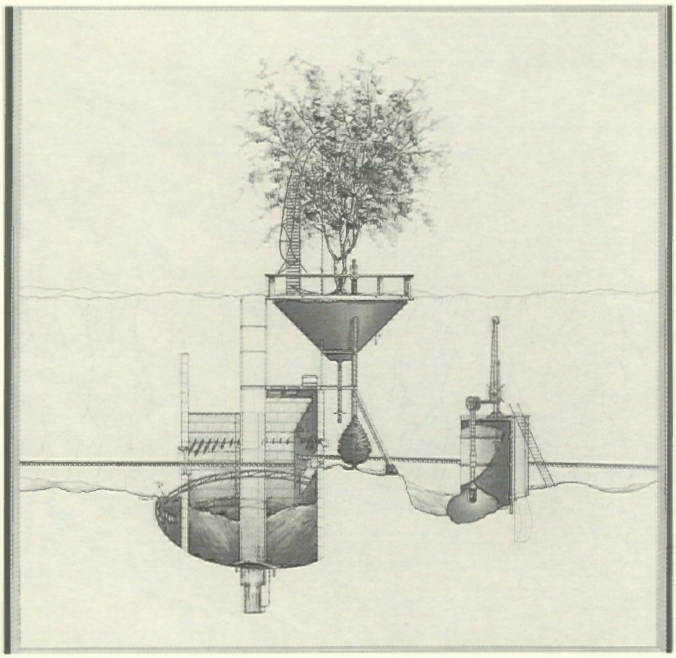




Operations

During Life

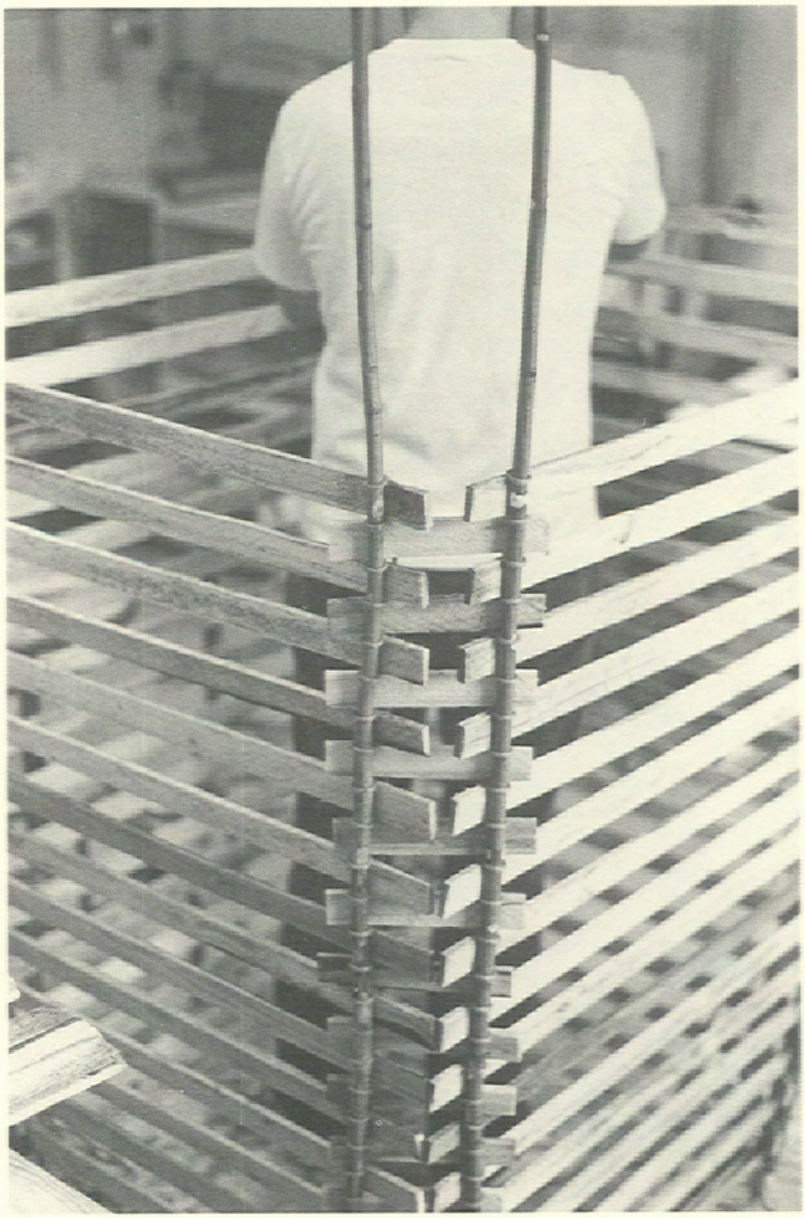
Operation 1.
Visitor is screened by nurse
Operation 2.
Nurse releases facade, visitor ascends stair.
Operation 3.
Abraham receives visitor.
Operation 4.
Visitor descends by lift



After Death

Operation 1.
Oxygen tent is dismantled. Abraham is wrapped in tent membrane.
Operation 2.
Abraham's body is removed and buried in base of lift.
Operation 3.
Willow is uprooted; replanted in drum-base.
Operation 4.
Drum-torso is dismantled; relocated over well-spring.

Hope is the memory of what is to come.
-Jorge Luis Borges



Richard M. Parrish taught at the University of Michigan in 1991. He is currently an Assistant Professor of Architecture at Montana State University.

Memory - Place

Richard M. Parrish

Memories of past and future places are embodied in the corporeality of this work. Transformative acts are performed which activate the memories of past locations and bring remnants of those places to the work. The work makes its own place; it is a material embodiment of memory and act.

The intention of this work is to explore a process of making architecture that does not exist in a fixed state. Matter is the body of architecture. In this work, matter is on a continuous journey, transformed along the way, leaving residues which bear the memory of the process of making. These processes and residues trigger our individual and collective memories of past and future.

This work seeks to make architecture that is a fusion of the inside (myth, ritual, and belief) and outside (location on the earth with all its inherent conditions). Memory and place, material and ethereal, are manifested in the physicality of the work. Myth and ritual connect past and future, memory and act. Joseph Campbell speaks of the "reality" of myth taking place in the past whereas its truth applies to the present.

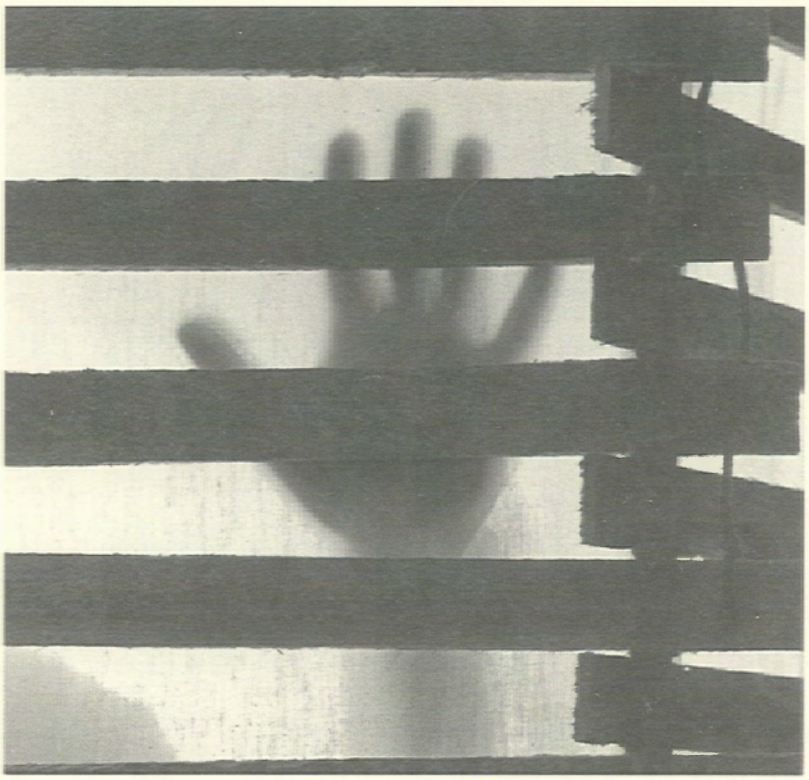
..memory links the living to the dead. The homeland, as the embodiment of dear memories, holds the heart of man, who parts from it with sorrow and looks back to it with homesickness and longing from abroad.... Even in times of nomadic wandering, family and home are the source of such sentiment.... The metaphysical character of the clan, the tribe, the village and town community is, so to speak, wedded to the land in a lasting union.
-J. B. Jackson, Discovering the Vernacular Landscape

The work expresses the process of making in an obsessive, ritualistic processing of materials as a way to embrace the real and understand the phenomenal nature of the object of architecture. Michelangelo said "the hand is the instrument of the mind." The work is concerned with craft, with the mark of my hand in the work, bringing memory to the present.

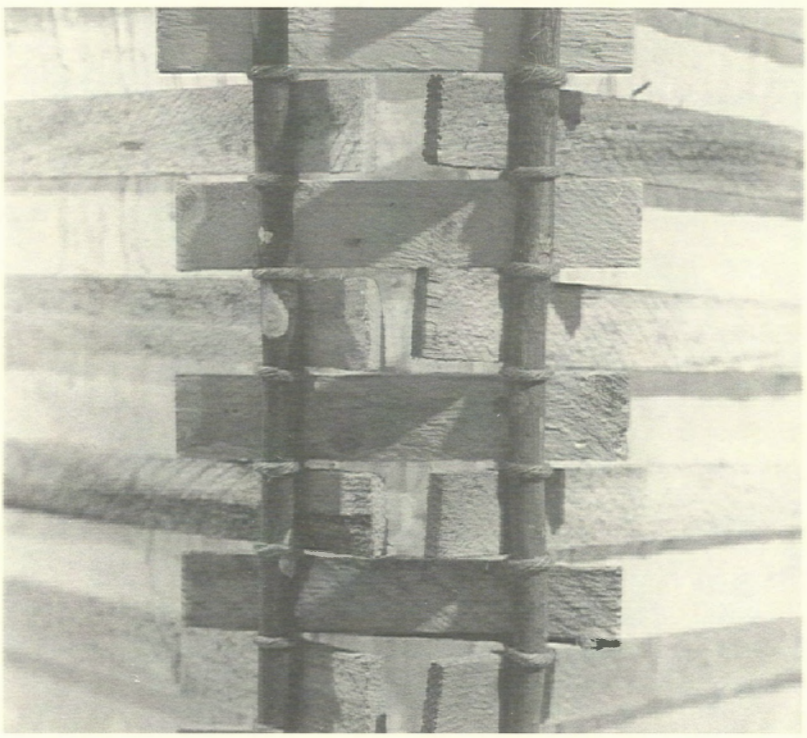
The very essence of man's humanity is in his hands.
-Roland Barthes, The Plates of the Encyclopedia

