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On Memory and Architecture

Stacey Hopkins

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Community Arts Collective
Rochester, NY

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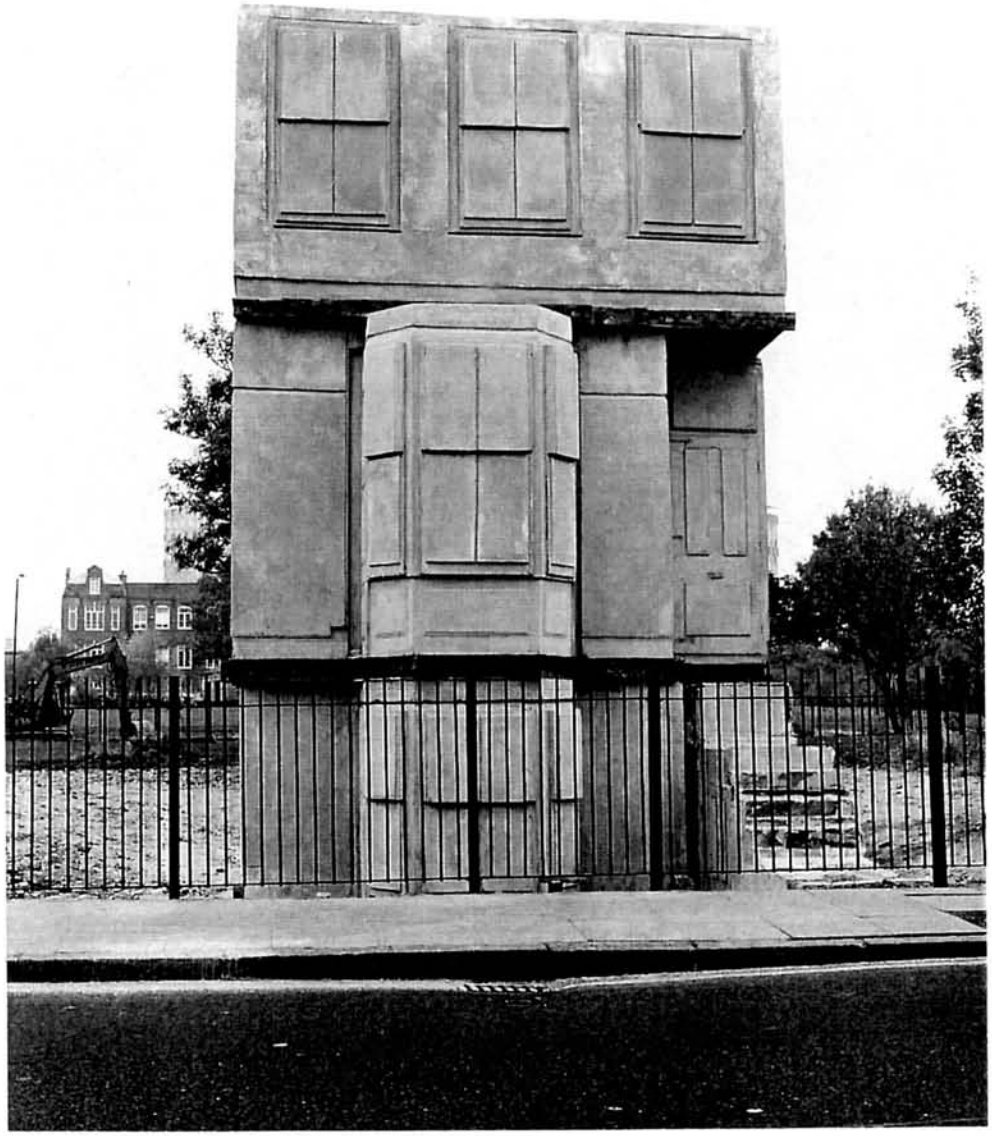

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Thesis Summary

On Memory and Architecture

Addressed to the eye of vision and to the soul of memory, a city's streets, monuments, and architectural forms often contain grand discourses on history... Every discourse sets up a spatial order, a frozen image that captures the manner in which the transitory present is perceived.

--M. Christine Boyer

Architecture, like memory, is composed of images. Memory, like architecture, constructs through a relationship between images, a framework for understanding space and time. The positioning of the self within this framework forms a personal definition of place, and the recognition of a relationship, a tie, between one place to others realizes a perceptual whole. The purpose of this thesis is to explore man's connection to place through images of architecture as memory: the experience of layers of history, time, place, and their connection, and also to entertain the usefulness of drawing on this relationship as an urban strategy.

Furthermore, program can be expressive of memory in revealing, through its architectural form and components, an idea about the place in which it is constructed. Again, it is a shared association with image by architecture and memory... and likewise, art, that manifests itself in program selection: a Community Arts Collective, which explores, through image representation in arts media, both memory and architecture of place relative to time as described by a concern for light.

As representatives of place, memory and architecture are dependent on site. Ultimately, this place, when organized in conjunction with other places within a city, allows the city to be read as a totality where, aided by recalled image, relationships transcend boundaries. The possibility of exploiting this boundary condition, and therefore, memory's relationship to architecture, exists on Park Avenue in the City of Rochester. Relevant is the ability that architecture through image has to reflect and transform memory and specifically, the city of Rochester and the Park Avenue area's homage to the creation of image that has bearing on its significance as a site selection.

Development of Contention

Memory As Companion of Architecture

Architecture is judged by eyes that see, by the head that turns, and the legs that walk. Architecture is not a synchronic phenomenon but a successive one, made up of pictures adding themselves one to another following each other in time and space...

--Le Corbusier

The symbiotic relationship between architecture and memory is forged in each one's appropriation of the other to make connections in space and time; the fragmentation between present and past disappears as one place, through imagery, unites with another. Memory and architecture relate to one another in that they use man's perception of and empathy with imagery to recall particulars of place, the connection of one place to others, and the way that these connections might explain time in tangible terms. For memory, architecture symbolizes a point of reference in time--a proscenium against which experience can be recalled; in architecture, memory reveals the essence of form which allows the built environment to lend itself to human spatial comprehension.

The ability of architecture and memory to utilize time and image to their advantage is expressed in the creation of architecture as stage set where history is reconnected to experience. In architecture, place is constructed of layers, each associating itself with a moment in history: distinguished from time by experience. This moment is given shape by a marker, a reference, which stands among and against the permanence and timelessness of the context, the stage. Memory relies on these moments to make sense of the flux of time, and is able to utilize these referenced images to unify fragments and dissolve boundaries: to make connections. Likewise, architecture, composed of layers of history represented in form, requires the referencing of these layers through memory to create a contiguous sense of time and therefore, place. Memory is a companion of architecture.

To promote an architecture of place and memory, an activated, interactive atmosphere is essential. This atmosphere aides in the creation of memorable experience through the dynamic nature of the public realm of the city. Intrinsic to this urban place of memory is the ability through contrast to understand the role of its components which support reference. This contrast may be obtained through a dichotomy between "honorific and humble monuments" or

"permanent and ephemeral forms" [1] for instance. The public space: the gallery or the street, can be shown juxtaposed with "private memory walks" and "personal retreats" [1] in the form of the intimate pocket park, the artist studio. In any case, the architectural memory of place requires an investigation into and reinterpretation of the series of layers of time (history) and people (community) which it proposes to represent.

When place supersedes boundary through architecture and memory, the whole can be understood. Thus, as an urban strategy for maintaining connections beyond imposed edges: zoning, highways, and natural forms such as rivers or landscape, memory is useful when accounted for by architecture. The image of architecture imprinted on the mind can be recalled independent of a clear axis, a framed view. The framing instead occurs by what is selectively remembered and brought to the next place in search of comprehension. Once comprehended in reference to that which was experienced before, the whole may take shape.

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[1] Boyer, M. Christine. The City of Collective Memory: Its Historical Imagery and Architectural Entertainments. Cambridge, MA and London, UK: The MIT Press, 1994.

On Program and Site

Therefore I am deformed by connections with everything that surrounds me here.

--Walter Benjamin

Program, as an inspiration of architectural form, plays a role in the realization of memory in architecture. Memory appropriates a building's formal characteristics embodied in program to form image. The mind's eye views a building and captures an image of its design: essentially, its form with supporting details abstracted,...a simple, translatable picture.

The details, initially abstracted, beg to tell a tale of the place in which the form is situated. Another look at the building draws attention to its character and its relationship to its environment. This site environment, formed of interrelationships between physical artifacts: buildings, landscape, signage..., speaks about place. And so now, memory moves from initial relationships of a form as translatable image to a new concept of place as a memory demonstrating the role of site. Memorialized within this place concept is the experience of the physical artifacts coupled with the interaction between people.

Once understood in immediate context: the street, for instance, the place can be used as a tool for creating mental links through remembered images between one place and others. Yet again, the focus is on image, however, at this juncture, the remembered image is actually a composite of place images. This composite image may now aid in the understanding of the next artifact through its likeness to the image and also the contrasts which exist between them. The character of one street is posed against the character of another.

The experiences of one place are captured as specific memories which distinguish that place from another. The place, thusly, becomes a reference point for navigation around the city. However, since memory also works to make sense of initial images through abstraction and translation, the connection between one place and the next is made by recalling an image as reference point from within the place and observing how it relates to the transitional fabric between the two places: a memory sequence. In this way, memory serves architecture not only in the creation of a sense of place and series of reference points that aid in navigation, but also as a means of connecting these places and points through aiding in the comprehension of the transitions.

Program Clarification

What can art do, apart from existing in its own right? It can tell a story, or many stories. It can establish a mood. It can reinforce selected virtues. It can surprise and delight by unexpected juxtapositions of form, textures, colors, and movements. It can soothe and reassure by repetition of familiar forms, textures, colors, and movements. It can stand for, or represent, ideas, qualities, institutions.

--Donald J. Olsen

The importance of the transcendent quality of memory, exhibited in image as representation, is unquestionable. It is through image that memory is made possible, and it is through memory that image gains its power to inspire associations. Therefore, it is a logical extension of this relationship of image to memory to explore, as a program selection, the needs of one to whom image is vitally important--the artist.

The artist creates, through evaluation of his own experiences, an original work of art. By way of recomposition and manipulation of composed memory fragments, the new image is born. This image now takes on the responsibility of reflecting narrative or content, associated symbolic value or meaning intended by the artist to be translated to the audience. In effect, the artist is attempting to share his own memory fragments with the viewer.

Similarly, architecture, in its associations with memory, attempts to reflect a narrative or intended meaning to the observer, perhaps in the quest for representation of ideas, but at least in search of translated order...an established set of rules to guide the viewer to reach an understanding of the building. Further, once an understanding of the singular building is reached, the architecture might engage its surroundings...and then the greater context: the whole, utilizing memory as an aide. In this way, architecture seeks, like art, to provide information and simultaneously effect thought.

Program Scope:

It is this shared association with image by architecture and art... and likewise, memory, that manifests itself in the program selection of a Community Arts Collective where the artist has a realm in which to work with, to display, and to discuss image through representation in arts media. The function of the collective of artists is to present a forum for the discussion of the image and the critique of the work by others with similar concerns and empathy for image representation.

Likewise, the representation of this collective entails an understanding of the need for artists to not only have privatized agenda: the intimacy of creating an image in the studio and discussion of its potentials among peers, but also a public one: to portray the image to the community in order to effectively test the work's social impact. The Community Arts Collective requires spaces for private study and creation in the form of studios as well as public interaction which may take shape in the form of gallery display spaces and a small experimental theatre. The display in the form of exhibit space brings the image to the community at large and reconnects the private and semi-private functions of the building back to the place: the street, the district, the city. The theater can function dually as a stage set for display of artistic performances and also a lecture forum for discussion.

Additionally, support spaces such as the cafe which functions both to cater to receptions and to offer a place for the artists and community to gather informally, and the pocket park which may transform, in fact, into a sculpture garden for public art display as well as an exterior meeting place of the public and the artist, will help to unify the private and public aspects of the building and promote experience through interaction.

Furthermore, the introduction of the presence of time through light is of interest in the selection of this program: both the studio and exhibit spaces require that natural light be factored into their design. By the transitory nature of light, its constant gradation from dawn to dusk, time is poetically charted.

Program Analysis

studio

The studio spaces function to recall the meeting of private and public as well as the significance of light as a reminder of time. These spaces provide the artist with a haven for creation of image--his art, in a privatized realm bathed in natural light which reveals color and form through shadow.

The individual studio respects the fact that each artist creates differently and must so address the needs of each. For instance, the painter requires the steady northern light, while the sculptor might prefer southern exposure to make use of shadow to describe three-dimensional form. Likewise, the metalsmith requires a certain space protected from flame and protective of chemicals and propelling agents whereas the ceramist might need space connected directly to the exterior as in Raku.

However, some parts of the processes of image creation are the same among users of the related materials, and community rooms might take shape. A community assemblage area can be used by sculptors of various materials, a community cast forming room can service the sculptors and metalsmiths, the ceramists can make use of a community firing space, the photographers, a community darkroom.

Studios should be privately accessible to the artist community for security purposes, and should also have access to loading facilities and freight elevator if not on the ground floor. Ventilation is a key concern as most of the materials used by the artists are toxic inhalants. Adequate and ample space should be anticipated for the required equipment of each artist, the minimum of which is a bench and sink and may include large machines.

gallery

The gallery will also take on two forms to reflect public and more private concerns. Firstly, the site suggests, due to its relatively commercial nature, that a commercial gallery would be fitting. The artists that create in this facility create with an intention of selling their work as well as for the purpose of creating the work for its own sake. The reality of living outside of institutionalized settings reveals itself in this way. The commercial gallery, too, reflects the

constant transition between artwork being displayed. Its role is that of temporary gallery, not museum. Thus, it also reflects the issue of time.

The second form is of installation gallery for the artists to have a forum for critiquing their work amongst their peers. This galley is, by definition, more private than a commercial gallery, but still retains the public nature of exhibit space in contrast to the private musings of personal studio space.

Both galleries require that light be factored into their design, again describing time and providing an undistorted presentation of image to the viewer so as to allow the work to be seen as the artist created it. The image and light refer back to memory as previously described.

Additionally, the temporal quality of each gallery requires that they be designed for continuous display change. They need to accommodate various sizes of art from lifesize sculpture to jewelry to painting and their adequate display. Some walls may be moveable, and a hanging system for two dimensional work is suggested to alleviate the need for repainting of walls on a regular basis.

Galleries should be accessible to the street as well as a loading area. A small storage area for works in-between shows should be provided with appropriate shelving systems that accommodate a variety of art forms. An office space is needed for the gallery manager, and a coat check and lobby are suggested to cater to the public.

small experimental theatre

The function of the experimental theater is to provide the artist community with a space which is meant for performance art as an extension of display. The performance is expressive of the experience of time and place through combined movement and image. The experimental theater truly acts as a forum for expression and discussion of ideas at their most dynamic level. In fact, as a representation of site, the experimental theatre acts in representation of the festival--the promenade, the interactive realm.

When the theater is not used for performance, it may function instead as a more traditional forum in the form of lecture room, conference space, or for use as in poetry readings. The versatile nature of this program component relates to the transitory nature of the gallery spaces, and likewise, maintains a public and semi-private function depending on use. Obviously,

acoustics are an issue in the design of this theater as well as the means of lighting and accommodating set changes.

cafe

The cafe functions both as a support space to the galleries for use in receptions, and also for the daily meetings between artists and the community. It works much like the theater or community studio space as a gathering place. The interactive atmosphere is of the greatest interest in determining the cafe as essential to the facility.

sculpture garden

The sculpture garden provides an exterior support space to the facility for use as display place, outdoor lecture and performance space--weather permitting, and perhaps most relevant, a tie back to the community. Park Avenue, as the name suggests, is remembered for the private, intimate qualities of its pocket parks as well as the public atmosphere expressed in the street promenade. This sculpture garden is also a means of providing a transition between the edge of the street facade of the proposed facility and the facade and activities which relate to the intimate neighborhood atmosphere of the residential quarters to its north.

Program Space Requirements

studio spaces				
typical personal studio		25@300 sf	7500	
community spaces				
	darkroom	3@450 sf	1350	
	cast forming	2@900 sf	1800	
	large assemblage	1@1000 sf	1000	
	firing room	1@400 sf	400	
	raku space/ spray booth	1@300 sf	300	
	woodshop	1@600 sf	600	
	printshop	1@400 sf	400	
	computer studio	1@400 sf	400	
	metalshop	1@600 sf	600	
total studio space			14350	
gallery spaces				
commercial gallery: exhibition		3000 sf	3000	
	lobby	A.R.	A.R.	
	coat check	20 sf	20	
	office	2@120 sf	240	
	storage	800 sf	800	
	w.c.	2@150 sf	300	
installation gallery		1500 sf	1500	
	storage	800 sf	800	
total gallery space			6660	
experimental theater				
foyer/ ticket booth		A.R.	A.R.	
w.c.		2@150 sf	300	
main space				
	stage	800 sf	800	
	seating for 150 capacity	500 sf	500	
backstage		400 sf	400	
storage		350 sf	350	
total theater space			2350	
cafe				
kitchen		800 sf	800	
storage		350 sf	350	
seating		1000 sf	1000	
entry/counter		A.R.	A.R.	
w.c.		2@150 sf	300	
total cafe space			2450	
sculpture garden		A.R.	A.R.	
subtotal space required			25810	
mechanical		30% total	7743	
circulation		30% total	7743	
total square footage required			41296	

no painting drawing

under sized

dressing rooms shop(?)

Site Viability

As spectators, we travel through the city observing its architecture and constructed spaces, shifting contemporary scenes and reflections from the past until they thicken into a personalized vision. Our memory of the city is especially scenic and theatrical: we travel back in time through images that recall bits and pieces of an earlier city; we project these earlier representations forward into recomposed and unified stagings.

--M. Christine Boyer

Representing place, memory and architecture are driven by site. In architecture, place is constructed of site specific layers, each associating itself with a moment in time, an aspect of history: distinguished from time by experience, and developing the formal stage set upon which the next layer is added. Architecture, and likewise, memory, relies on these moments to make connections.

Connection requires the referencing of these layers through memory to create a sequence of time and therefore, a grasp of place. The experiences aided by the layered stage set of one place are captured as specific memories which distinguish that place from another. As a unique circumstance, thusly, the experience of place becomes a reference point allowing a path to be conducted around the city by relating it to the occurrences of other places. Additionally, the continuation of layers from this place to the next forms a transition between the two and begins the architectural sequence of events, the promenade, which, through memory, serves as connecting device.

Aided by recalled image, architectural relationships transcend boundaries to make virtual connections. The ability to inspect these connections and their comprehension as a memory sequence lies in the initial exploitation of a boundary condition, the point of contrast. Such a condition exists on Park Avenue in the City of Rochester.

Site Selection:

At the base of Sibley Place running perpendicular to Park Avenue, a park terminates the street. Sibley Place, a street which recalls bits of Rochester's history in its primarily residential nature extends from East Avenue in Rochester's historic district and stops short of making a connection to the vibrant street life of Park Avenue. It does, however, demonstrate quite clearly the secession of the historical district lead by the Rochester Historic Society on its corner and remind the observer of the layered aspect of city history in built form beginning with its first "country" houses.

Moving from Park Avenue with its unique enveloping structure encompassing both the busy commercial focus minus the fragmentary nature of Monroe Avenue to its south and the picturesque still-life nature which frames the object artifacts of the East Avenue historic district to its north, one can sense a city composed of layers. By reattaching disconnected Sibley Place to Park Avenue, which is populated constantly by movement and promenade, the passing of time and memory of place in terms of history might be called to mind along its path.

Appropriate too, is the city of Rochester and the Park Avenue area's dedication to the creation of image that has bearing on its significance as a site selection. "The Image City," Rochester, historically has been culturally and industrially linked to the artistic disciplines with significant ties to the visual and graphics fields. These ties are made visible through extensive museum collections, including fine arts, photography and film among others, the prevalence of instructional programs in the arts in the form of schools and workshops, and the concentration of technological research from such firms as Kodak, Xerox, and Bausch & Lomb which have their roots in Rochester.

Prince Street, an extension of Sibley Place slightly offset at the intersection of East Avenue, leads one to the historic site of the University of Rochester City Campus. This campus, while no longer functioning in a primary role as the university, is home to the main fine arts museum in the city, the Memorial Art Gallery, founded on its 17-acre site in 1913 to one side of Prince Street bordering University Avenue, and to the opposite side lies the School of the Arts. Also on Prince Street is the Visual Studies Workshop for advancement and study in the fields of film, photography, and computer applications in art as well as part of the Eastman School of Music and the Auditorium Theatre which brings in any number of renown traveling shows and concerts each year.

The reconnection of these primary institutions of cultural life in Rochester to the community in the sense of the residential quartier and intimate small art-related businesses and shops along Park Avenue can be accomplished by reattaching Sibley Place to Park Avenue and by doing this in such a way as to maintain the intimacy afforded by non-institutionalized buildings and pocket parks which are a part of what makes Park Avenue unique.

Finally, the role of Park Avenue as collector of place imagery makes it a prime location for the founding of a community arts collective. The place that is Park Avenue not only brings together frames of time in its absorption of contemporary and historical features of physical artifacts from Monroe and East Avenue, but also speaks itself about passage: this, in the poetic form of the festival which comes to the street in a given moment, and then all but disappears except for its traces in the daily promenade of people to and from residences, shops, parks, cafes, and galleries. Park Avenue is home to a traditional summer arts festival that takes place annually and draws faces from across the city not to mention across the country. It is a celebration of art and craft marked by display, music, social exchange. Additionally, The Park Avenue Open House is in its second year, occurring in early December to usher in the holiday season and remind the city of all the street has to offer in terms of unique gifts and festivities.

Site Analysis

Criteria of Site Selection

- exposure of a boundary condition
- ability to connect pieces of urban fabric by relationships:
    - based on history
    - based on use
    - based on relationship to place
- raises concept of memory by making the observer awareness of these elements

Site Description:

The separation between public and private functions has played an important role in the development of the street and surrounding area. Park Avenue, historically gained entrance into existence as an extension of East Avenue's parks and gardens, thus its name. East Avenue formed, first as a cranked portion of Main Street which led eventually grew up as a remove from city life through the escape to the country. The object in the landscape in the form of the Victorian country house became the realization of a place which was in fact extremely different from Main Street's continuous built fabric with landscape appearing only in the public square.

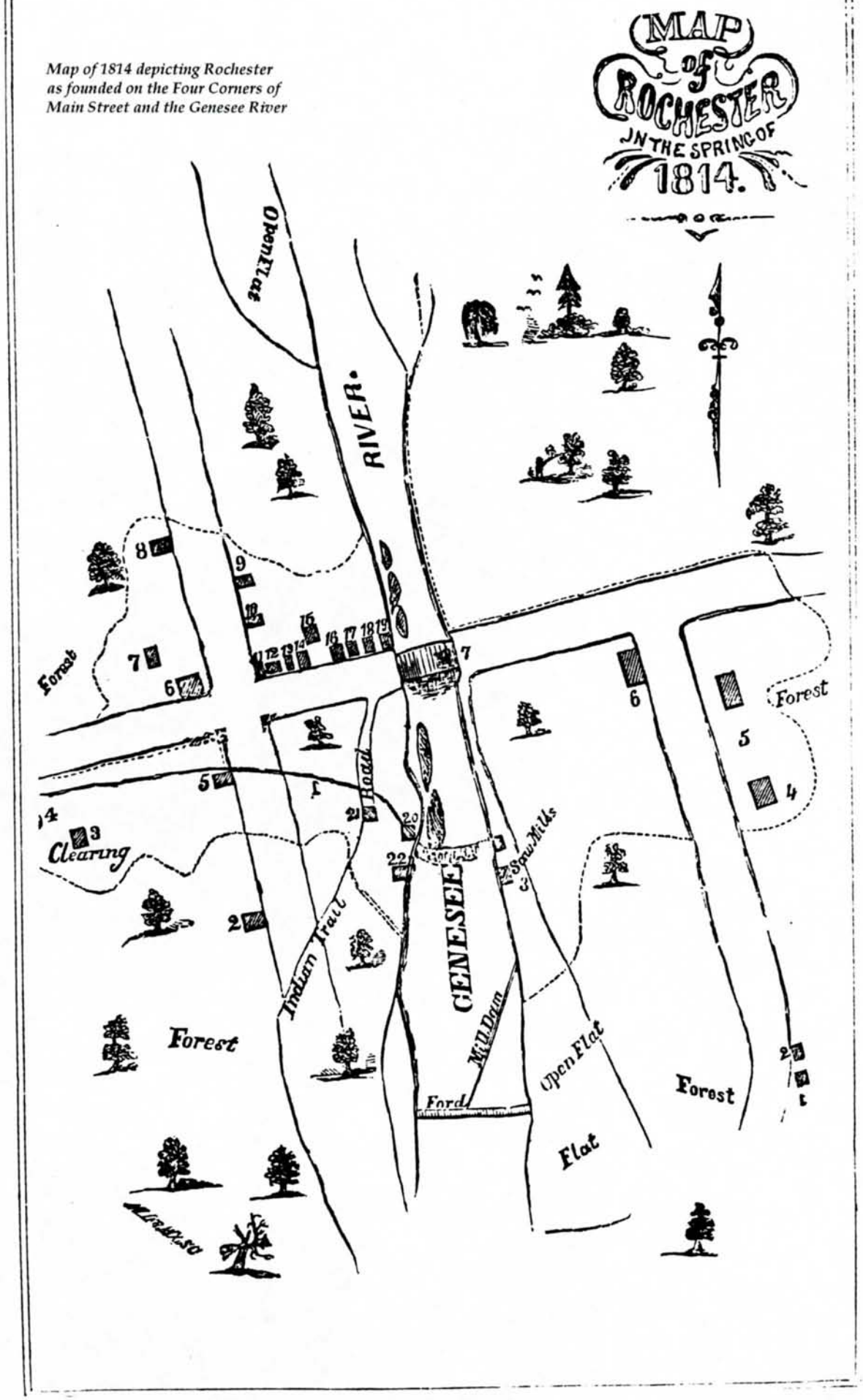
With the rising prominence of the country house and the move from the city, the social events which had previously taken place in common halls and the postal arcade moved to the public spaces of the home: the parlor, the library...in fact, often the entire ground floor of the house was given over to social gatherings in the form of art clubs or literary guilds, and cultural entertainment. To this day, this is evidenced by a reinterpretation of the public sphere of the house being taken over by small boutiques, salons, shops, cafes, and also galleries.

Further, the heretofore public square of Main Street Rochester became a more intimate element acquiesced by the private landowner to form the garden and the pocket park, a constructed piece of the country landscape. The leisure time of the family gained a new outlet in the promenade along tree-lined streets and parks made not of pavement and hardscape, but of

flowing lawns and a multitude of flowers. In fact, the park and horticulture grew up in Rochester in such fervor, that for a time, the "Flower City" was known throughout the country for its nurseries and later its public park system created by landscape architect, Frederick Law Olmstead.

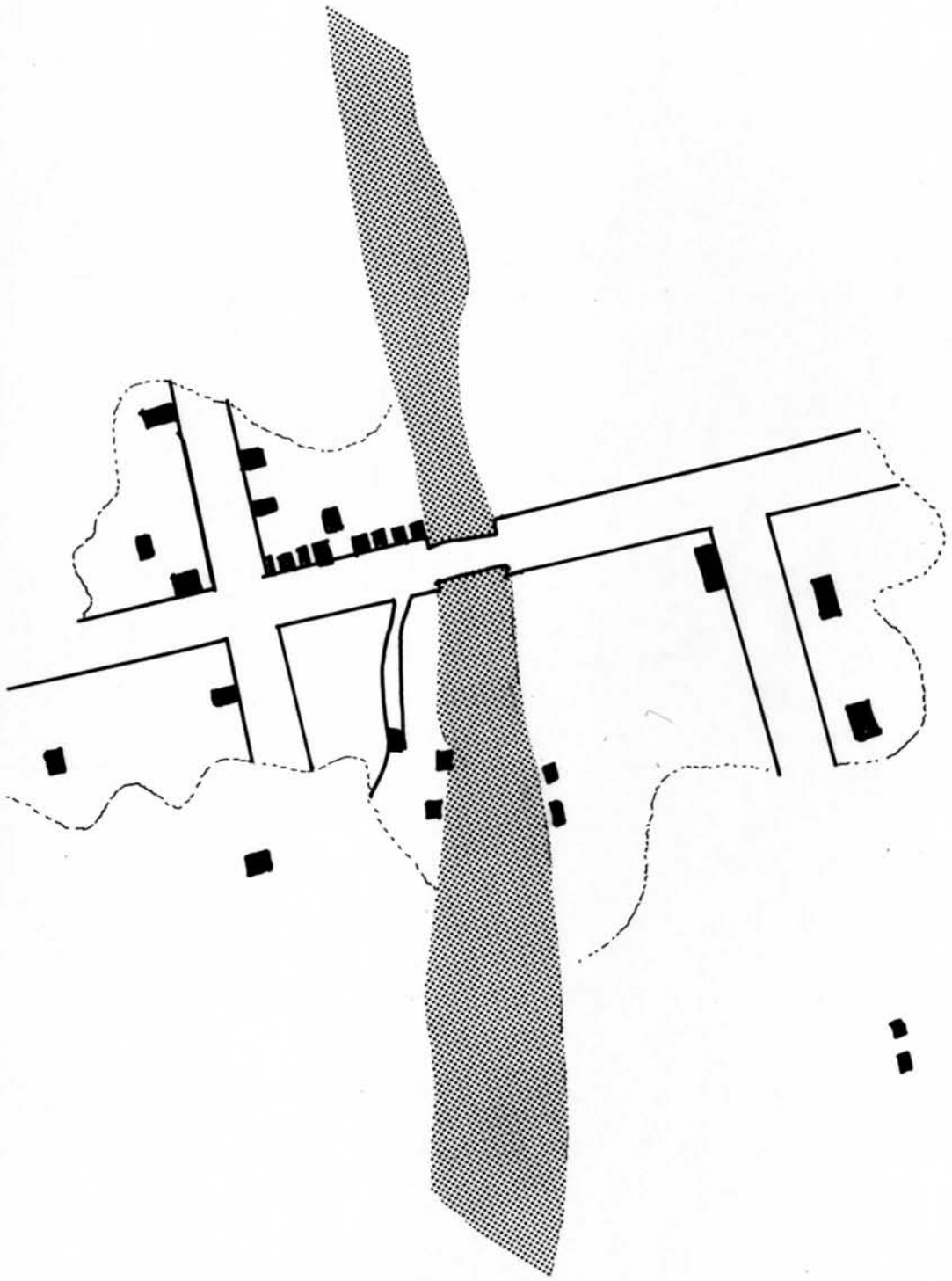
Evidence of this importance placed on landscape is still evident today in the continued use of the Olmstead parks: Seneca, Maplewood, Genesee Valley, and Highland (of the infamous Lilac Festival), and also is demonstrated in the modest pocket parks of Park Avenue. In fact, these modest parks are a means of Park Avenue making connections to other areas of the city including the revelation of East Avenue's "object in the landscape" history and reaching also to Monroe Avenue in tree-lined parkways that are its connecting streets. The only street that remains disconnected from this pattern is Sibley Place, and as a result, the area of Park Avenue to its base lacks the movement and interaction that occurs elsewhere on the street. To reconnect this portion through park sequence recalls a memory of the example of streets nearby, and also reaches out to the art campus to the north.