BOUND VESSEL

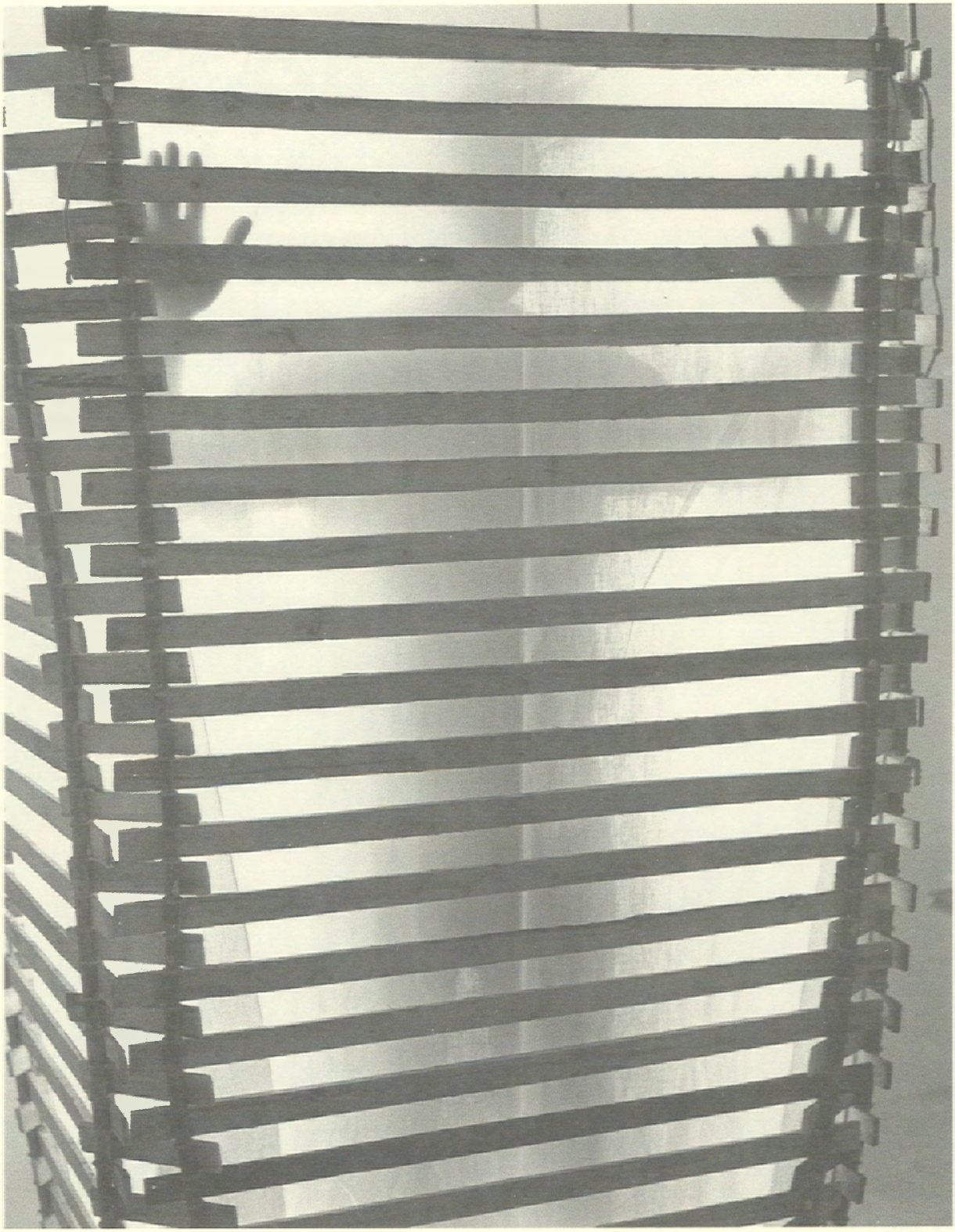
place n. 1. A portion of space; an area with definite or indefinite boundaries. 2. An area occupied or set aside for a specific person or purpose. 3. A definite location.... 5. a. A space for one person to sit or stand....
-The American Heritage Dictionary, Second College Edition



...the emptiness, the void, is what does the vessel's holding.. The empty space, this nothing of the jug, is what the jug is as holding vessel.
-Martin Heidegger, "The Thing"



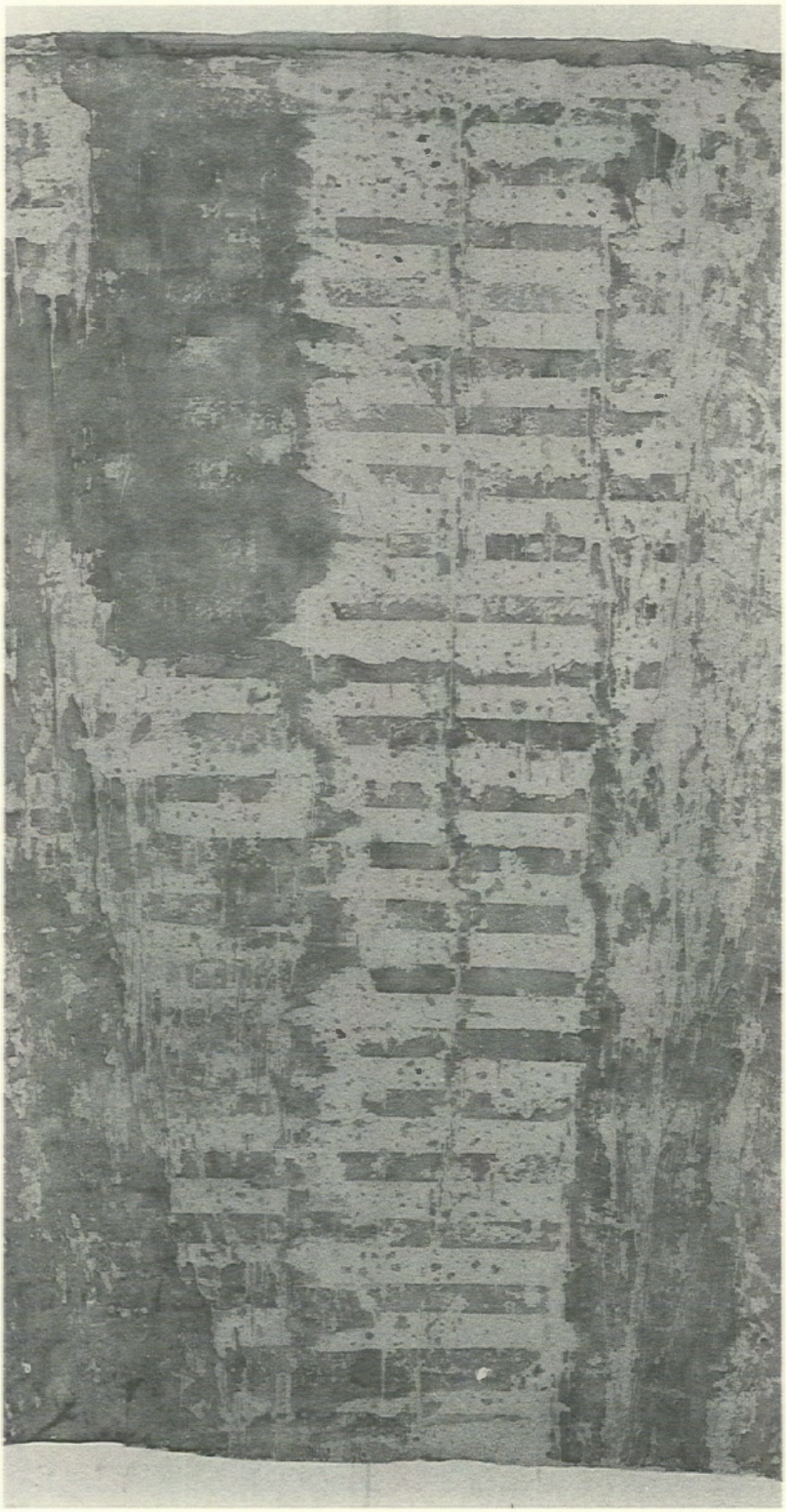
This vessel is made from within, enclosing the inhabitant/maker. It is made of the landscape, of lath, stacked and bound with jute cord. Binding is an act of marking and occupying the landscape. The linings of cloth and paraffin are membranes resisting penetration from within and from without. The cloth is a boundary. It is the threshold between inside and outside, binding and bound by the structure. The cloth/shroud conceals and protects the inhabitant. The cloth is peeled away, the structure unbound. The inhabitant/maker leaves.



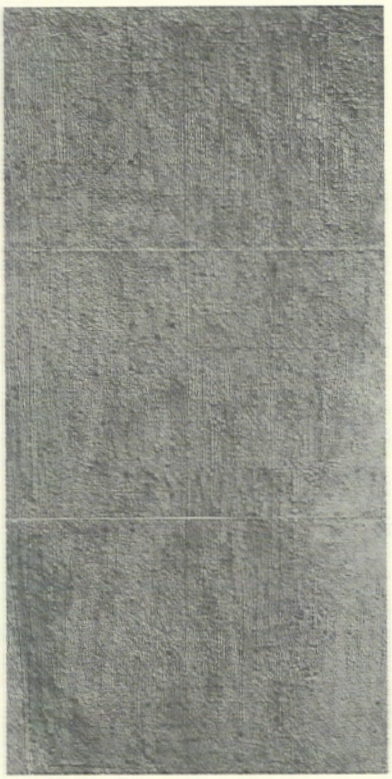
Residuum

residue n. 1. The remainder of something after removal of a part. 2. Matter remaining after completion of an abstractive chemical or physical process...; residuum...

reside intr.v. 1. To live in a place for an extended or permanent period of time. 2. To be inherently present; exist...
-The American Heritage Dictionary,
Second College Edition



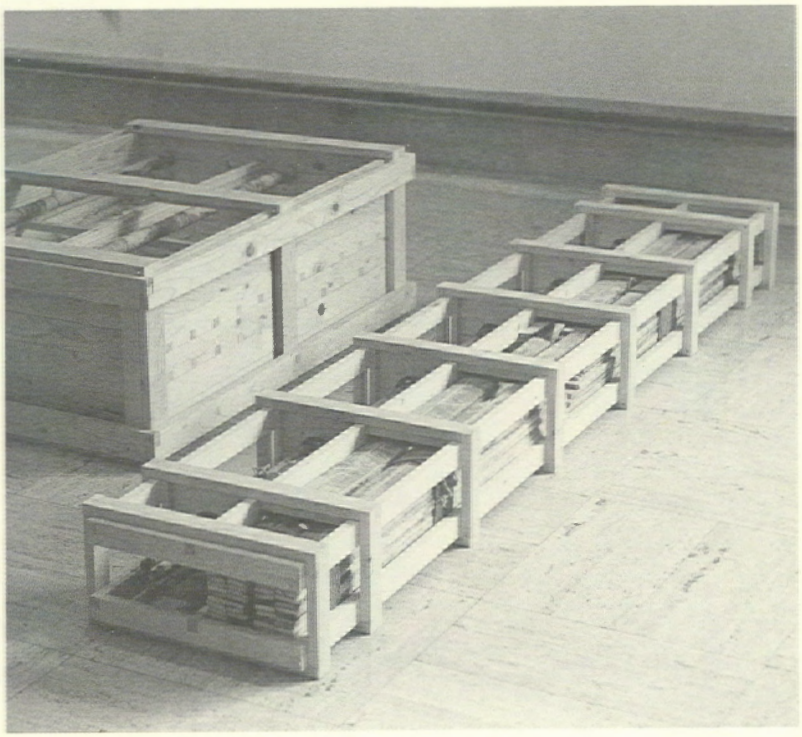
Shroud
The cloth is a shroud, marked by the residue of the vessel making-paraffin resistance and water/stain of the earth. The residual drawings are the memory/shadow/soul of the vessel. They are maps of present and future places of inhabitation. The paraffin coated lining is removed from the Bound Vessel, laid out as a skin, and stained with bark and berry juice.