Map of 1814 depicting Rochester as founded on the Four Corners of Main Street and the Genesee River

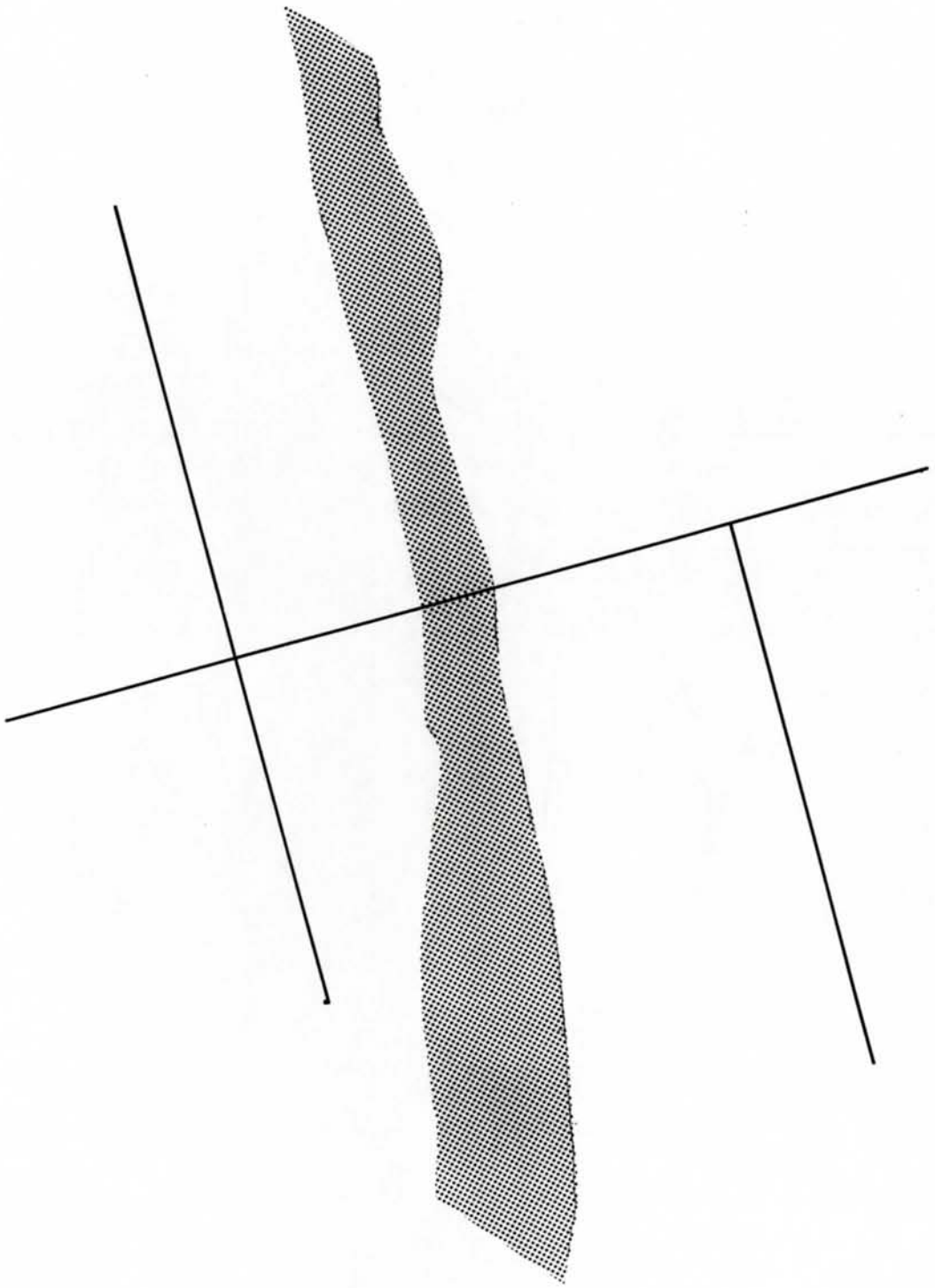


Map of Rochesterville, 1814

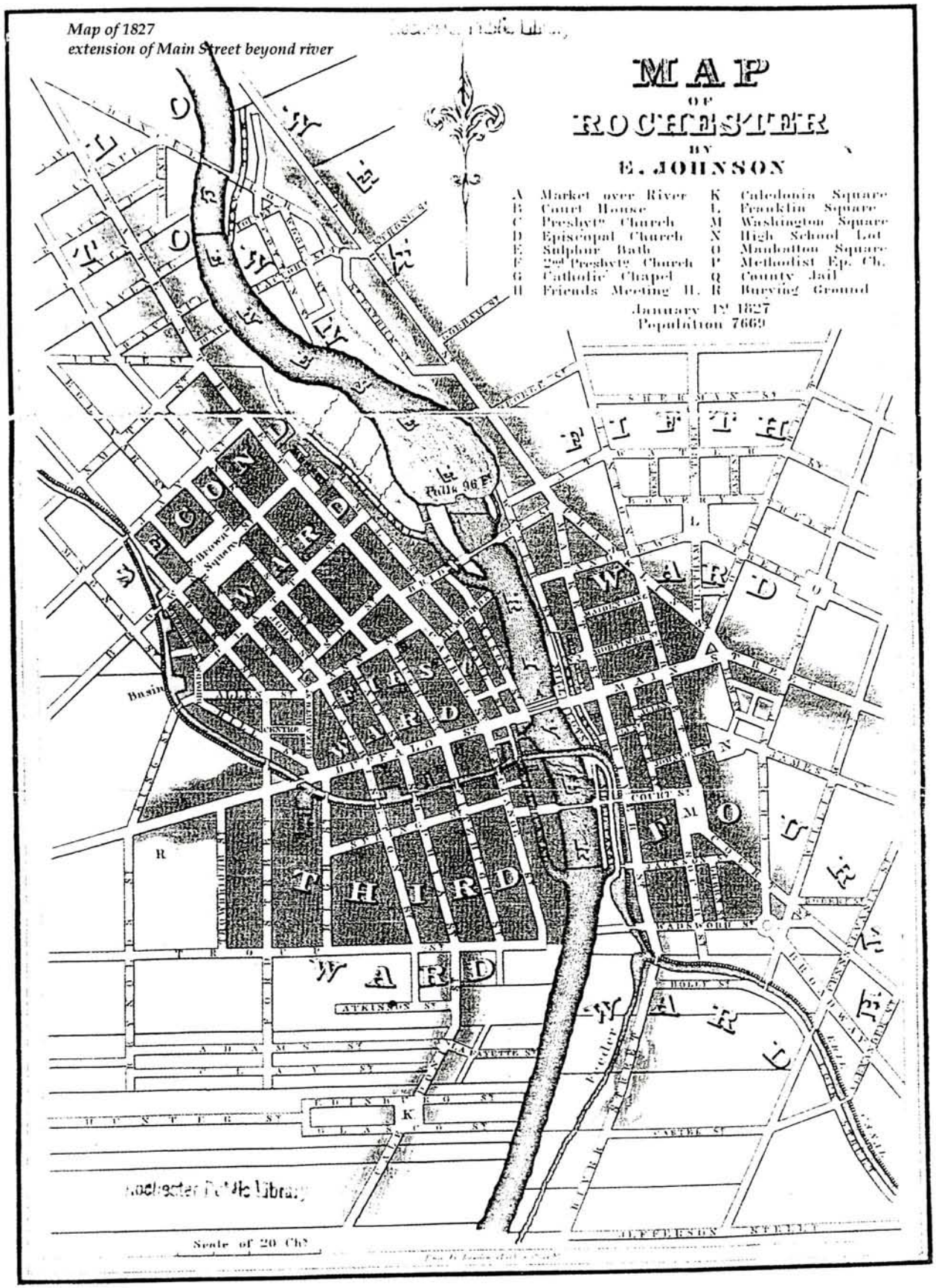
Map of 1814 figure-ground



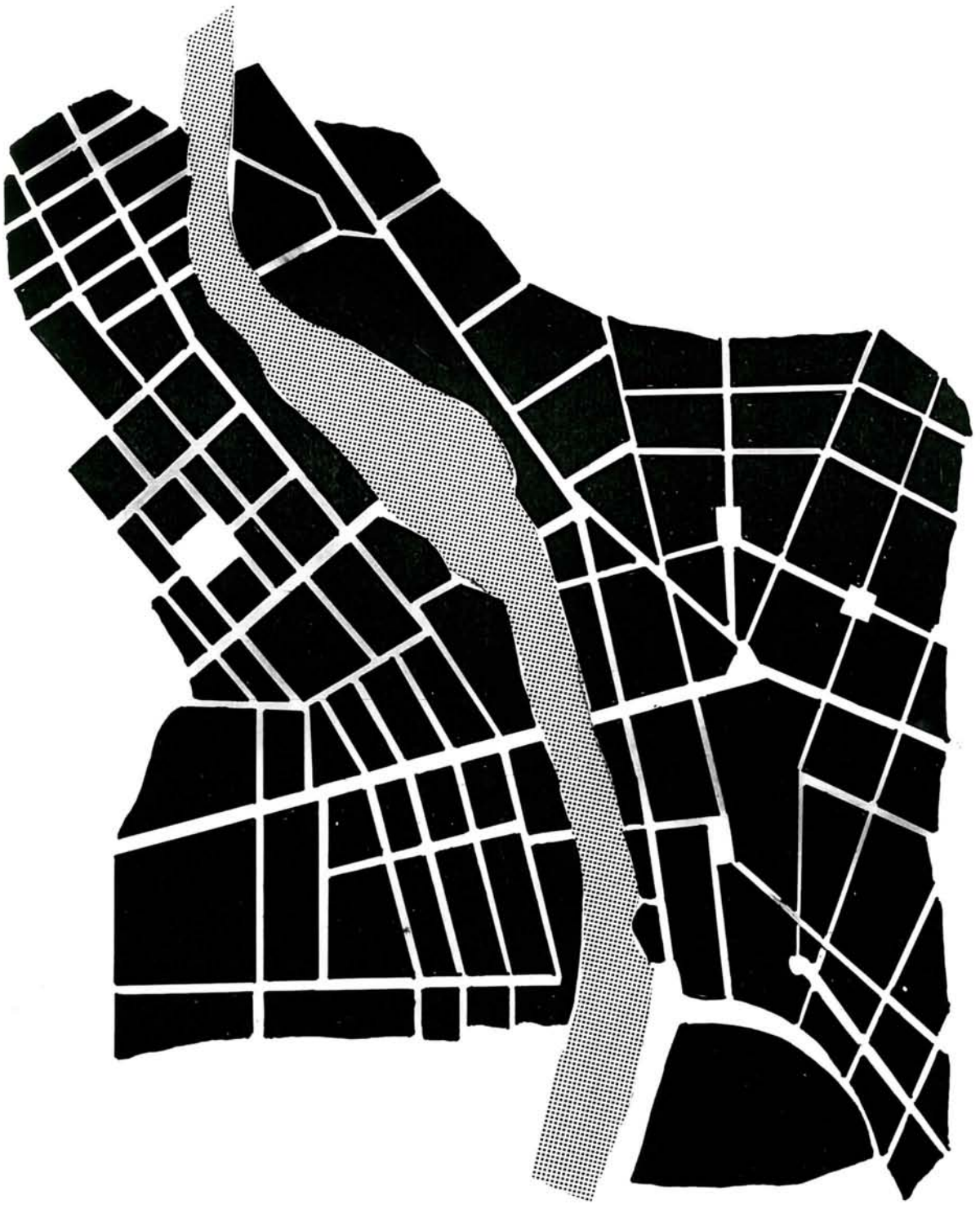
Map of 1814
grid established on river



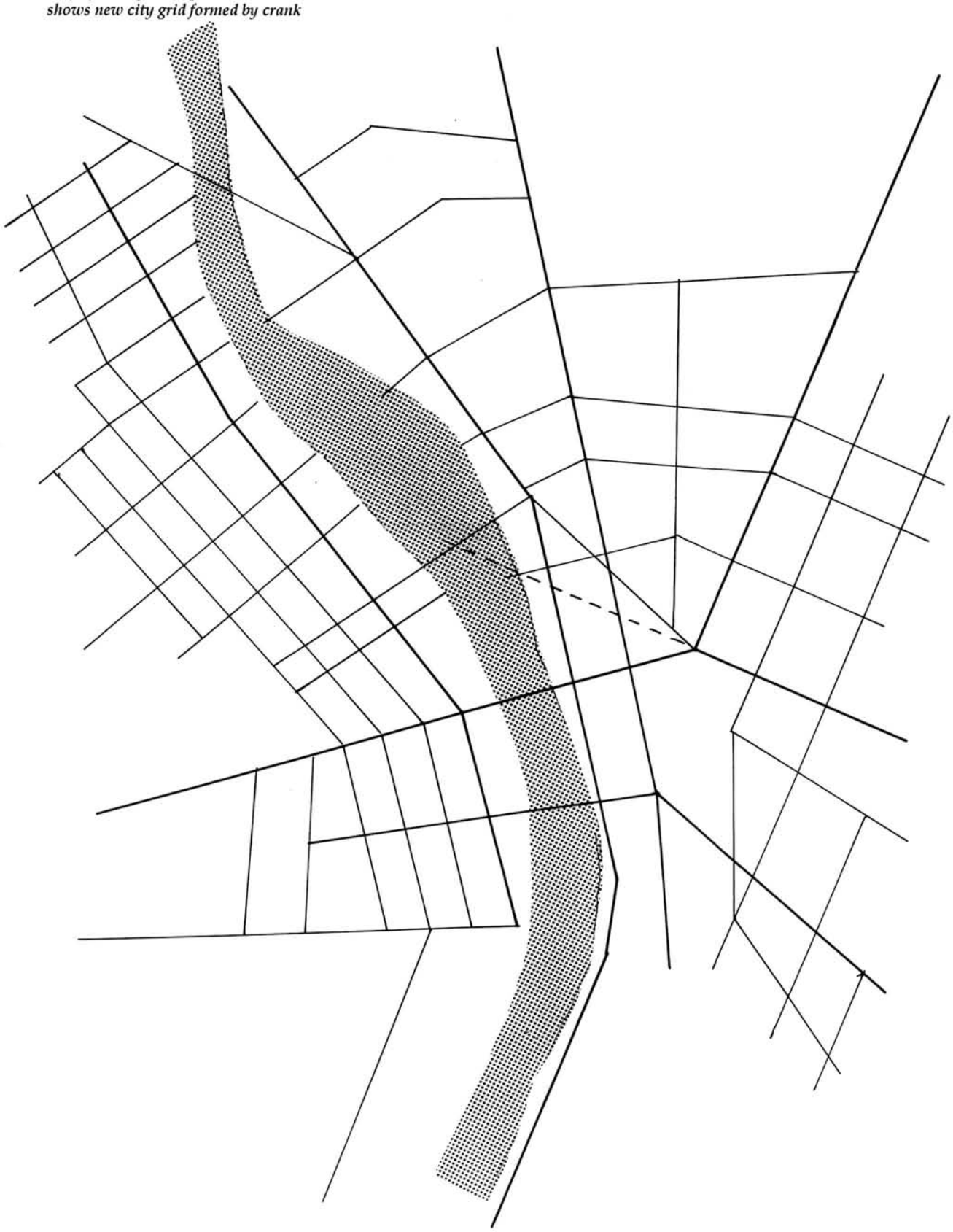
Map of 1827
extension of Main Street beyond river