Residual Drawing I
A graphite rubbing is made from the paraffin coated shroud, making a map. The map drawing is integral to the process-not a preconception of an object or a later record of it.

Residual Drawing II
Another drawing is made when the paraffin is removed from, or drawn out of the cloth giving further understanding of what it means "to draw."

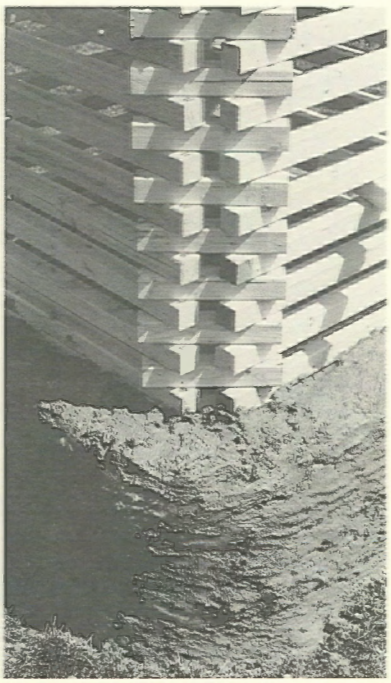
the soul vanishes
the soul vanishes into the shape of things
-Robert Kelly, "The Blue"



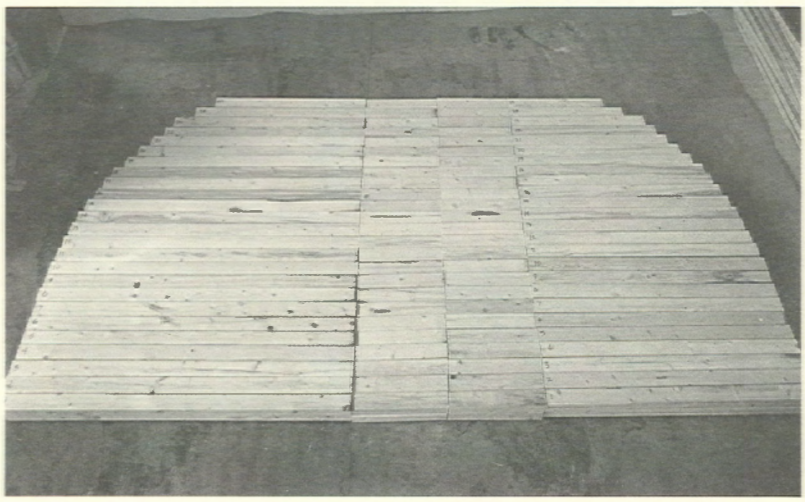
Crate
The materials are unbound and carefully accounted for, the residue and residual drawings are crated, ready to move on to a new place.

FIRE-PLACE

This vessel is an urn, a "reminder of ashes and the fragility of life." Wood, stacked and bound, is covered with earth (clay and cement), concealing that which is inside the vessel for fire. The vessel is handed over to the forces of nature-fire and time. Fire consumes the structure, leaving the earthen shell.



In the bright crystal of your eyes
Show the havoc of fire, show its inspired works
And the paradise of its ashes.
-Paul Eluard
-Black Elk, *The Sacred Pipe.*



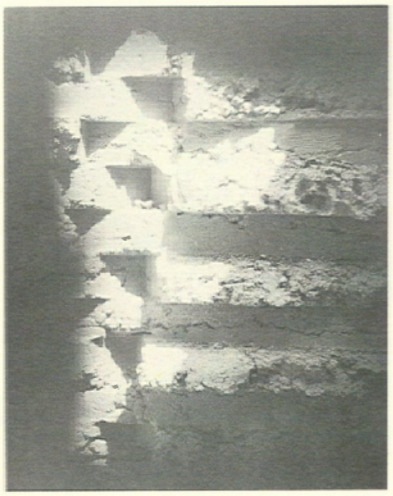
25) 8' 2 x 2's cut into 96 pieces, stacked
20 cubic feet (1600 pounds) of clay/ cement (earth) coating
1 part lumite cement
2 parts fire clay
1 part sand
1/2 part perlite

applied in 100 pound batches, 4" thick, each requiring 1 hour to apply, 16 hours to enclose
dried for 3 days
fired for 12 hours

The sacrificial fire, center of the universe, returns the vertical object to the horizontal landscape. Opened and laid out in fragments, it is the body quartered, residue/memory of a cataclysmic event. The sacred ashes are gathered and bundled. Place is marked on the burned earth.

The power of a thing or an act is in the understanding of its meaning.

Hunting the Phoenix



Leaf through discolored manuscripts,

make sure no words

lie thirsting, bleeding,

waiting for rescue. No:

old loves half-

articulated, moments forced

out of the stream of perception

to play 'statue,'

and never released-

they had no blood to shed.

You must seek the ashy nest itself

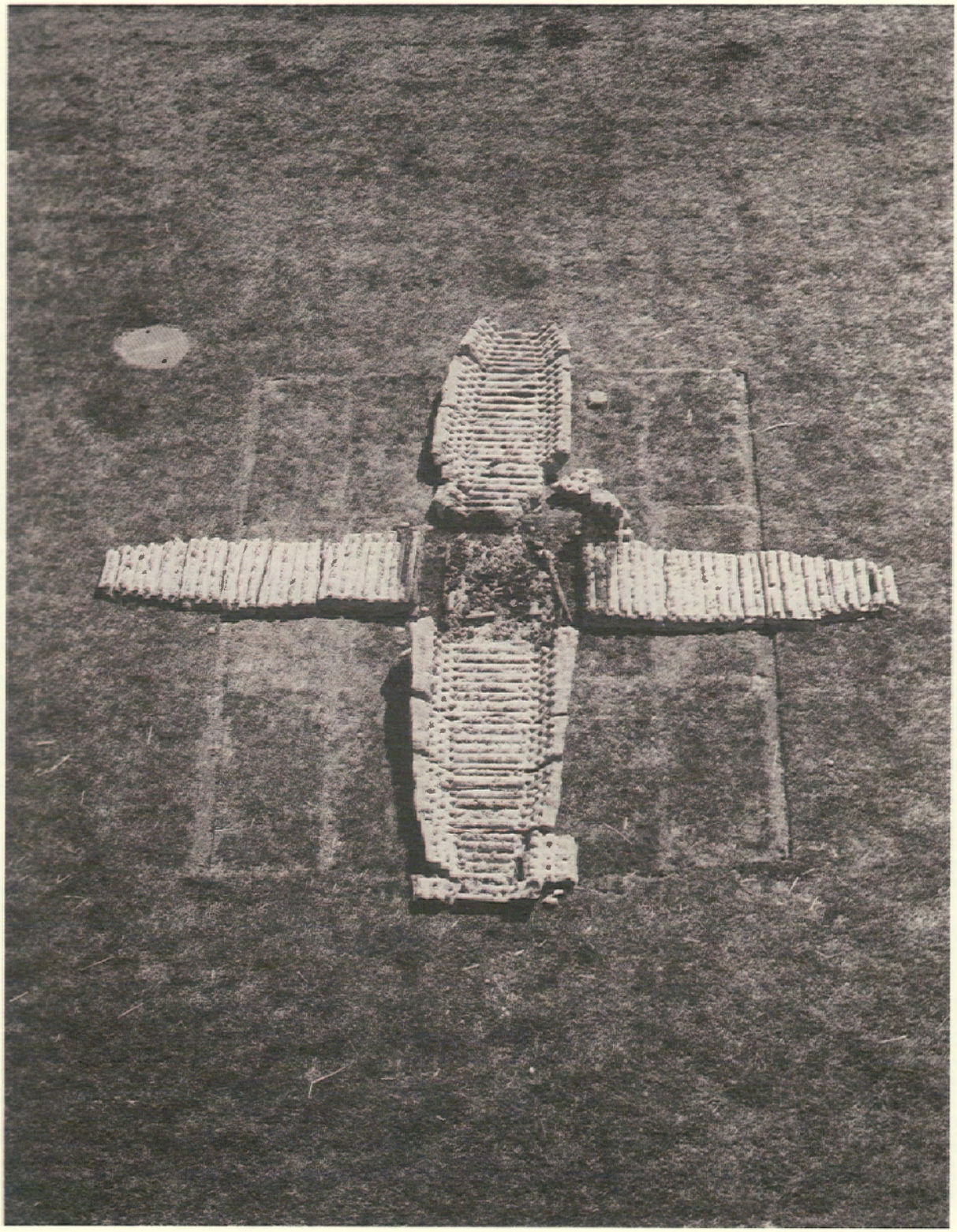
if you hope to find

charred feathers, smouldering flightbones,

and a twist of singing flame

rekindling.

-Denise Levertov, *Breathing the Water*



clarity
freed from confusion or doubt,
burden or obligation,
guilt or innocence,
recognizing what needs to be done
and doing it.

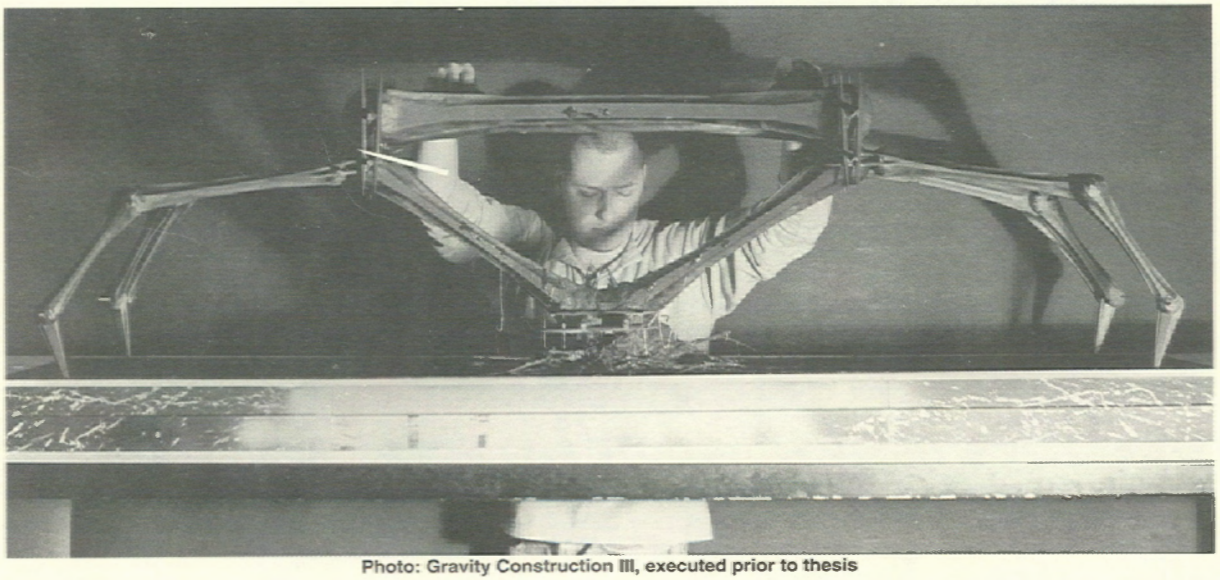


Photo: Gravity Construction III, executed prior to thesis

nature
the cycles, processes, and forces
producing and controlling the
physical world

order
the condition of coherent, logical or
systematic arrangement in time or
space.

purity
free from contaminants: clean,
sinless

Donald L. Stenstrom is a graduate student in architecture at the University of Michigan.