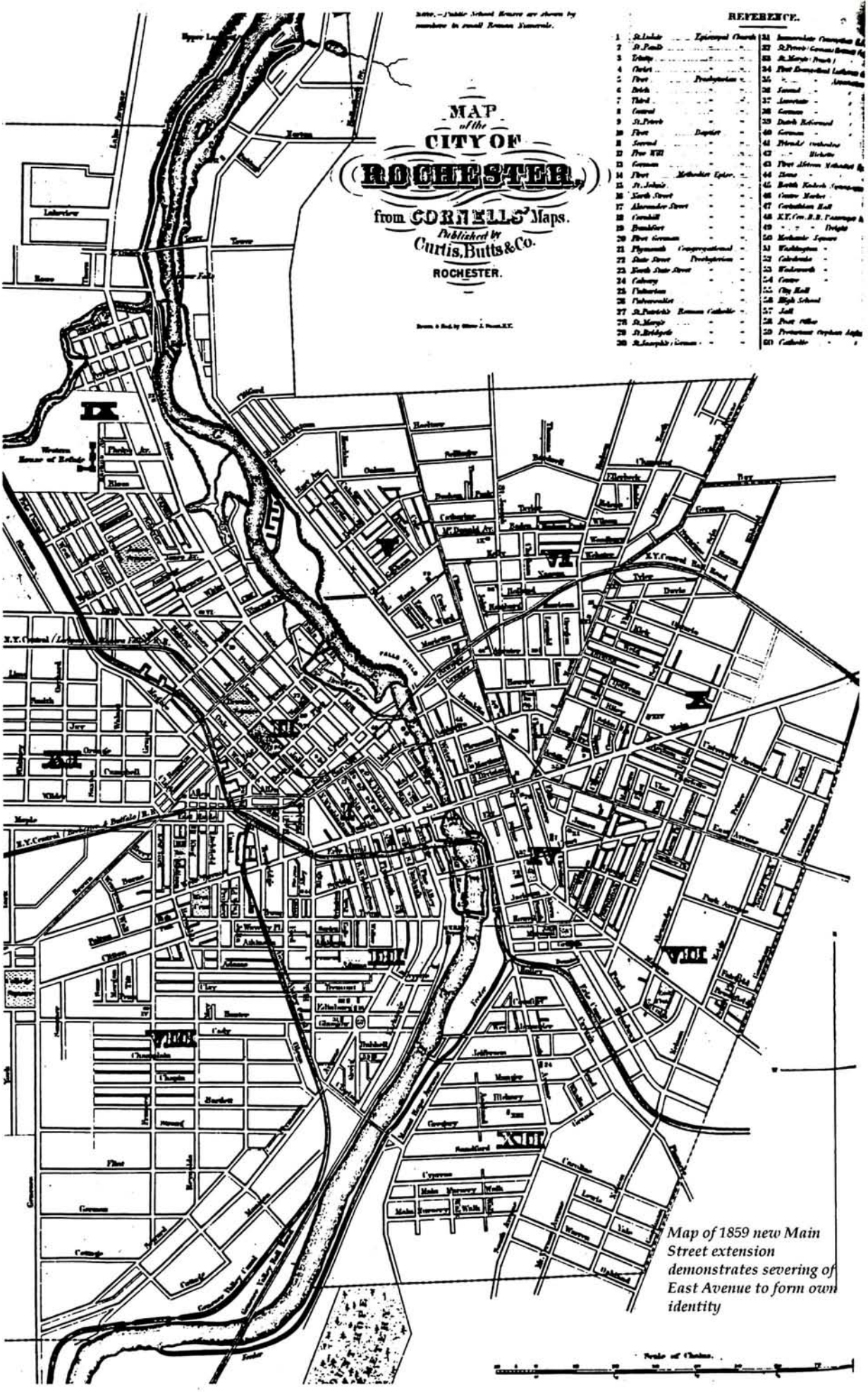


Map of 1827 figure-ground
shows crank of Main Street extension

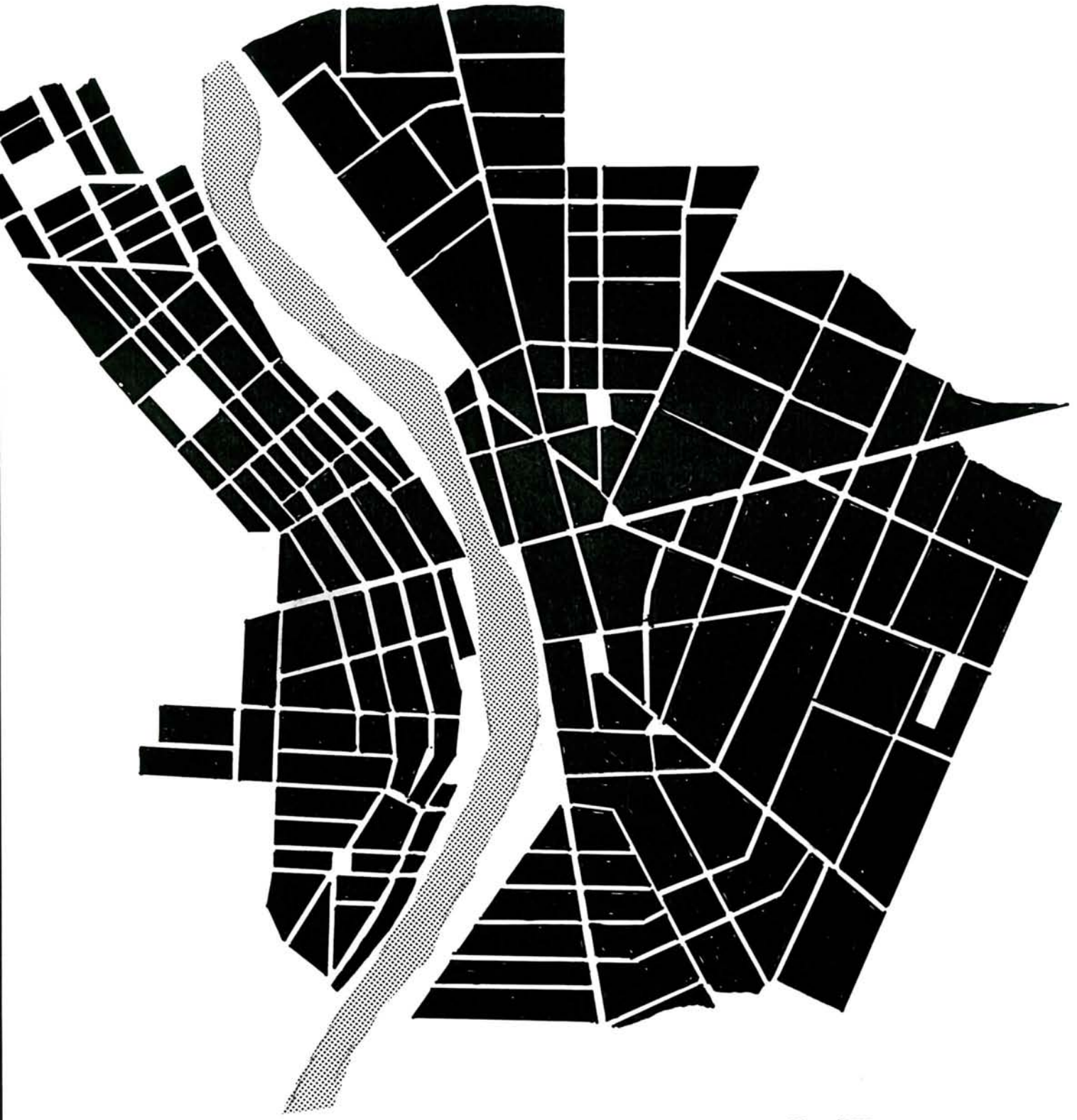


Map of 1827 grid diagram
shows new city grid formed by crank



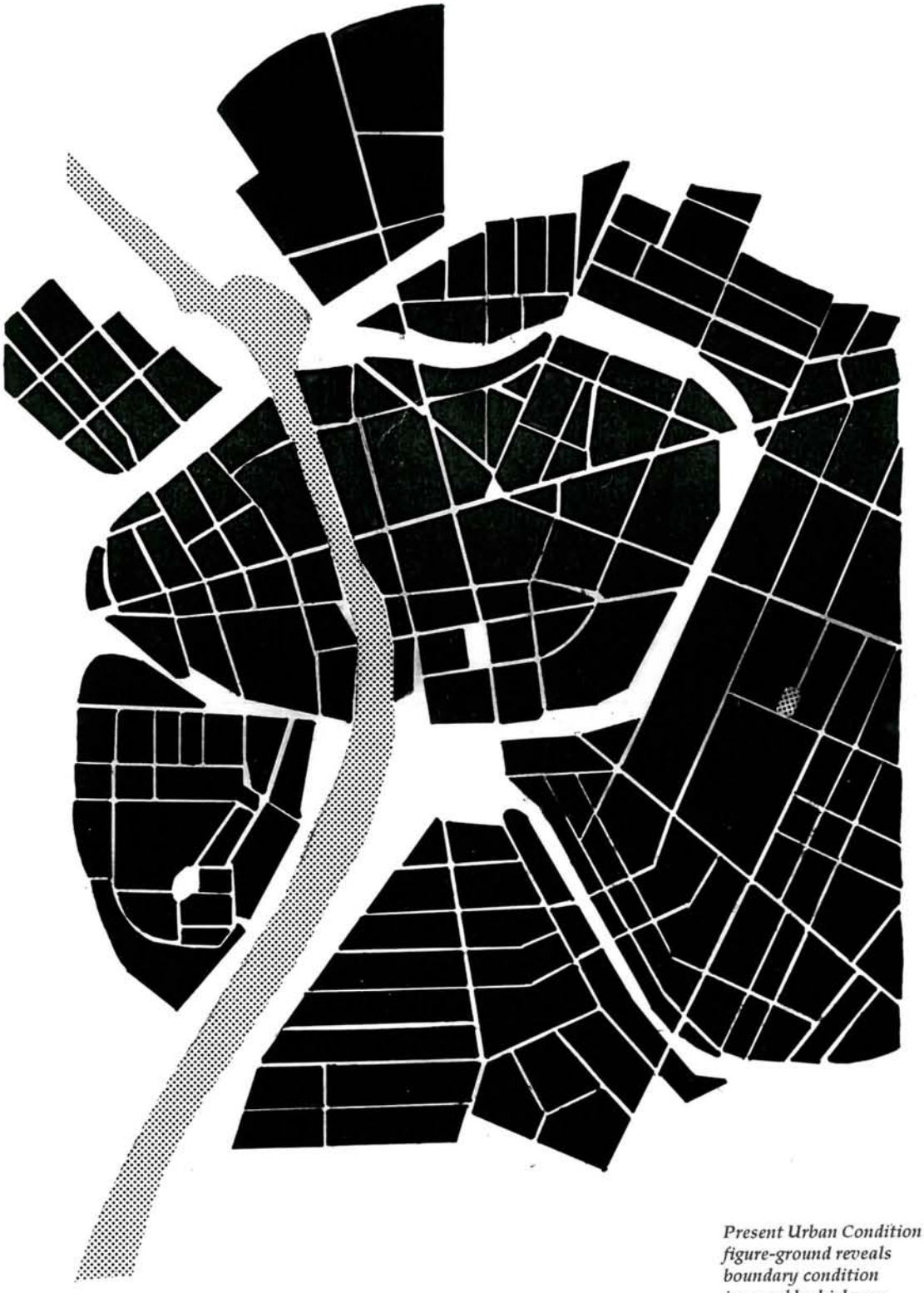


Cornell's map of Rochester, 1859

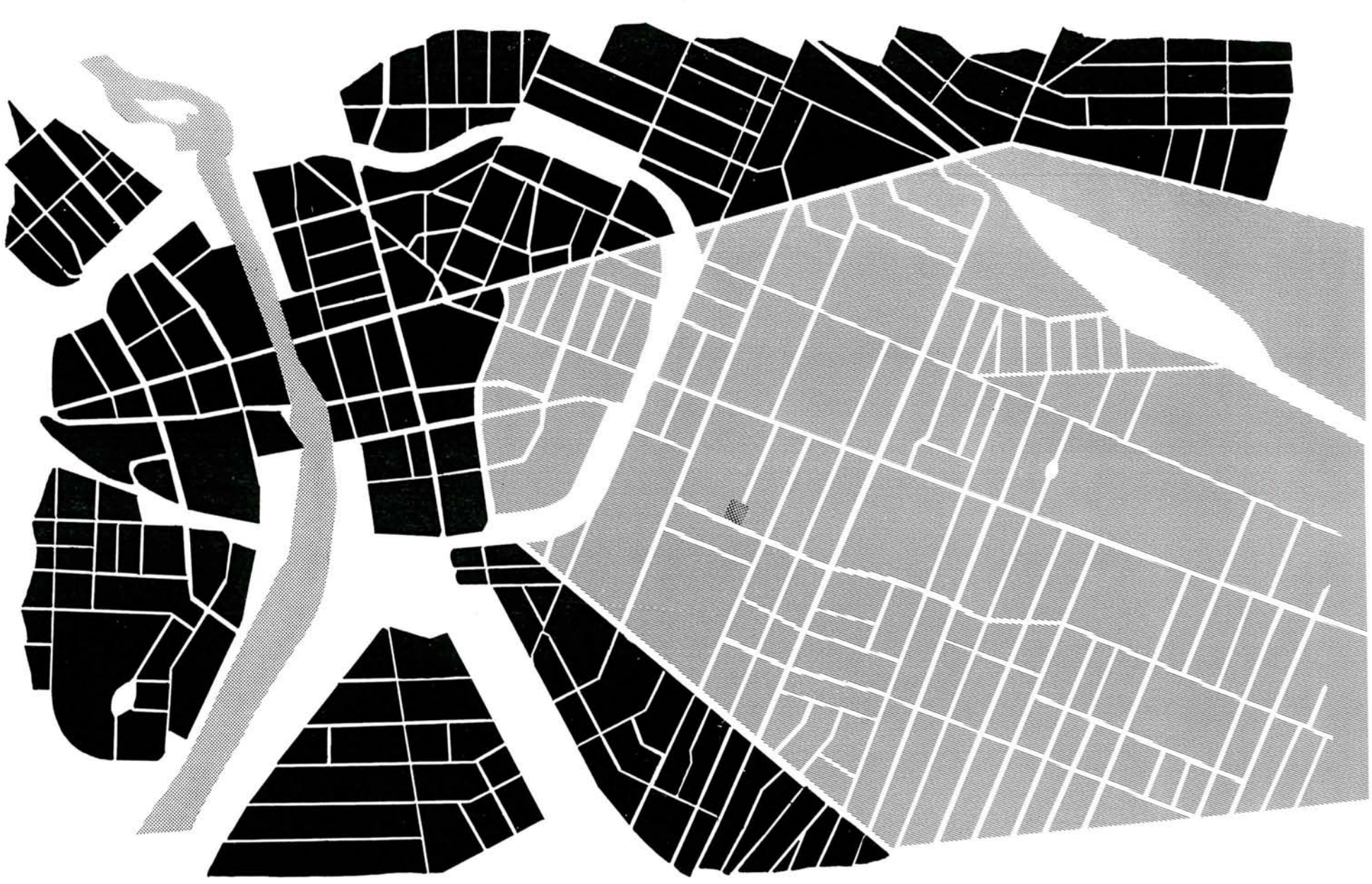


Map of 1859
figure-ground

Map of 1859
extension interrupting
existing grid



Present Urban Condition
figure-ground reveals
boundary condition
imposed by highway