Intervention
in
the Evolution of Man

Donald L. Stenstrom

i believe the human mind is too powerful and precious a thing
to be subjected to the cycles of nature
nature has been kicking our ass for far too long
in fact she is undefeated
100 trillion and 0
undisputed heavyweight champ
obvious owner of the ring and yet
still hungry
i believe we should acknowledge that we are indeed
losers
in our battle with the cycles of nature
let us re-examine the subtle methods and tactics of our opponent
master of chaos
southpaw no doubt
relentlessly wearing down the soul through
the order of disorder
the orchestration of a monstrous machine
floating
illusive
liquid

dammitalltohell

she is a two faced apparitional (*) that we can't seem to
jab, pin down, cage or contain in any manner
if it is not clear
i am speaking of nature's ability to end human life
to me
this hypnotizing and widely accepted truth is not logical
absolutely, completely, entirely, fully, totally, ultimately

unacceptable

when one determines that the logic of this cycle
cannot be fully understood
that there exists too many variables

(deleted)

one could say polar options arise

wait on your knees in perpetual darkness
fondling philosophy or religion
or
engage evolution armed with the power of cross-roads science

Lucien Gerardin
on cross-roads science from his book bionics:

'everything is only a part of a larger scheme. But the number of subjects has increased so astronomically that a single mind can no longer hope to embrace them all. True progress can only come from a composite view; invention consists of connecting things never before connected, and yet one must be aware of their existence before one can connect them. If specialists from different disciplines were brought together this would provide the initial conditions for some effective meeting of different points of view. Instead of one mind trying to grasp everything there would be an association of minds, all pooling their knowledge.'

the exploration of the said intervention
is an experiment in cross-roads science
combining the disciplines of art, architecture, cybernetics,
engineering, medicine, robotics, and others
as an architect studying the creation of design systems
i see my role as an ignorant but objective orchestrator
stepping into each professionals shoes long enough
to define the beginnings of a coherent and feasible whole

the intervention consists of a surgical transfer
of our existing brain and spinal chord
to a re-designed and re-engineered body which will
maintain, inform and transport these organs
the intent of this designer
is to streamline a new body thru
rigorous elimination, simplification and redesign
a brief and frantic study of the human body's existing systems
resulted in a new organization pertaining to the proposed transfer
four entirely interactive and interdependent divisions evolved
they are:

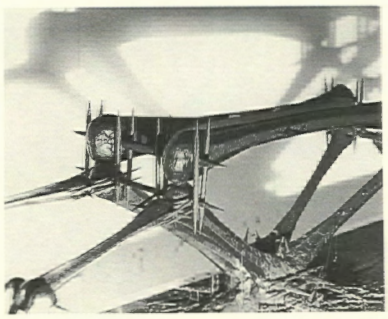
division 1 : existing
division 2 : structure
division 3 : energy
division 4 : messages

division 1 - existing
the organization of the nervous system is composed of 2 subsystems:
the central and peripheral.
I am suggesting that the central nervous system
be transferred to a new body - eliminating the peripheral system.
What elements are necessary to maintain the "self"?
I don't know
The brain and spinal chord: our component of thought
and its connection to a body
were selected as the essential elements to be salvaged in the
intervention
simply stated yet frighteningly complex
the existing division is composed of all elements needed to maintain
these two organs

division 2 - structure
consists of all elements necessary to support, protect and transport
the brain and spinal chord
the design of these elements define the image of a mechanical body
this is the major focus of the thesis
and the only area in which this designer is even remotely comfortable

division 3 - energy
electric power is to be used
for information and signal processing - methods based on electricity
are superior to air, gas and oil pressure methods
weight, maintenance, efficiency, power and flexibility
all influenced this selection
along with its potential compatibility with existing nerve impulses

division 4 - messages
composed of all elements the existing organs need
to be informed by and communicate with the outside world
included in this division is the system of communication between the
brain and the the body
it is hoped that the spinal nerves, those tracts which leave from the
spinal chord,
can be tapped at their point of departure
I am hopeful that our electrically charged nerve impulses
originating from the brain
can in fact be processed by an electronic body



the following is a short review of our existing systems
generated from spence's text human anatomy and class notes taken
at the university of michigan school of medicine

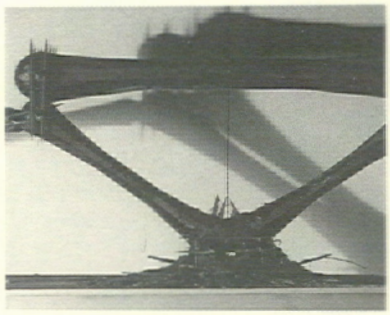
integumentary system
skin, nails, hair and such
protects internal body structures
prevents fluid loss
helps regulate temperature
to be eliminated
functions accounted for in the design of divisions 2 and 4

skeletal system
bones
supports and protects soft tissues and organs
to be eliminated
this is the major focus of division 2 - structure and of this designer

muscular system
skeletal muscles
moves body and its parts
to be eliminated
functions accounted for in the design of division 2 - structure

nervous system
brain, spinal chord, nerves, sense organs
controls and integrates body activities
responsible for "higher functions" such as thought
and abstract reasoning
the central nervous system is the core and focus of
division 1 - existing
all elements in the design of this new division
shall be directed to maintain and or improve its condition

digestive system
mouth, esophagus, stomach, small intestine, large intestine
salivary glands, pancreas, liver, gallbladder, etc.
supplies body with substance from which energy for activity is
derived
and from which components for synthesis of required substances are
obtained
to be eliminated
functions to be accounted for in divisions 1 and 3



urinary system
kidneys, ureters, urinary bladder, urethra
eliminates variety of metabolic end products such as urea
conserves or excretes water and other substances as required
to be eliminated
functions to be accounted for in the design of division 1 - existing

reproductive system
female: ovaries, uterine tubes, uterus, vagina, mammary glands
produces female gametes
provides environment conducive to the development of fertilized ovum
male: seminal vesicles, testes, prostate gland, bulb urethral glands, penis and associated ducts
to be eliminated

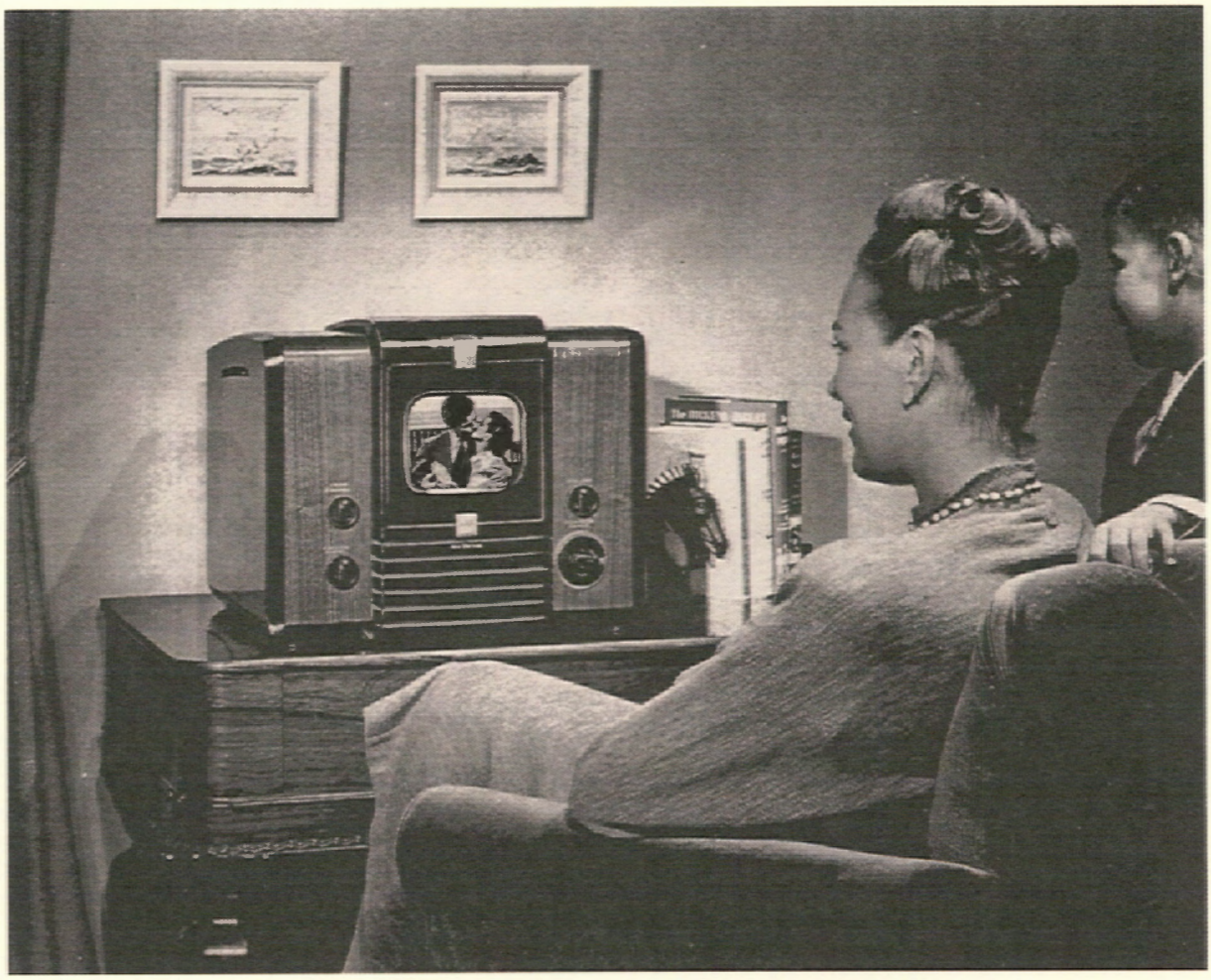
endocrine system
hormone secreting gland
pituitary, thyroid, parathyroid, adrenals, etc.
controls and integrates body activities
function closely allied with that of the nervous system
to be eliminated
accounted for in the design of divisions 1 and 4

circulatory system
heart, blood and lymphatic vessels, lymph
links internal and external environments of the body
transports materials between different cells and tissue
it is hoped to eliminate these elements by the use of
a mechanical system and a derivative of an artificial blood prototype - fluosol

respiratory system
nose, trachea, lungs
transfers oxygen from the atmosphere to the blood and
carbon dioxide from the blood to the atmosphere
to be eliminated
redesigned under division 1 - existing

what i am proposing is a possible alternative to death
i consider it an unwavering right cross to the chin of nature
in the end
i don't know

let's do it for grandpa



Geoffrey Makstutis is a graduate of the University of Michigans's architecure program and is currently a student at the Architectural Association in London.

This article constitutes a fragment of a larger work entitled "Written Blindly By The Sun." Substantial modifications were necessary for the publication of the work in this excerpted form.