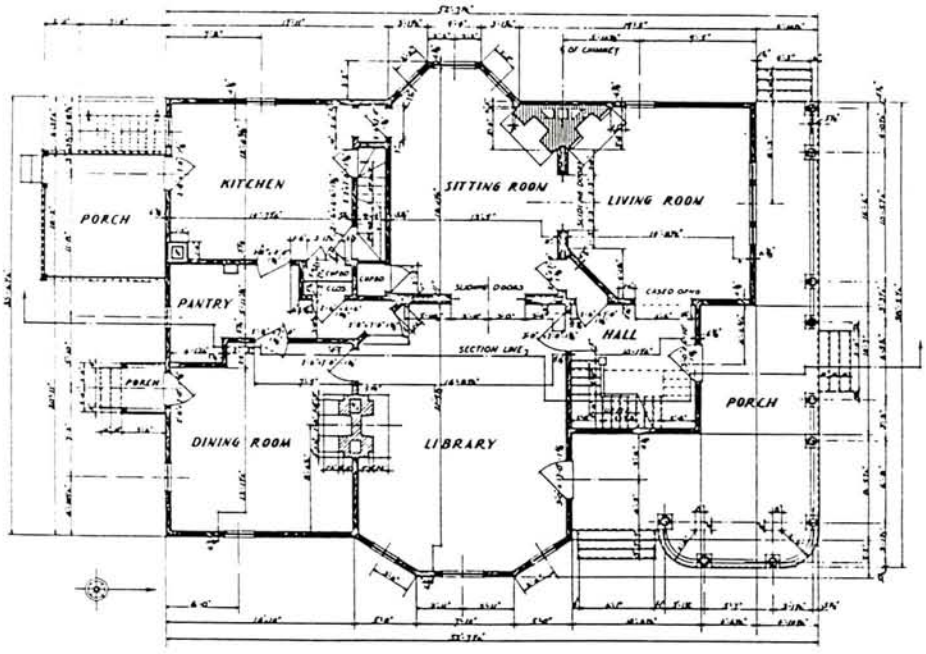
Cultural District Analysis
figure-ground

Cultural District Analysis
grid showing terminated streets:
Park Avenue & Sibley Place

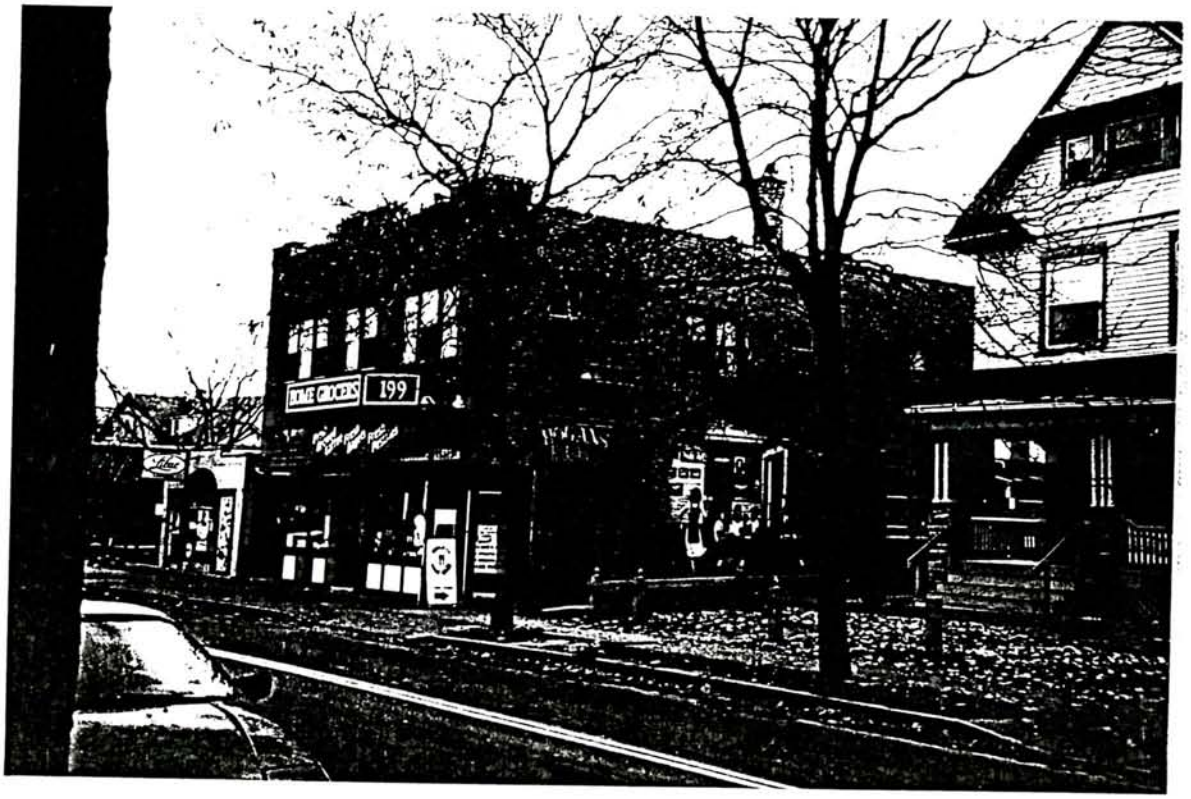
Cultural District Analysis
parks and landscape as connection

Cultural District Analysis
cultural institutions

With the rising prominence of the country house and the move from the city, the social events which had previously taken place in common halls and the postal arcade moved to the public spaces of the home: the parlor, the library...in fact, often the entire ground floor of the house was given over to social gatherings in the form of art clubs or literary guilds, and cultural entertainment.



First-floor plan.



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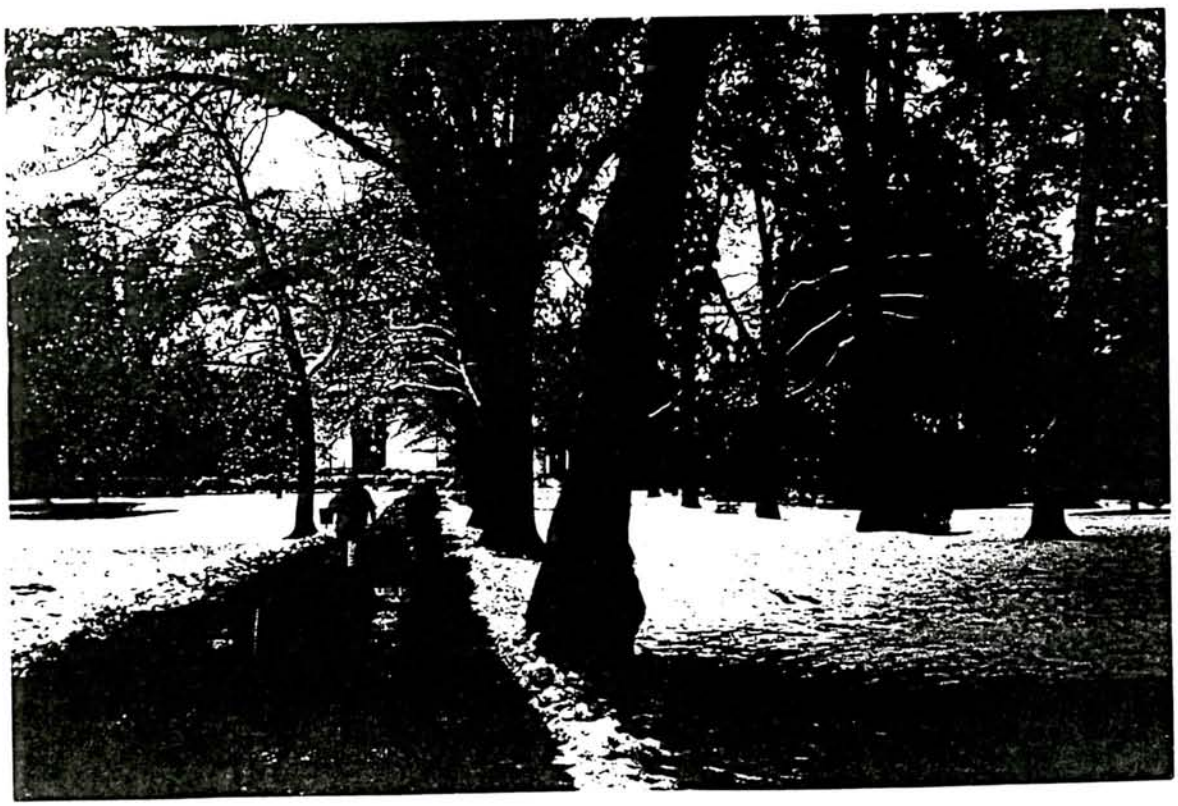
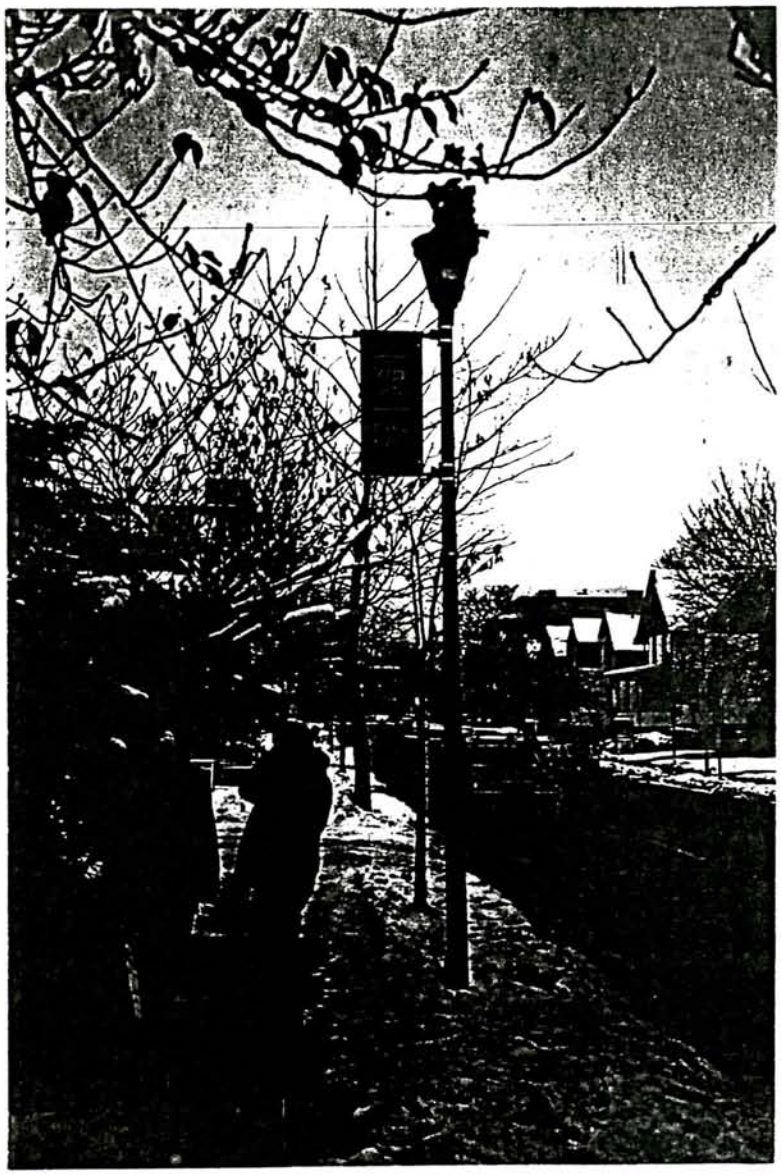
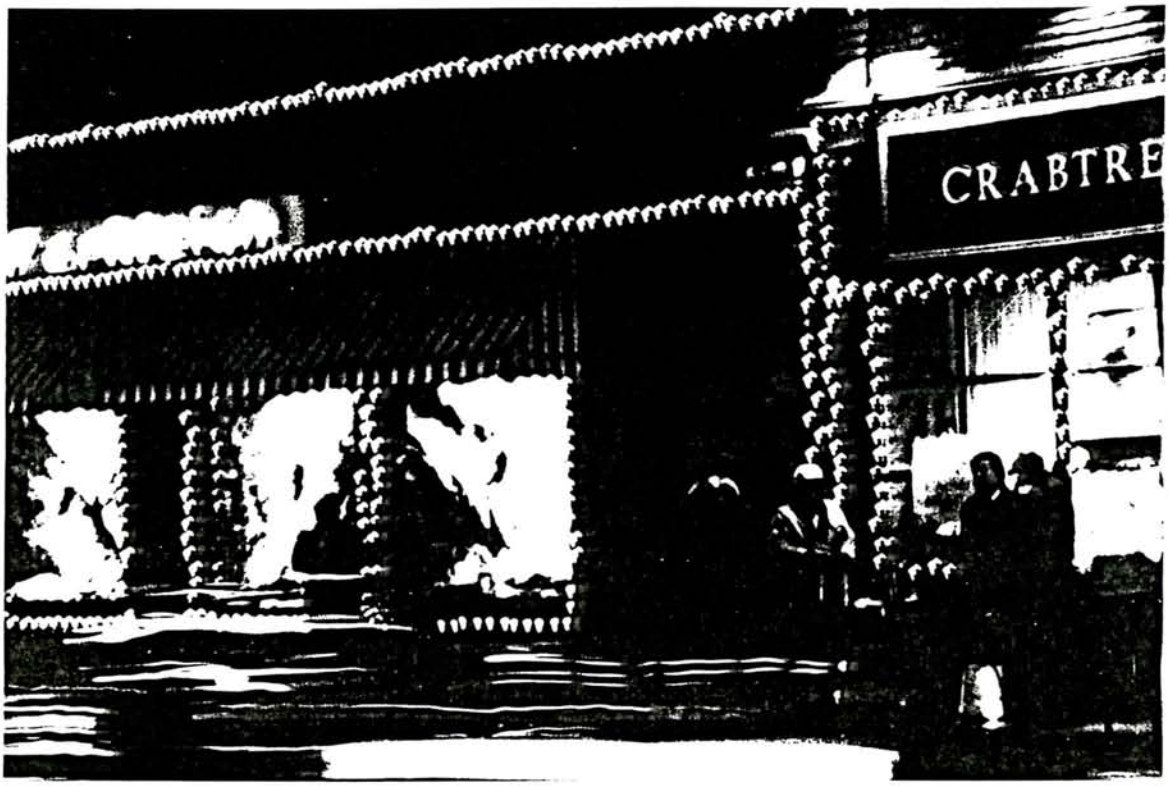