Notes on the Disappearing Experience

Geoffrey Makstutis

This essay is an attempt to address the issue of the increased use of devices of visual recording in mediating our bodily experience and the impact of recorded images on our understanding of reality.

When Marshal McLuhan wrote *"the medium is the message"* he could have had little idea how far beyond that state the world might progress. With the increasing availability of low cost technology, we are seeing a shift toward a condition where the *medium is not merely the message, but the experience*. The recording of the event now carries greater valence than the initial experience.

The intention behind recording is, essentially, to capture and hold a moment in time - to make the transient timeless. The recording provides a visual proof of history. Without the proof, history takes on the character of myth; one may believe but cannot prove. The recording, as indexical proof, breaks down our resistance to believing in the past. We believe what we see - and what we see can be believed to be *experiencable*. The reality of the photograph makes more accessible the reality of the past. "From a phenomenological viewpoint, in the photograph, the power of authentication exceeds the power of representation."[1] The reality of the photograph does not approximate reality but proves reality and allows us a path into the past. This, like any attempt to save a moment, is to forever strive to relive that moment; it is an attempt to alter the present reality by a nostalgic re-centering of the viewer.

[1] Roland Barthes, *Camera Lucida* (New York: Hill and Wang, 1981), 89.

Possession, representation, collection, voyeurism, technology, and recording all play a part in the historical development of the phenomenon of the disappearance of experience. All recordings, and the act of recording, represent a voyeuristic condition which allows the thrill of watching without the need to participate. This voyeurism is one in which there is a great deal of power asserted by the individual. The imposition of the device between the individual and the event mediates the voyeur's participation in the event. The device "gets between the viewer and the world," and "shapes reality according to *its* terms."[2] It occurs, then, that what was intended to act as the method of capturing the event as an amplifier for the human eye actually replaces the viewer and negates the event. Recording scenes of violence or pain necessitates

[2] Rosalind Krauss, *The Originality of the Avant-Garde and Other Modernist Myths* (London: MIT Press,1986).

a separation of the recorder from the event. In such situations the voyeur has chosen not to be a part of the event or action in order to be the recorder, thus, there is no relationship between the event and the recorder's experience. The more one's experience is given over to the recording (both as action and product), the more one is separated from that which one seeks to capture.

When one is placed into a new situation or culture, the first reaction is to raise a barrier between oneself and the situation; the recording device. This mediating device allows one to be isolated from the situation, reassured by the fact that there is no real experience, only the observed. In such cases the experience is not one of event, but of recording. Where the reality lived is invaded by the action and contemplation of recording, the experience *is* the act of recording. McLuhan argues that photography corrodes the individualistic activity of production, "no one can commit photography alone."[3] Yet, while recording requires at least the observer and the observed, one cannot say that there need be any engagement between the two. Rather, the more likely condition is that where any potential engagement occurs, it is isolated through the lens. In the act of recording the image the observer becomes the only active force, since the observed is just an object within a field of focus. "In the image world, it *has* happened, and it *will* forever happen in that way."[4] More importantly, the thrill of the recorded voyeuristic action can be regained each time the event is viewed from the recording. It is this ability to review (and thus relive) that is the primary lure of the act of recording.

[3] Marshall McLuhan, *Understanding Media* (London: Ark Paperbacks, 1964), 189.

[4] Susan Sontag, *On Photography* (Middlesex, England: Penguin, 1977), 168.

The recording device may be the photographic camera, the cine-camera, or the video camera. The resultant collection of images, gathered without experience, is not a reality, only a partial reality in which the totality of life cannot be grasped. That which is represented by the recording (the physical object - the photograph, the film, the tape) is not experience but *null-experience*. By this term I mean the concept that the loss of primary experience exists both phenomenologically and physically. If we assume that the physical existence of the recording means that the event has taken place then we may conclude that the recording represents the negation of the experience of the event or action for the operator of the device. Further, the existence of the recording leads to the necessary acceptance that the event or action was not experienced. Therefore, the recording represents not experience but null-experience.

The photograph is a surface for the projection of desires. This simulation is a reality which cannot exist, for it is either a reality past or a reality of possessing an object which one cannot possess. To possess is to control; by possessing the recording one is able to control the simulation and the level to which one allows oneself to project into the surface those desires that the object (recording) represents. The mass media that arises from

the reproduction and distribution of photographs places the photograph firmly in the realm of the commodity, for one is able to buy and sell the photo as an object in and of itself.

In any photographic reproduction there is an essential element lacking. The reproduced has no spatial or temporal presence because its existence relies upon the presence of the original work of art. The presence in space and time of the original is based upon the history that surrounds and infuses the work. This may include both its physical condition (a clue to its movements and those of the humans around it) and the history of its ownership. Spatially and temporally, the reproduction can inhabit places and times that are inaccessible to the original. However, the non-rarity and non-uniqueness of the mechanical reproduction denigrates the authority of both it and the original. For, if "the authenticity of a thing is the essence of all that is transmissible from its beginning, ranging from its substantive duration to its testimony to the history which it has experienced,"[5] then by reproduction the authenticity of the original is placed into jeopardy. "Substantive duration" is no longer an issue and, ultimately, what is jeopardized is the authority of the object.

[5]Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction." *Illuminations* (New York: Schoken Books, 1969), 221.

The moving image carries with it a greater impact and believability simply by its ability to show motion. While the photograph can hold a moment in perpetual stasis, the cinematographic forms allow serial vision. This ability frames the recording in a point in time, based upon the continuity of the moments preceding and following. Cinematic space is not based on the physical but on the temporal - it is time. The dimensions of cinematic space are measured in fractions of a second; those fractions being the shutter speed of the camera.

The voyeuristic conditions particular to the cinematographic are the scale and the reversibility of the sequential which are inherent to the medium. As a projected medium, the cinematographic has the ability to approach the scale of the real world. While painting and photography also have the ability to approach human scale they both have similar drawbacks: both are static mediums and, especially in the case of photography, do not easily present themselves at the scale of the human body.[6] Because of the serial nature of the cinematographic, and the sequential nature of the medium (a series of consecutive images on a linear piece of film), one has the capability to reverse the sequence or to replay the sequence again and again. This reversal capability means that, to the collector, the past is not lost. Whereas the photograph broke the resistance to history (as a myth) the cinematographic breaks the resistance further by introducing the possibility that (in some sense) there is no past. One can not only see the past and project (nostalgically re-center) into that reality, but one can replay the sequence of time surrounding that moment which further defines the reality.

[6] One exception to this is the photographic medium of slide transparency. As a projected medium, it is ideally suited for approaching the human scale. Also, because of the small size of the finished medium it is easily transportable, unlike paintings and photographic prints which to approach human scale must be produced at the scale of the body.

The primary vehicle in this system is the television - *the video screen.* As Baudrillard points out this condition replaces the "scene and mirror" with the "non-reflective surface, an immanent surface where operations unfold - the smooth operational surface of communication."[9] The screen creates a situation in which the viewer is no longer experiencing an action (scene), but is only the receiver of information through the network of connections. The individual now controls the network. The condition is one of surveillance rather than phenomenon. Like the isolation of the body from the action which occurs with the mediation of device (camera) here we are faced with a further layer of isolation by the screen. Both cases provide the user with a specific sense of power in the ability to control and mediate, but the screen now allows (in conjunction with the playback device) the ability to speed forward, back and freeze.

[7] Baudrillard, "The Ecstasy of Communication." *The Anti-Aesthetic*, Hal Foster,ed., (Port Townsend, Washington: Bay Press: 1983), 127.

The resulting loss of the experiential primacy, in favor of the recording, is that the null-experience itself becomes a commodity. As Marx related, the commodity is corrupt, in that it is based on the notion of free circulation. In the case of the recorded null-experience, "free-circulation" derives from the fact that the recording carries no primary value - it is only a collection of images to be consumed later. With the existence of the recording, the later viewing can take place at any period in time and to some degree, anywhere. The circulation of the image in time is free of the bonds of temporal space. Because the primacy of the experience is denied by the act of recording, the reviewing (carried out at any later time) has no use until consumed. Unlike the object, the commodity has no weight, opacity or substance and thus, no use value. However, the ability to control the screen and the images which are revealed upon the screen give the controller the capacity to develop an exchange value for the commodity. That is to say that, as the viewer repeatedly views the null-experience (in order to attempt to regain the lost experience), more and more desire is developed for the commodity.

Photography, film, and (especially) video have the unique ability to reverse the normal Marxist *labor theory of value.*[8] Although Debord claims that there is a constant "tendency of use value to fall," in video the use value actually increases as the "real consumer becomes a consumer of illusions." For it is specifically these illusions which are the commodity that the operator of the device wishes to capture and then relive through repeated viewing. This repeated viewing creates a greater value or desire for the null-experience. "The commodity is this factually real illusion, and the spectacle is its general manifestation."[9] The increase in use value, perversely proportionate to the loss of meaning, is desire - the desire to attempt to relive the nullified experience. It is this desire to participate in the null-experience that gives the commodity its use value and forces the recording into the role of information. Strangely, however, it is the destruction of the social dimension that creates the spectacle,

[8] The labor theory of value, according to Marx, states that the true value of any product or service is simply the about of labor used in its production. See Daniel R. Fusfeld, *The Age of the Economist* (London: Scott, Foresman and Company, 1986), 62.

[9] Guy Debord, *Society of the Spectacle* (Detroit: Black & Red, 1983), 47.

causes the loss of meaning, gives video its power, and makes it desirable. "For it is not meaning or (of) the increase of meaning which gives tremendous pleasure, but its neutralization which fascinates."[10]

[10] Baudrillard, *In the Shadow of the Silent Majorities* (New York: Semiotext(e), 1983), 36.

Like cinema, video has the added layer of becoming *spectacle*. In the case of video, the spectacle is private and personal, while the spectacle of cinema is public. In this situation, video reduces the quality of that which it presents, because it carries no meaning beyond that which is offered to the individual who records - it is *information*. And if, as Baudrillard holds, information is the implosion of meaning[11] then, with repeated viewing, the spectacle loses more and more meaning as it gains use value. As such, the image does not communicate (in the sense that it does not offer meaning beyond the fact that it is present). Again, the screen is the vehicle for this condition. Because the screen of video is the same screen as television (utilizing the same technology on a personal level) the information presented within the surface is viewed in the same way as television. Just as television is mass media at a global scale, video is mass media at the scale of the individual. As Baudrillard writes: "Media, *all* media, information, *all* information, acts in two directions: outwardly they produce more of the social, inwardly they neutralize social relations and the social self."[12] We may conclude that, if television (and cinema) is the outward (global) manifestation of mass media and video is the inward (personal) mass media, then television produces the social relations and social self (by being global) and video destroys the social. What video presents to the operator / viewer is the false hope of regaining that which the null-experience, as information, has negated.

[11] Baudrillard, "Implosion of Meaning in the Media." *In the Shadow of the Silent Majorities*, 95-110.

[12] Baudrillard, *In the Shadow of the Silent Majorities*, 66.