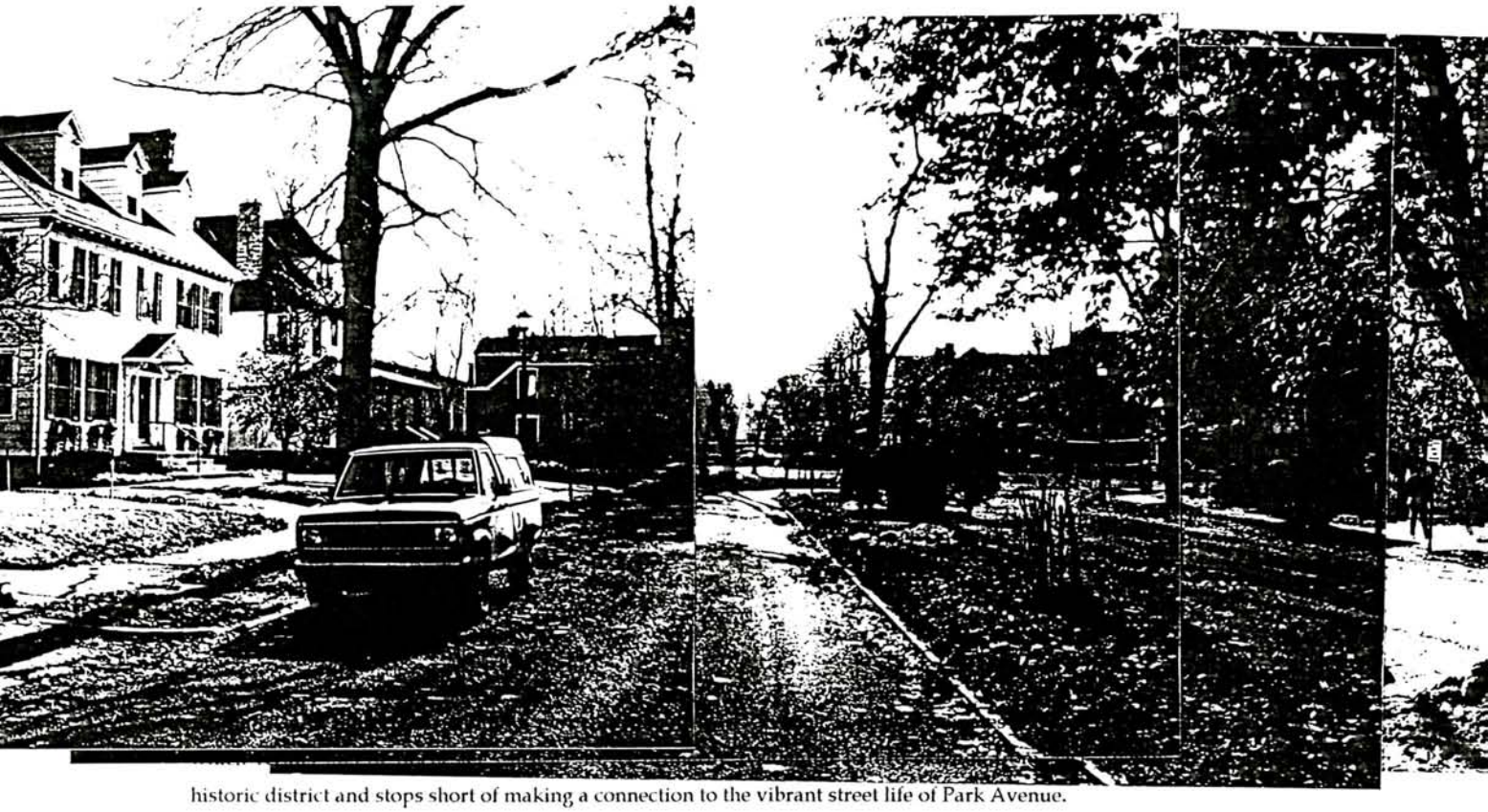
The leisure time of the family gained a new outlet in the promenade along tree-lined streets and parks made not of pavement and hardscape, but of flowing lawns and a multitude of flowers.

Park Avenue appropriates elements such as lamp posts, tree allees, and an eclectic color and texture of building materials to combine in a montage exploiting its nature as event promoter.





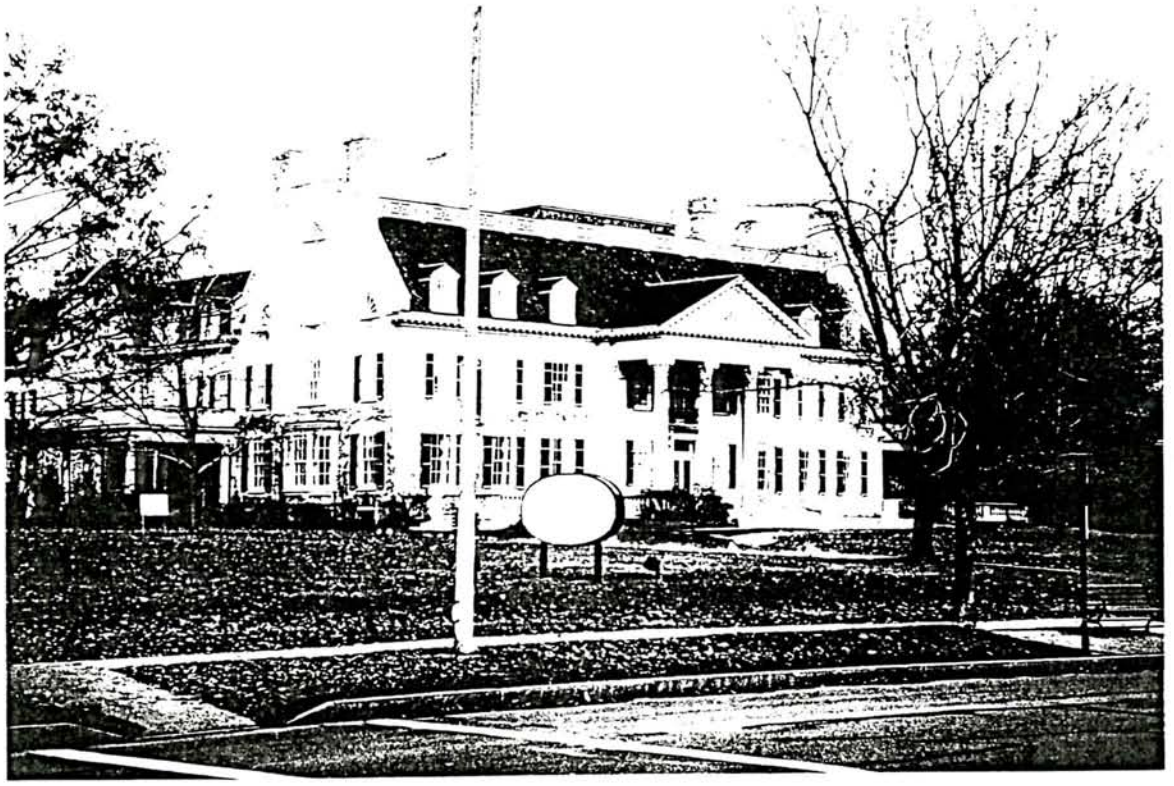
The place that is Park Avenue not only brings together frames of time in its absorption of contemporary and historical features of physical artifacts from Monroe and East Avenue, but also speaks itself about passage: this, in the poetic form of the festival.



historic district and stops short of making a connection to the vibrant street life of Park Avenue.

At the base of Sibley Place running perpendicular to Park Avenue, a park terminates the street. Sibley Place, a street which recalls bits of Rochester's history in its primarily residential nature extends from East Avenue in Rochester's historic district and stops short of making a connection to the vibrant street life of Park Avenue.

It does, however, demonstrate quite clearly the secession of the historical district lead by the Rochester Historic Society on its corner and remind the observer of the layered aspect of city history in built form beginning with its first "country" houses.



The picturesque still-life nature which frames the object artifacts of the East Avenue historic district

The ever-changing present of Monroe Avenue which continues to be about movement and the morphology of the moment

The fragmentary nature of Monroe Avenue

Architectural Issues

Every memory unfolds in a spatial framework. It is above all scenic, and it is here in the arrangement of cities and places that remembrance will reemerge... Operating only in fragments, memory is an art that connects disparate events... Now space is a reality that endures: since our impressions rush by, one after another, and leave nothing behind in our mind...It is to space --the space we occupy, traverse, have continual access to, or can anytime reconstruct in thought and imagination --that we must turn our attention. Our thought must focus on it if this or that category of remembrances is to reappear.

--Maurice Halbwachs

- Architecture as Experience of History

History is formed of components of thought, inquiry, events,...in short, significant life experiences which are captured in time. History is a composition of people and of place--it is a record of ideas held in regard and also of failures. And history, by its capability to hold time stationary, is a vehicle of memory.

Memory itself suggests a recalling of some past thought concerning an event or other such incident in time. The tie to history is one that is obvious: without a past there is nothing to recall. Also important to note, history, like memory, can not operate without a spatial context...a stage upon which to narrate its story. History, then, can be referenced in architecture by way of its ability to command space; actually, architecture as part of place is consumed by history. Consequently, one way of relating architecture to memory is through a common denominator: history.

The experience of history is one that is significant to Park Avenue specifically because it attempts to unite the distant past embodied in the life-size curio cabinet that is East Avenue, at once a reminder of change and an opposition to it, with the ever-changing present of Monroe Avenue which continues to be about movement and the morphology of the moment. As before stated, the means which architecture currently implies this connection on Park Avenue is through its mixed use for private residences and public rooms in the form of shops, salons, cafes and galleries.

- Architecture as Experience of Time

Though time is clearly experienced in dissecting history, architecture might also reference time through light. Light has, throughout time, been a measure of the day by dawn and dusk. In earlier years, work began and ceased in accordance with this measure.

For the artist, this has remained the same, as daylight is still unequaled by artificial lumination in its poetic display of true color and shadow. For the creation of image in art, natural light is truly desirable, if not a necessity in the mind of the artist. Therefore, architecture might take its cue from art and recognize time's natural manifestation in the glory of natural light and harvest it to express this fact. The expression of light is of interest especially in the design of artists' studio spaces and gallery spaces for the exhibit of the images.

- Architecture as Experience of Place

An architecture of place is characterized by patterns of organization, form, movement...all pieces of a whole which compose the experience of the place. Architecture of place might refer to sequences and layers: of color and texture, structure and composition. The architecture of place looks to its predecessors on site for inspiration and to be assured that the community will recognize the new form as a part of the place. In this reinterpretation of existing conditions, architecture makes use of images of place and enters the realm of memory to accomplish this.

Park Avenue appropriates elements such as lamp posts, tree allees, and an eclectic color and texture of building materials to combine in a montage exploiting its nature as event promoter. It is in these images that Park Avenue is remembered as place. Sibley Place, in contrast, expresses a more quiet approach. The homes which line the street, while formed of mixed use: apartments, the rest home, the private residence, appear unified...being of approximately the same size and constructed of similar materials. Instead, the street is about park, landscape, nature...a continuation of the country houses of East Avenue, but recognizing this through more humble means. They do not have large private gardens, but revert to the public park for release.

- Connection of Place, Time, and History Through Architecture

This issue of connection is the key for understanding these three elements: place, time, and history, with respect to memory. Each individually has architectural significance, but when taken together, they enter a new dimension that makes a lasting imprint on the mind. This impression can then be recalled at will to serve a need to comprehend another place, time, or period in history. Based on conditions of the site that inform these elements, memory is then translatable to other points within the city to regain a sense of the whole by understanding its parts. Connection is translatable in architecture in sequence of experience: a constant reminder in movement of these three elements. By reattaching the architectural sequence form the arts campus to the public forum, Park Avenue, the realization of memory in architecture is possible.

Site--Program Fit

Precedents

- The Wexner Center for the Visual Arts
  Ohio State University, Columbus, Ohio
  Peter Eisenman

- Venice InterArts Center
  Venice, California
  Studio Works: R. Mangurian& C. Hodgetts

- Palazzo Citterio Art Gallery
  Brera Museum, Milano
  James Stirling & Michael Wilford

- The Block : The Chinati Foundation
  Marfa, Texas
  Donald Judd

- Lisson Gallery
  67 Lisson Street, London
  Tony Fretton

- Lynn Goode Gallery
  Houston, Texas
  Carlos Jimenez

- Hybrid Building
  Seaside, Florida
  Steven Holl

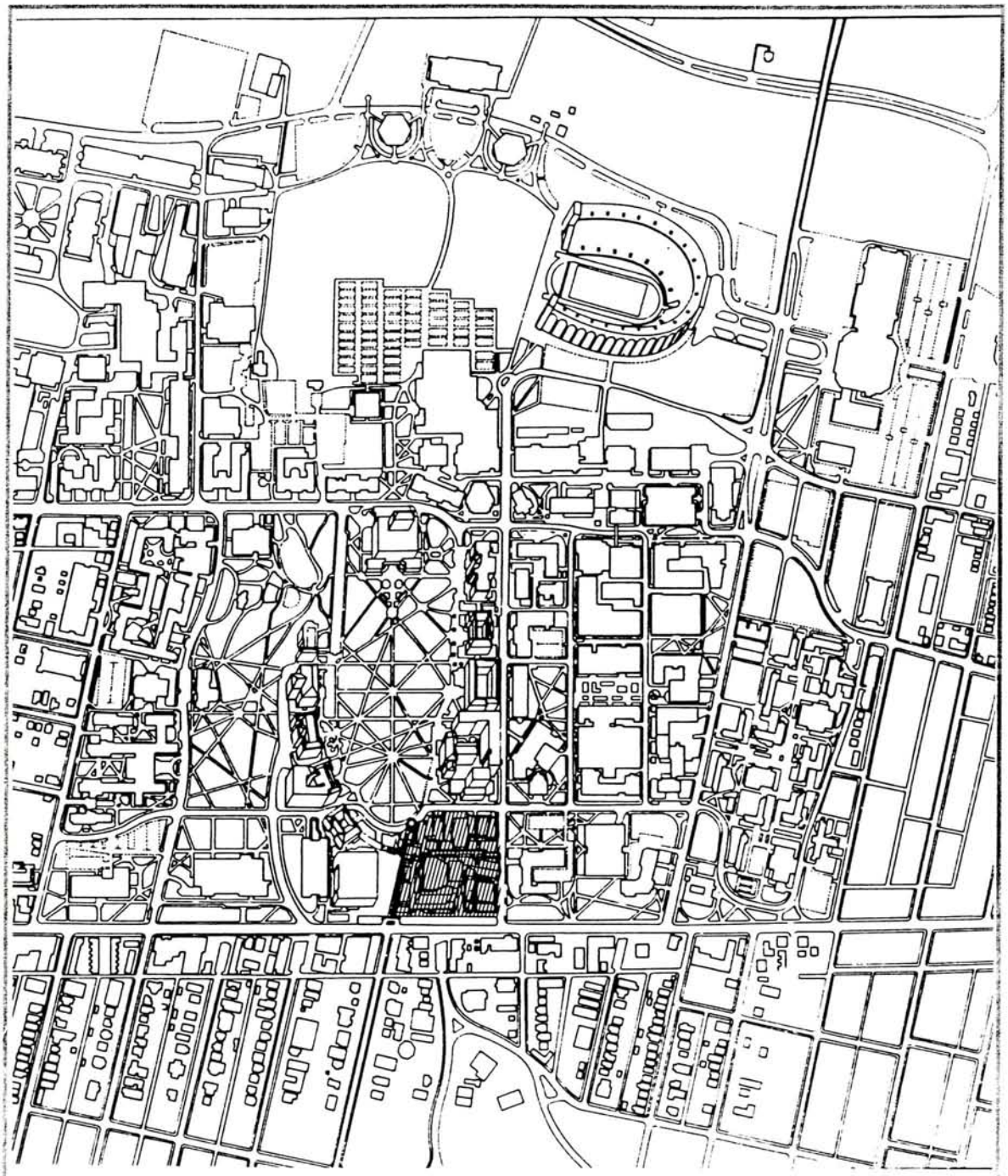
- Soane Museum
  Lincoln Inn Fields, London
  Sir John Soane

- Barclay Simpson Sculpture Studio
  California College of Arts & Crafts
  Jim Jennings Arkhitekture

Precedents

Peter Eisenman

The Wexner Center for the Visual Arts
Ohio State University, Columbus

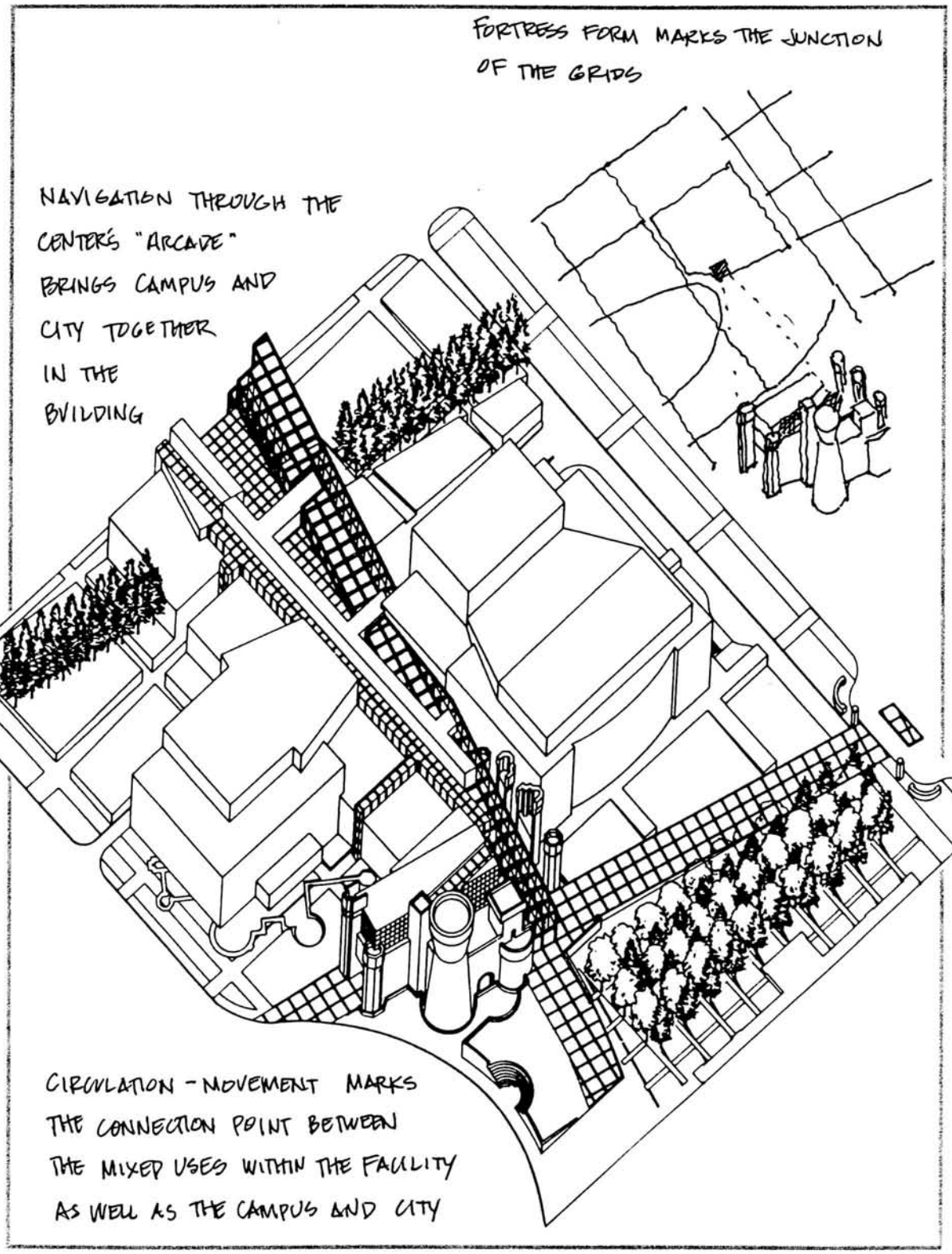


ARTS CENTER ATTEMPTS TO MEDIATE BETWEEN CITY AND COLLEGE CAMPUS THROUGH JUXTAPOSED GRIDS

Precedents

Peter Eisenman

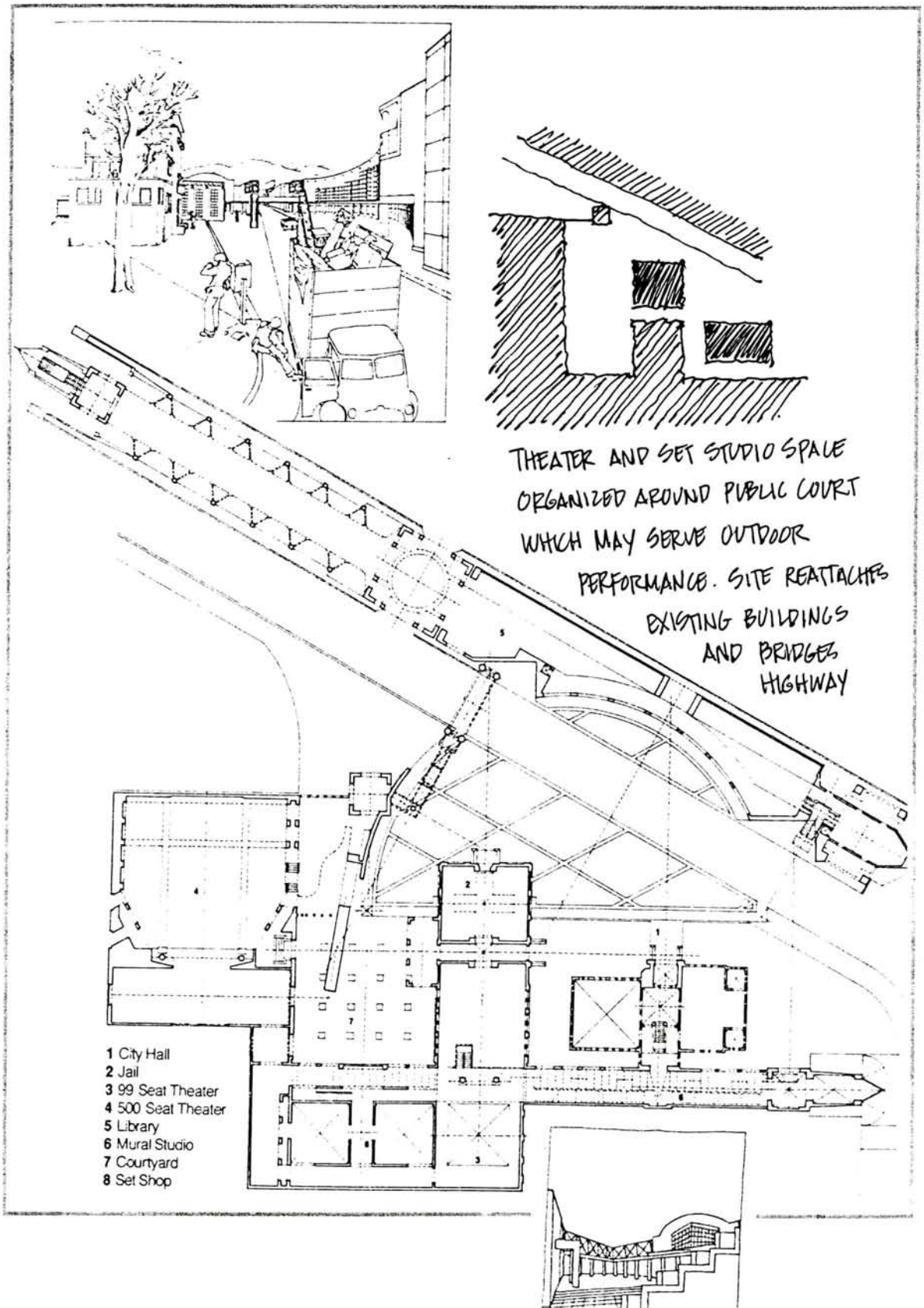
The Wexner Center for the Visual Arts
Ohio State University, Columbus



Precedents

Studio Works
R. Mangurian & C. Hodgetts

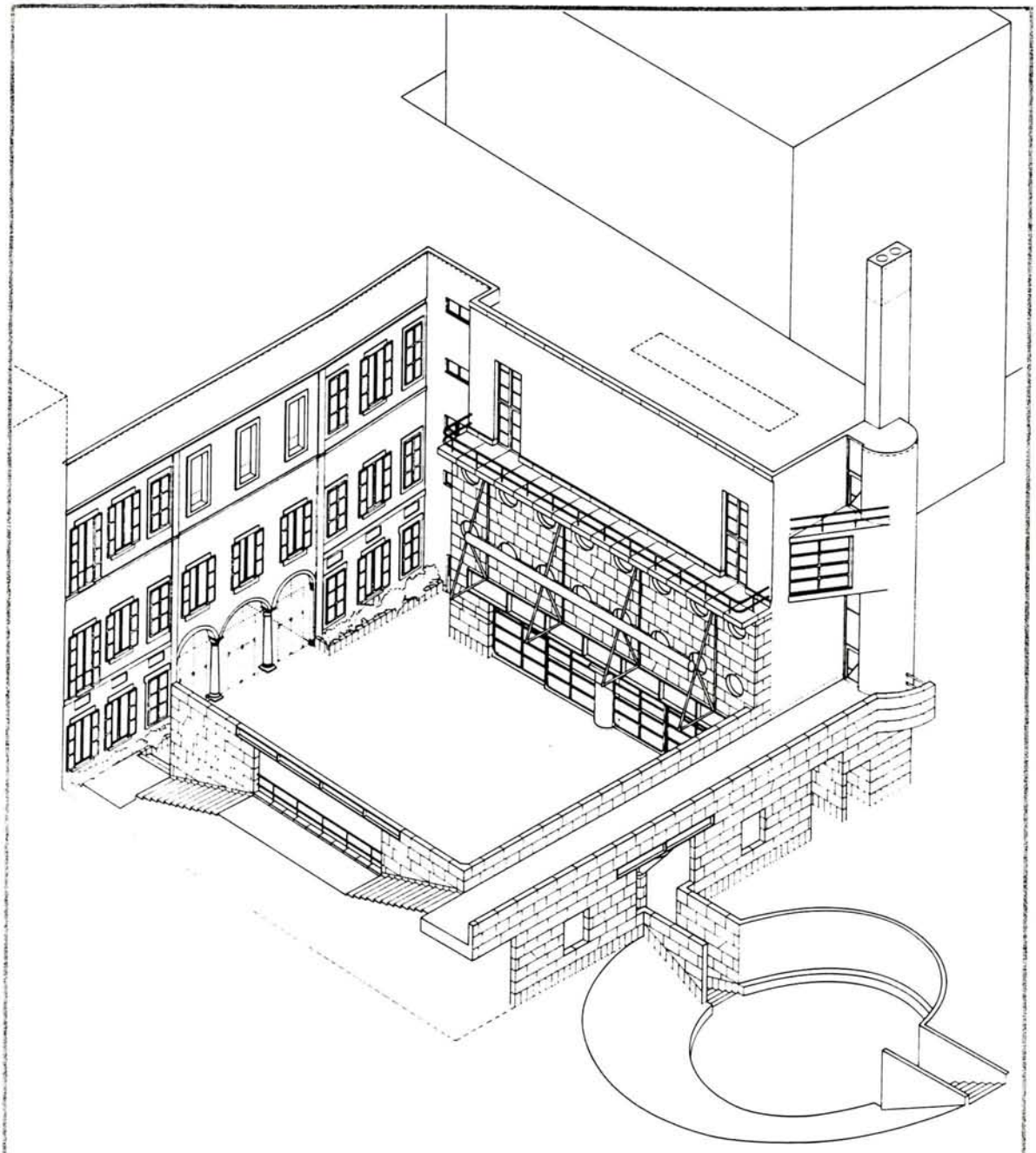
Venice InterArts Center
Venice, California