The camera has subverted the human experience of the site. Any object may now be removed from its context, thus causing a disjunction between object and site. Through this fragmentation it is now possible to see any piece of the whole as a singular work of art in itself. The result of this process is that the fragment (removed from its context), while still a credible image in itself, loses some sense of presence (being) by its lack of reference. If one of the frescoes from the chapel of a church is photographed, we are presented with a fine example of fresco painting. Yet we do not understand the relationship between this segregated portion of the fresco and those which surround it. Further, we cannot understand the relationship of the entire series and its specific location in the space of the church. In the end, the reproducing of the fragment isolates the viewer from the full understanding of the original.

Baudrillard writes that this condition is one in which the psychological dimension has vanished as people do not project themselves into their objects. In the past people measured or were aware of their relationship to their surroundings by the physical relationship to the objects of the environment. This psychological projection relies on the use of memory and physical presence of objects in order to define the space within

which the individual's reality is set. The screen, however, does not represent a physical presence but, as Virilio says, the *fourth window* - a link with a global network of information.

With this increased isolation from the initial action the proximity of subject and object becomes increasingly divorced. The screen increases this gap to the point where the human body is only the carrier for the receiver/controller. The body is denied as the viewer projects into the network towards a re-living of the experience. All that remains is the immediacy of a miniaturized matrix of concentrated effects.

Here is McLuhan's prophecy operating with every situation where one possesses the technology of video. A great deal of the spectacle, and lack of meaning in the image, is reliant upon the fascination that people have with the medium's technology. The power and immediacy of the technology has lead directly to the desire to record and playback. All of the devices that we have discussed are simply extensions of the human eye leading to a perceived extension of reality, and as McLuhan points out, such extensions are narcissistic in nature.[13] This is a narcissism which causes a numbness (*Narcissus*, derived from the Greek *narcosis*) within the mind in an attempt to maintain equilibrium in a state of constant flux; the modern state wherein one is constantly subject to a changing set of referents. Extensions of one part of the body, according to McLuhan, demand new ratios or equilibrium in the non-extended organs. So the extending of the eye by the device requires a new equilibrium to be found in the mind in order to equalize reality. The individual projects into the surface (extending mind/body) in order to reach an equilibrium with the recording. This, coupled with the speed at which we now gather and assimilate information, leads to a condition where the device becomes more and more active in the life of the individual (the increasing extension of the body). Thus, one is constantly in the process of seeking to equalize by mentally projecting into the screen.

[13] McLuhan, *Understanding Media*, 41.

"Our taverns and our metropolitan streets, our offices and furnished rooms, our railroad stations and our factories appeared to have us locked up hopelessly. Then came the film and burst this prison-world asunder by the dynamite of the tenth of a second..."[14]

[14] Benjamin, "The Work of Art in the Age of Mechanical Reproduction", 236.

Although the ability to collect moving images has provided greater potential for the simulation and inhabitation of the null-experience it has also subverted the reading of the reality that one seeks to relive. The most vital element to be lost in the rise of the cinematographic is the loss of spatial constancy. The disappearance of spatial constancy in the cinematographic medium has a profound impact on the way in which one uses the device of recording. It is no longer necessary to collect and review the world as one might truly experience it, rather one can now dissolve the distances of the real world while recording. The use of the

camera (be it photographic or cinematographic) allows the immediacy of the recording to match the immediacy of the eye, but can transcend the ability of the eye in its ability to penetrate, reduce or expand space. As Virilio points out, architecture (the physicality of space) resists the "nihilism of the shooting camera as the ramparts of a fortress, five hundred years earlier, resisted the fitful flickerings of artillery before they were destroyed by the shattering development of its projective power."[15] Like the power of projected artillery, the power of projected moving images breaks down the solidity of space.

[15] Paul Virilio, *War and Cinema* (London: Verso, 1989), 13.

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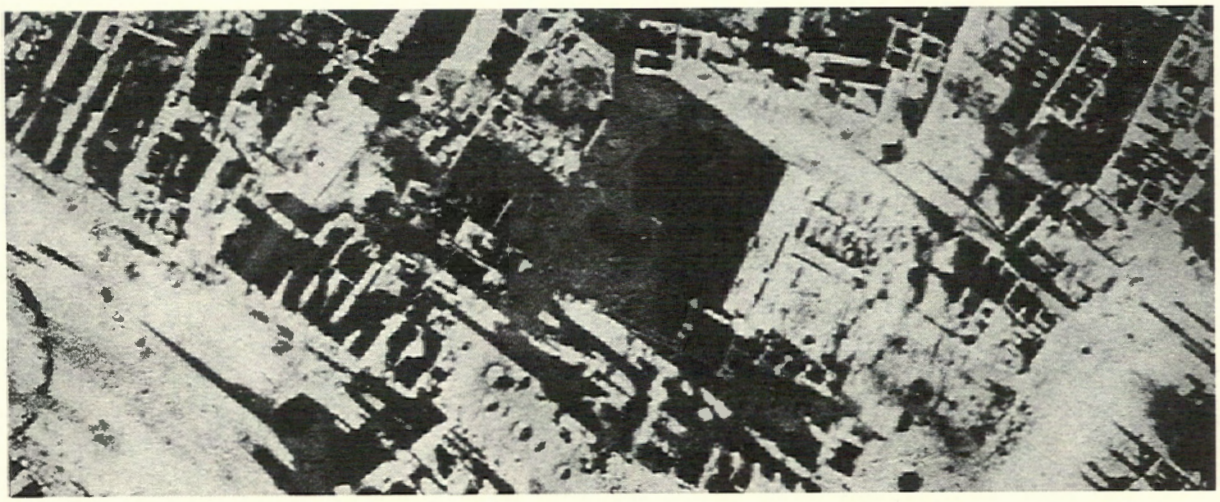

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Camouflage as Process

Techniques of Counter-Surveillance in the Production of Architectural Knowledge

Charles Waldheim

'camouflage':
from the French verb 'camoufler'
"—to play a practical joke, to snub, usually by blowing smoke in the face of someone"
from 'Chault Moutlet'
"—hot face"

A visual survey of the recent products of architectural education might leave one unclear as to the relationship of these practices to the design of buildings. To look at certain of the works in this publication, for example, one would find drawings and models which are clearly intended to be read as proposals for buildings. These occupy the same space as objects which must be mis-taken as something other.

Certainly, one reasonably expected activity of those capable of author(iz)ing buildings might be the legitimate exercise of that authority in the drawing up of plans for future constructions. That being the case, how is it that the practices (read products) of those training to be architects should dissemble themselves so greatly from anything that could be seen as a building?

A provisional answer (for the sake of continued questioning) might be found in the current ruptures and shifts within the division of knowledge itself. In fact, architectural education might presently be enduring a re-formation of some significance; and this rupture (between responsible professionalism and disciplinary identity) might be sketched along the axis:
simulation — analog.

If one accepts the possible emergence of architecture as an academic discipline, then the relations between it and other fields of knowledge might be suspected as a source of our current inf(l)ection. Perhaps practices of the "unsafe text" have replaced the pure practices of "textual

healing" which should rightfully characterize the transmission of architectural knowledge (Somol); but could paranoia of linguistic imperialism alone account for what we see?

"We might say, as a matter of fact, that interdisciplinary activity, today so highly valued in research, cannot be achieved by the simple confrontation of specialized branches of knowledge; the interdisciplinary is not a comfortable affair: it begins effectively when the solidarity of the old discipline breaks down - perhaps even violently, through the shock of fashion - to the advantage of a new object , a new language, neither of which is precisely this discomfort of classification which permits diagnosing a certain mutation."

Roland Barthes, "From Work to Text," in *The Rustle of Language* (Hill and Want, 1986).

In his article "From Work To Text," Roland Barthes locates the status of interdisciplinary inquiry as correctly falling under the sign of the affair. On the surface of things, one's affairs are simply a matter of business — that which must be done — one's day to day responsibilities. We speak of one's business affairs or affairs of state; should something distract us from this business, we can nominate another to tend to our affairs. Even before death we are required to put our affairs in order. Always present, however, is suspicion of the affair as an illicit rendezvous outside the limits of legitimate discourse — as the erotic, if somehow inevitable, collapsing of the appropriate distance between two bodies: socially constructed and legally construed. Any fruit born of such a non-sanctioned union must by definition be considered illegitimate.

This bastardization places us in an ambiguous situation regarding our own identity. In the space of language, discipline intersects such diverse locations as physical punishment, the means of correct training, and the subdivision of labor/knowledge. Paradoxically, discipline suggests both coercion and self-identification.

If, for a moment, we bracket these considerations of architecture as an emerging discipline — an answer to our question might be found within the very practices of architectural education itself. This essay will attempt to explicate the present situation by positing the following: that certain studio practices have become a site for deliberate (mis)recognitions and that intentional strategies of (mis)reading are being employed as method. These methods might generally be described as utilizing techniques of counter-surveillance; and, counter-surveillance as a body of techniques might include concealment, deception and in its most subtle application the art of camouflage itself.

"One is an artist at the cost of regarding that which all non-artists call 'form' as content, as 'the matter itself'. With that, of course, one belongs to an inverted world: for henceforth content becomes something merely formal — our life included."

Friedrich Nietsche, as quoted by Dalibor Vezelay in "Architecture and the Conflict of Representation" in *AA Files*, No. 8, January, 1985, 21-38.

Taking this point of view, some assumptions implicit in the original question become visible. In questioning the relationship of these techniques of mis-recognition to the expected production of architects, we have mistaken methodology as a source of meaning. That is, that the practices surrounding the making of an architectural project have, until recently, been taken as the site for a reading of that project's content. This taking of means as ends might be one source of our (frustrated) expectation that process approximate product.

Regarding these practices of mis-reading in the making of an architectural project; a parallel might be found in another field of inquiry which could help flesh out a line of argument. In his *Four Fundamental Concepts of Psychoanalysis*, Jacques Lacan speculates on the formation of the self

during childhood. In Lacan's account of the "mirror phase" the key process through which we are produced as a viewing subject is itself founded on a mis-recognition of the self for an other. Taken at the level of analog, the production of an architectural object might be understood as the reflexive complement to the psychological formation of the subject which views it. Both of these formations rest on a foundation of mistaken identity.

Given this analog, the products of recent architectural education begin to dissemble themselves from those produced under an assumed equivalence between method and content. Specifically, studio practices of displacement, simultaneous reading, multiple reading, and re-framing can be seen as strategies for re-viewing the already seen toward new imaginative possibilities.

Given this understanding of current affairs, it seems curious (if not anachronistic) to insist on the means of a projects making as the sole site for that project's understanding. The result of this prejudice has been to polarize reception of the work. This has both cast suspicion on those practices of mis-reading and simultaneously restricted the interpretation of the projects coming from those methods. Frequently, projects produced through certain of these strategies can only be interpreted through the means of its own making. The status of such a project is thus changed from the "made-for" to the "made-by." One effect of this has been to propel the increasing autonomy of studio practices and render il-legible/in-eligible other "normative" readings of a project's contents. That is not to say, however, that method could not be a potential text for the reading of a project — but here it is understated to problematize the recent confusion surrounding the 'objects' of architectural education.

"Camouflage is disorder (as are trance and ecstasy) . . . camouflage makes it hard to see what is supposed to be alike and what is thought to be distinct. By these two maneuvers (by which all things look alike or by which a thing is split), camouflage makes it hard to see a part within a larger whole, to distinguish part from part, or to discern vital parts from those which are of no concern. One can camouflage thoughts of things as readily as the things themselves, since there need be no distinction between seeing and thinking. If, in order to perceive, a 'figure' must emerge from a 'ground', then one must also sort to see."

Roy Behrens, *Art and Camouflage* (University of Northern Iowa: The North American Review, 1981), 71-2.

The prejudice of granting a central position to process in the interpretation of architectural practices might be located historically as originating in the nineteenth century. This century found a rupture within architectural education which transformed ours from an apprenticeship to a professional training in the academy. At this moment when methods of interpretation and means of production become speakable as separate discourses — they are also inscribed in curricula. The teaching of architecture, then, becomes speakable as a discreet form of knowledge. Our present situation of (seemingly) radical disjuncture between the practices of the architect and those of the student — rather than reflecting some sort of fin de siècle decadence or cultural malaise — might simply be inscribing a set of conditions which preceded our own.

At this point, it might be possible to question the centrality of the 'meaningful act' as it persists within architectural thought. One step in this line of inquiry might be to pose a semiological model for the production and interpretation of architectural works. From this point of

view, the arbitrary character of the signifier (Bryson, et. al.) suggests a line of argument prejudiced within our field of assuming process to carry meaning which is essential to the reading of a given text.

"To claim.... that architecture is a kind of writing is not itself notable after twenty years of insistence on the language model."

Robin Evans, "Not to be Used for Wrapping Purposes," in *AA Files*, No. 10, Autumn, 1985, 68-78.

To push the linguistic analogy, architecture's inclination to collapse meaning and method would be akin to taking the signifier and its signified to have an essential relationship. Or, even more regressively, that the historical development of a signifier (through etymology) would be a site for the interpretation of its signified. This is another decidedly phenomenological practice (of the Heideggerian flavor) which architectural education seems intent on sustaining in the face of epistemological shifts in other fields.

If, adopting the psychoanalytic analog, the historical development and formation of the self (through process) is producing a condition of present illness — then the requisite response might be psychoanalysis of the object. Rather than assuming to 'know' a project by simple proximity to its historical development — we might rather put the work on the couch and deduce its present condition through its own admissions. Either of these — the psychoanalytic model or the linguistic model — might be brought to bear toward a revisioning of this nineteenth century prejudice prevalent within architectural discourses.

In order to access the strategies of deliberate mis-recognition which this essay postulates as a characteristic of certain current studio practices — a specific example might be useful. In November of 1991 Peter Eisenman delivered a public lecture at the University of Michigan. This talk concerned itself with transformations in recent visual history and extended an argument which he began in an article titled "Vision's Unfolding."

In this argument, Eisenman makes an explicit link between developments in our conception of vision and his most recent architectural projects. Eisenman prefaced his lecture by showing two slides of the so-called F-117A Stealth Fighter, as its image appeared in the New York Times. At this point in the proceedings we might have asked: What relevance could this photograph have to the work of an architect, or to these recent projects in particular?

Luckily, Eisenman did not keep us in suspense for very long. This, the latest in defense hardware, was not — as we might have far more economically assumed — following Corbusier's automobiles and steamships as visual metaphor. It was, instead, offering us a glimpse of an assuredly post-Cartesian object. An object which existed in (and presumably was designed for) the same "folded space" as did his most recent office buildings for Germany and Japan. All this was attested to

with reference to the most recent of French texts—and smothered by the implication that the literal folding of paper models was the requisite methodological response to a reading of post-humanist visual theory.

In this particular example, the status or intellectual currency of Eisenman's recent production is resting not on a reading of the objects produced through a particular method (the office buildings themselves); but rather, is founded on the imbued meaning granted them by the process of their design. In this case the building's proximity to the method of its own fabrication (the process of folding paper models), and the status of this process within the discursive field of other procedures used by architects, is given as the lens through which these projects are to be read.

"It is, I think, precisely this criteria of resemblance that has gone unquestioned regarding the use of deconstruction in architecture."

John Whiteman, "EyeSores: The Function of the Image in Deconstruction," unpublished manuscript, 1988.

At this point, I would argue, Eisenman is operating as a camoufleur—but not in the way that he would have us believe. The insistence on positing design process (the folding of paper models) as the locus of interpretation for an architectural project (in this case an office building) is obscuring the potential usefulness of the process liberated from the requirement of transporting the project's meaning. This ultimately has the effect of shielding the building itself (as one text of the project) from other lines of interpretation or critique.

The strategies of deliberate mis-recognition (relative to other design practices) imbedded in the folding of paper models and the potential re-reading of these "other" spaces toward architectural figuration are indicative of a variety of current techniques which, I would argue, mobilize camouflage as an intentional means toward architectural production. The form of camouflage as process which this essay puts forth (while visible in the Eisenman example) might be distinguished from a concurrent tendency within architectural discourses (Eisenman's assertion of method as content) to locate the method of a project's making as symmetrical with that of its reception.

This tendency, evident in current architectural discourses and certain studio practices, to use the method of production / means of interpretation conflation as a bodyguard to a project's re-reading by others has been commented on (specific to Eisenman) by Robin Evans:

"If Eisenman says his architecture is writing, I would say his writing is an armoured vehicle. What is it protecting? His architecture? Somewhere inside the wrapping, under cover and difficult of access, is the work . . . the aim of architectural writing by architects would thus be to protect the work, the aim or writing by critics to expose it. Protective, evasive strategies abound in Eisenman's writing. The reiteration of recondite, technical terms that suck meaning out of any sentence. The claim of support from higher authority, and more recently the resort to deceptions against audiences and readers which will make it increasingly difficult for critics to catch his tail;

the smokescreen, the bluff, the dodge."
"Not to be Used for Wrapping Purposes,"*AA Files* , No. 10.

"To dissimulate is to feign not to have what one has. To simulate is to feign to have what one hasn't. One implies presence, the other an absence. But the matter is more complicated, since to simulate is not to feign: Someone who feigns an illness can simply go to bed and make believe he is ill. Someone who simulates an illness produces in himself some of the symptoms."

Jean Baudrillard, *Simulations* (East Haven, Conn.: Inbook, 1993).

Those three: the smokescreen, the bluff, and the dodge, it should be pointed out, are all strategies of the camoufleur. This manner of camouflage at the level of interpretation might be distinguished from strategies of camouflage as process which potentially open the object of their production to other means of interpretation. This opening to other contexts of interpretation might suggest a way to avoid our current dilemma of autonomy (relative to representation) where the status of a project is readable solely through a (the) lens of its own making.

Clearly, the intersection of architectural production and techniques of counter-surveillance discussed here, at least provisionally, must at some point come to terms with the relationship of representation to questions of power. The status of these deliberate techniques of mis-reading which might be isolated from within current architectural discourses will continue to be interrogated along the axis of legitimacy — intention.

If, as this essay suggests, we might suspend our prejudice toward conflating intention (as embodied through action or product) with meaning; we may gain some greater perspective on the status of the representation within architectural production. If not — if one expects in Aristotelian fashion or perceptualist accounts for the outward appearance of a thing to give access to its essential aspects — if, in other words, the representation has access to the true; then camouflage will continue to fall under the sign of suspicion. If, however, we grant no precedence of the real over the representation — if we posit a simultaneity of interpretation and production (rather than their equivalence) — one might begin to see the surface of representation (through process) as a site (several among many) for the legitimate inquiry to depth.

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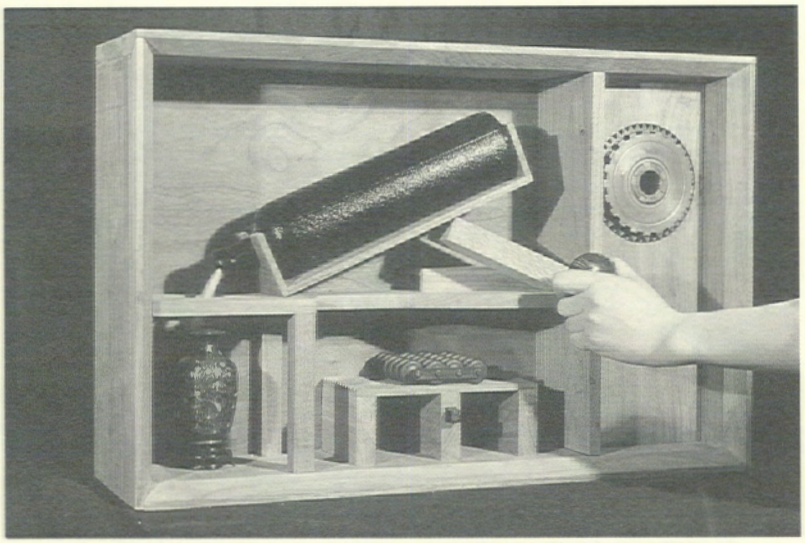

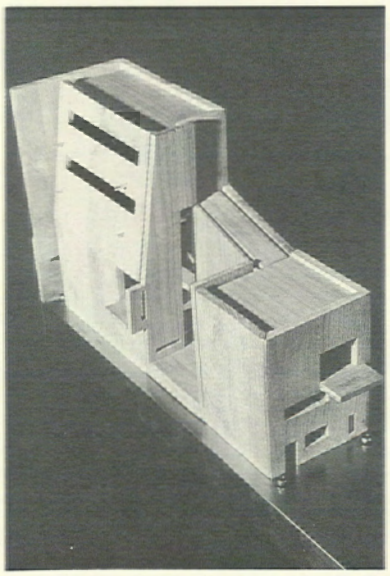

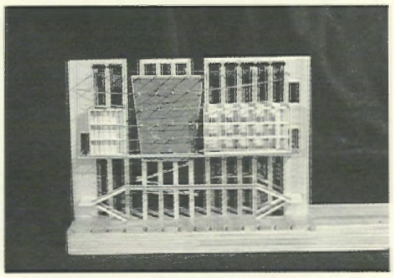

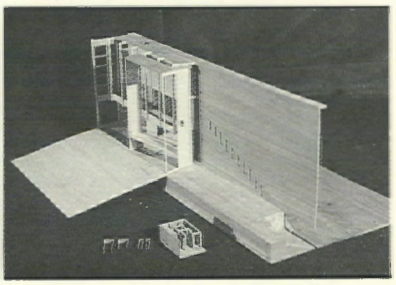

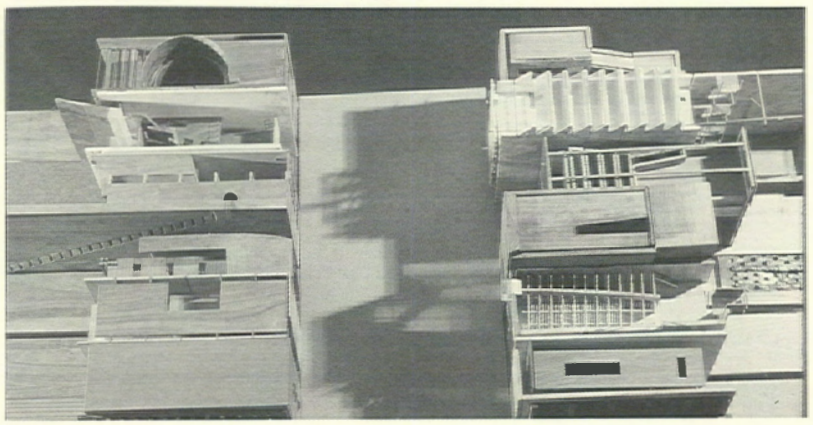

These images are a selection of work from Charles Waldheim's recent studio *"On Housing Collections: Projects for a House as Museum* (after Soane)." The brief called for the design of a house which also "houses" a collection of objects. John Soane's house at Lincoln's Inn Fields in London was used as precedent for this "house as museum." Work began in the workshop with the construction of cabinets or boxes which housed a collection of objects at a scale of 1:1. These cabinet constructions were based on Joseph Cornell's boxes and later served as analogical devices toward the production of the house.

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Peter Chen
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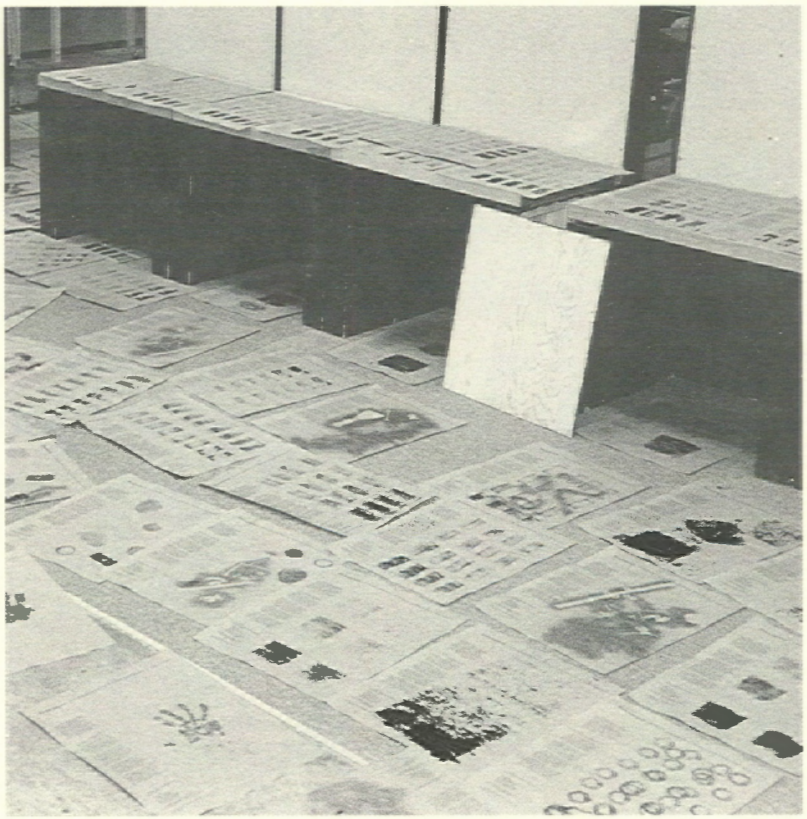

Dean Robert Beckley acted as faculty advisor to the editors of this journal. They are indebted to him for his insightful suggestions, for his faith and for the enthusiasm with which he greeted their initiatives.

Mary Anne Drew provided much needed encourgement to the editors, and warned them them against the pitfalls of previous years.
Craig Hoernschemeyer won the competition for the design for the cover of this issue.

Alfredo Montalvo, Betsy Williams, and ***Robert Beckley*** juried the cover competition.

Thomas Hille, Kent Kleinman and ***Emmanuel-George Vakalo*** provided valuable advice on the*Student Processes* section.
Sandra Patton assisted with budget management and bid coordination.

Kathryn Ridner helped publicize this issue through advertizements and articles in *Portico Magazine* and contributed her PageMaker expertise.
Amy Henry managed administrative details.

Harold Borkin set up and coordinated *Dimensions'* computer systems.

Scott Wood provided advice on numerous technical aspects of publication and produced graphics for the article "Silent, Robust, Predictable And Other Ways of Designing."

Kent Kleinman, Tom Hille, Laura Briggs, Peter Osler, Ana Henton, Suzanne Roach, Leekyung Han, Brett Pudik, Steve Koop, Laura Church, Lisa Kulisek, and Michelle Filipiak contributed photographs for use in the *Student Processes* section.

J. Jiyun Park: wishes to express her graditude to Yuko Maeda, Barbara Krasner, and her sisters.
Ronit Eisenbach would like to thank Dan Hoffman and the members of the studio at the University of Michigan: Jaffar Al-Chalabi, Klaus Buchberger, Brian Gil, Jessica Gutwein, Craig Hoernschemeyer, David Huizenga, Heather Kelsey, Napathan Komarapajkul, Rob Kraska, Susan Kremers, Kitti Kukulprusong, Hai Luc, Joseph Perner, Klaus Poxleitner, Dorothee Raichle, Beth Slone, and Madeleine Sun for their extensive work, faith, and enthusiasm for the project. Additionally, She would like to acknowledge Al-Chalabi, Buchberger and Poxleitner for their help with the photography, and Daniel Chazan, Monica Wyatt and Sukhwant Jhaj for their careful reading and comments on the paper.

The editors are greatly indebted to all of those who have helped to make this journal possible.

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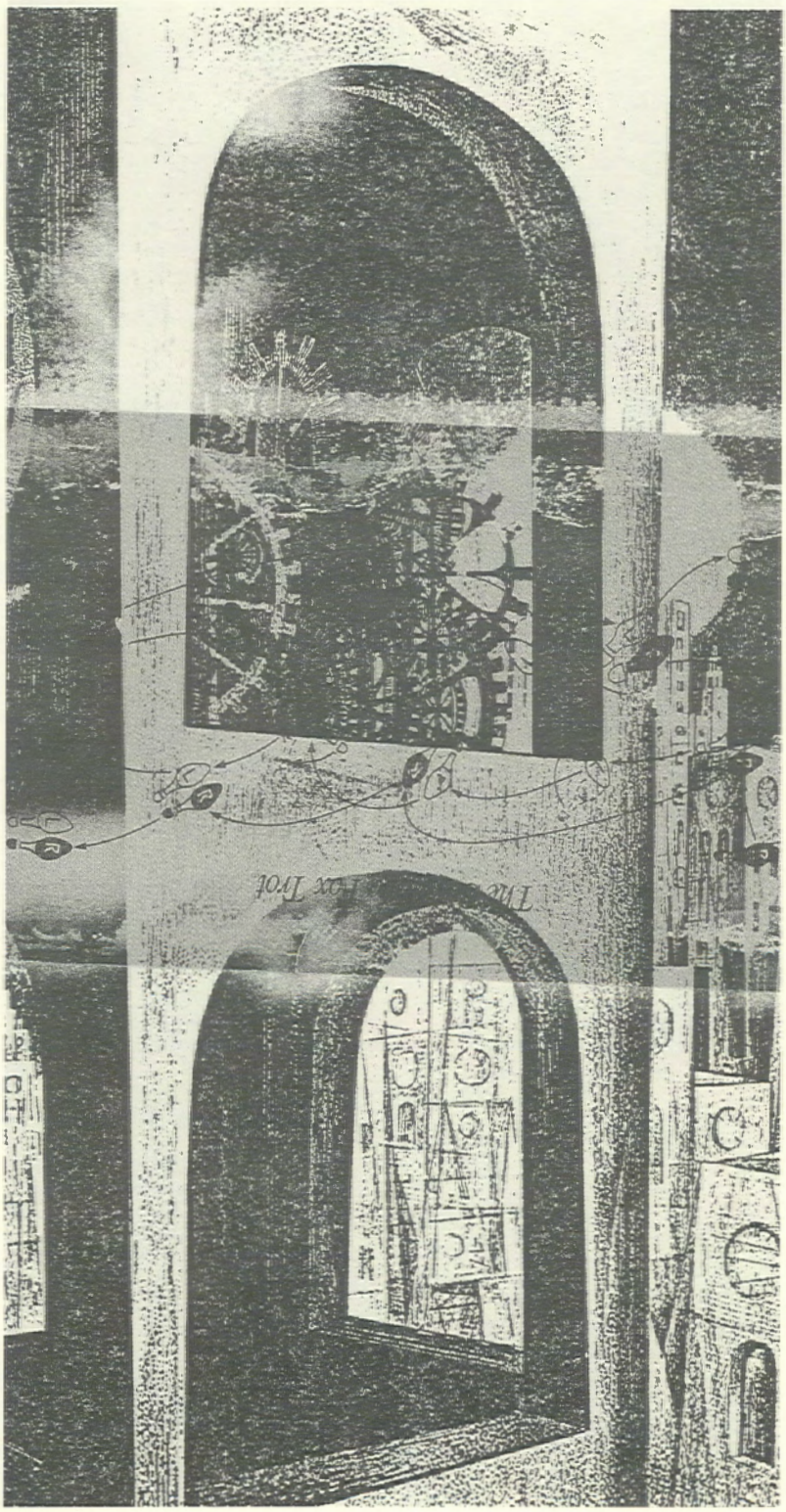

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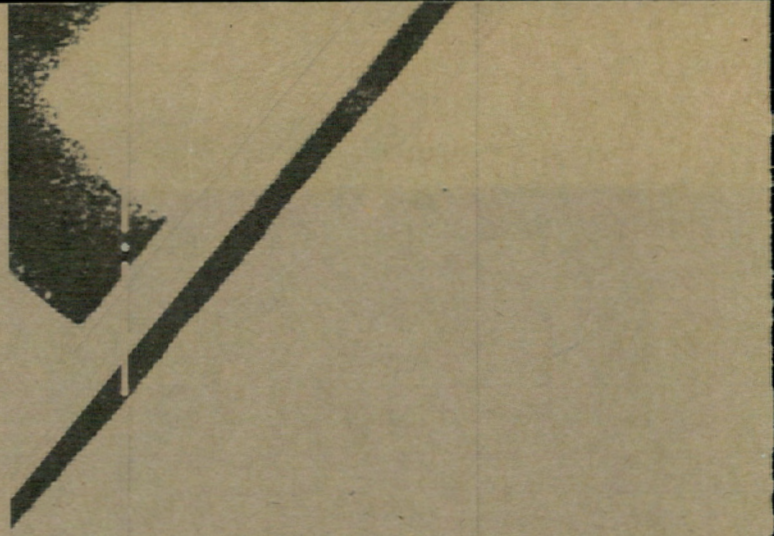

Process(es): *A Problematization of Method and Moment in Architecture.*

The Industrial Method: How does the algorithm of industrial production — research, experimentation and manufacture — affect its products? Does the production of architecture fit this model at present? Should it? Can one speak of 'experimentation' in a field such as architecture?

The Studio Process: Does architectural pedagogy demand different methods than architecural practice? Should the studio simulate the techniques of industry or experiment with architectural product, narrative and process with disregard to the conventions of industry. What are the justifications for *blind man's process*?

The Limits of Design: Can human atrtifacts simulate processes which are traditionally outside human reach? Can natural, evolutionary, urban and cultural processes be approximated by the methods of architecture? How can new methodologies extend the limits of design?

The Problem of Process: What does it mean to problematize process: Does it arrest design and undermine the product? Or does it heighten our awareness of a temporality denied by the closure inherent in a product. Can one overcome the ineffable silence of the moment of design in order to talk about it?

Dimensions, Journal of the College of Architecture and Urban Planning, University of Michigan, 2000 Bonisteel Ave, Ann Arbor MI 48109.