Precedents

James Stirling & Michael Wilford

Palazzo Citterio Art Gallery
Brera Museum, Milan

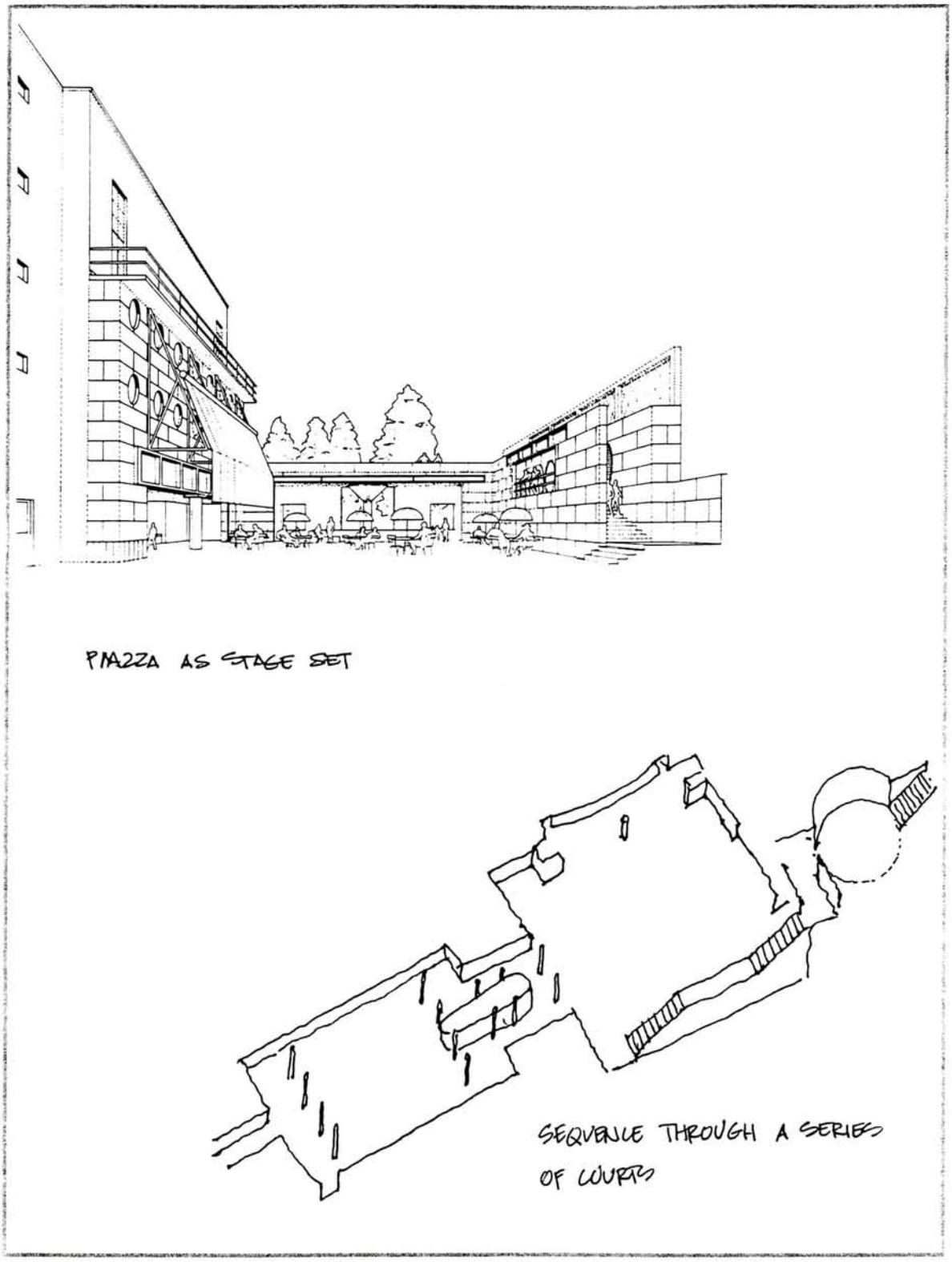


PIAZZA SPACE COLLECTS FACADES
OF VARIOUS TEXTURES AND COLORS

Precedents

James Stirling & Michael Wilford

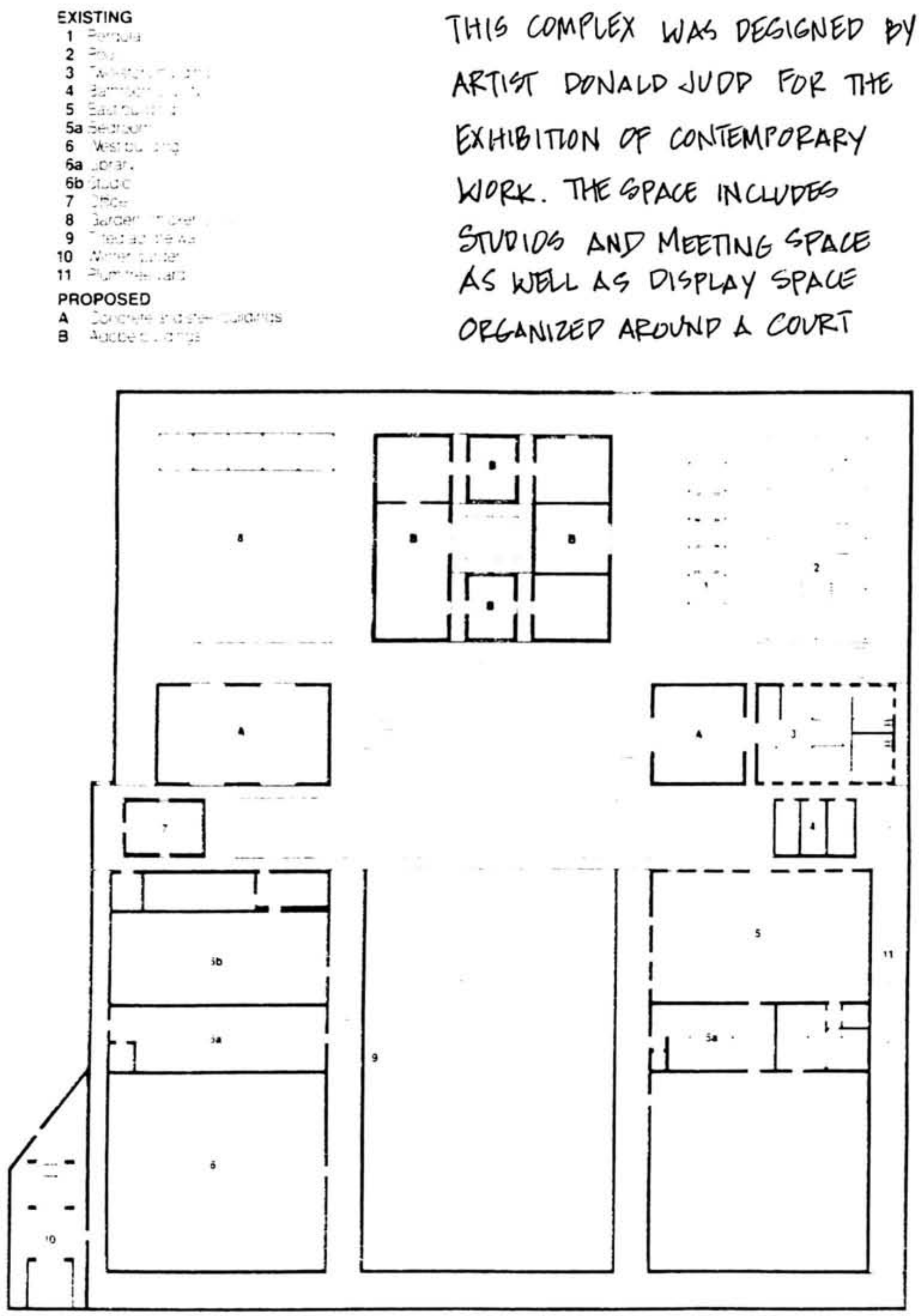
Palazzo Citterio Art Gallery
Brera Museum, Milan

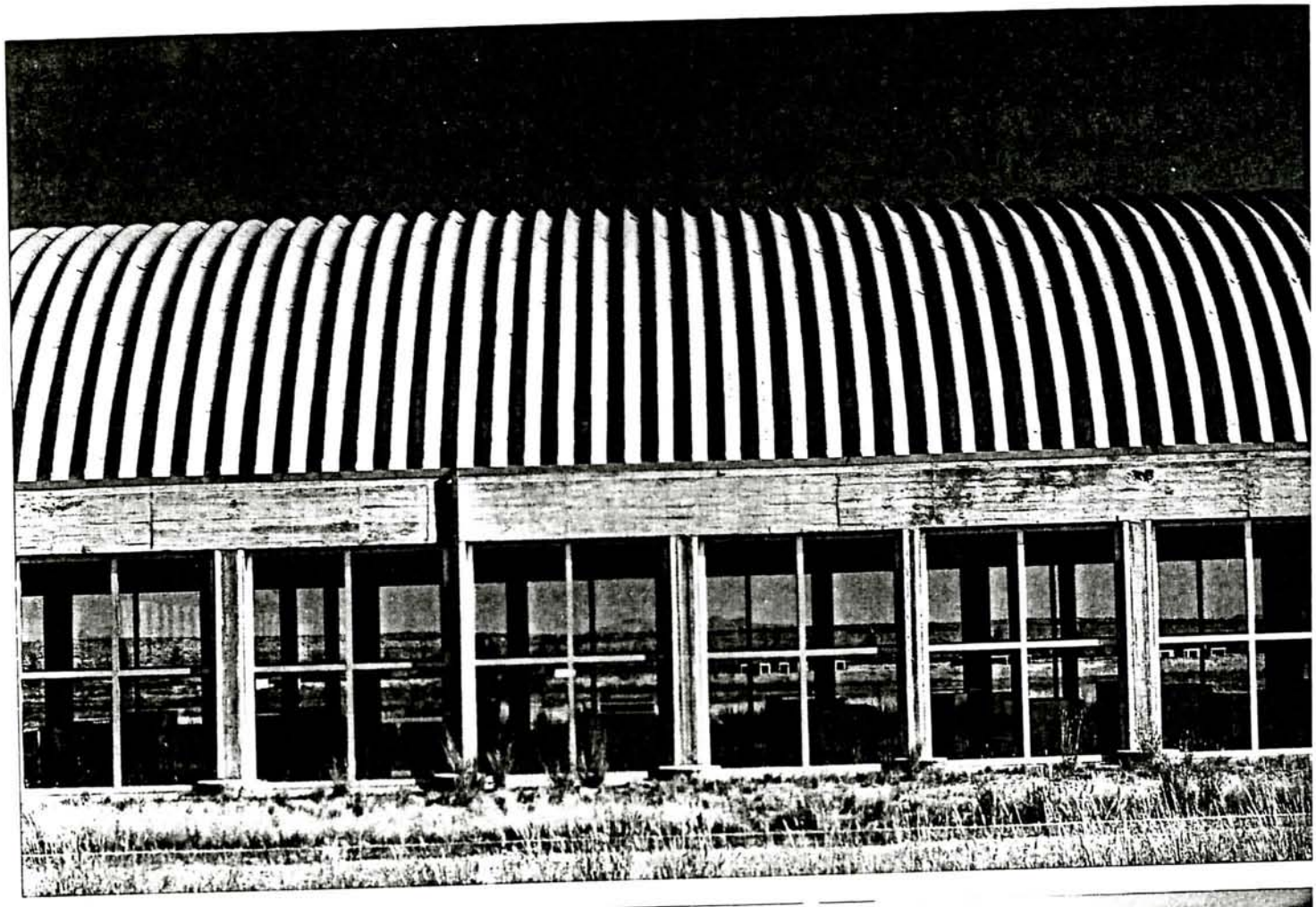


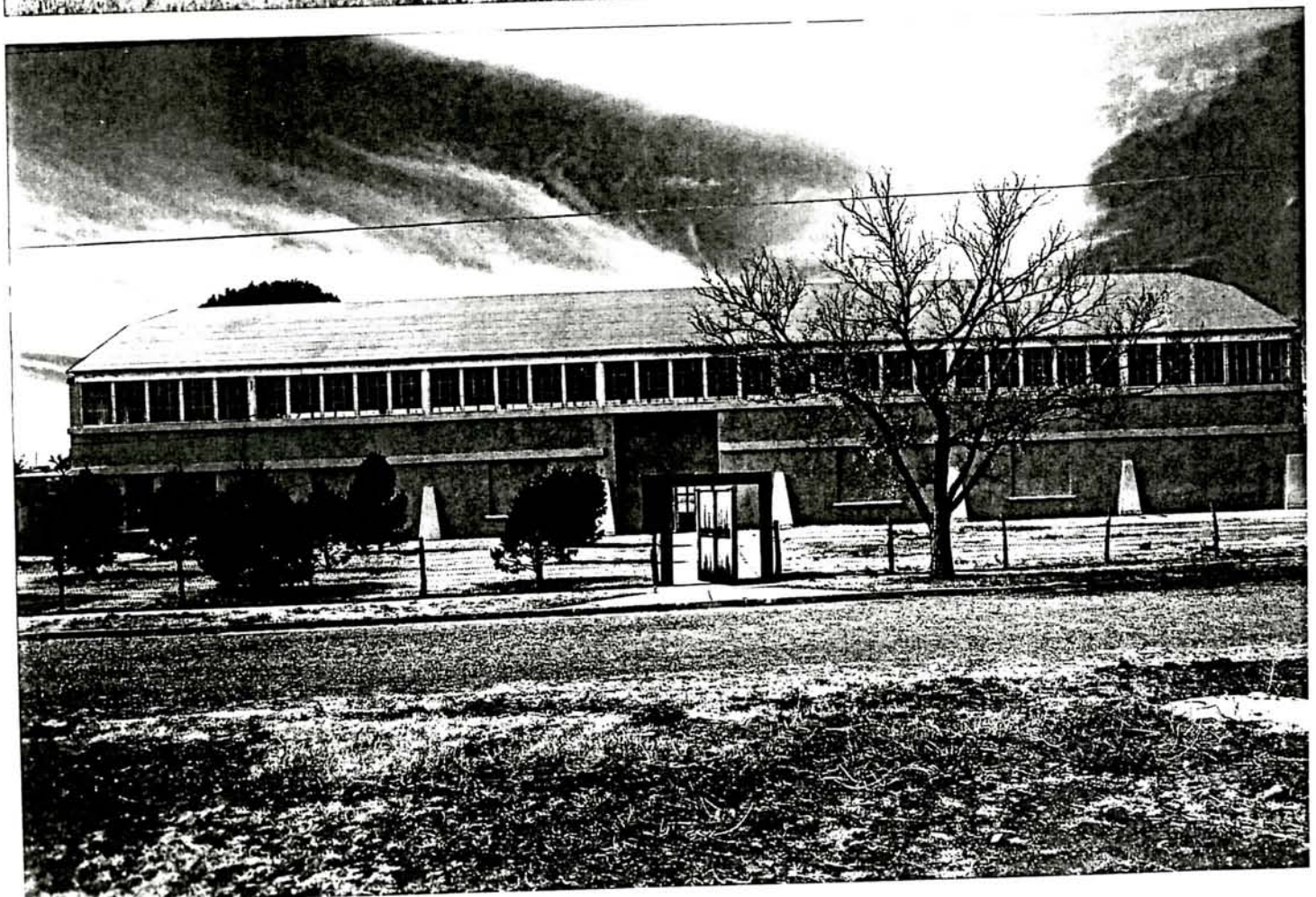
Donald Judd

The Block, Marfa, Texas

THIS COMPLEX WAS DESIGNED BY ARTIST DONALD JUDD FOR THE EXHIBITION OF CONTEMPORARY WORK. THE SPACE INCLUDES STUDIOS AND MEETING SPACE AS WELL AS DISPLAY SPACE ORGANIZED AROUND A COURT





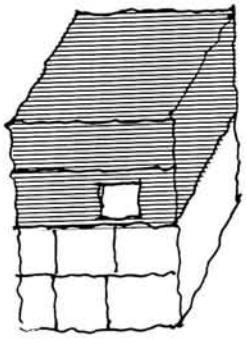


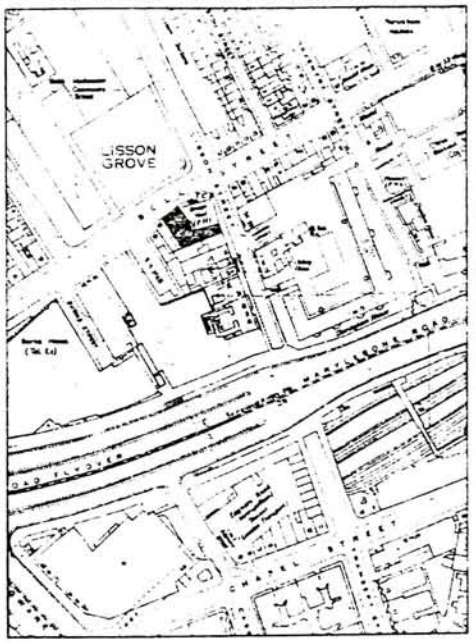
Precedents

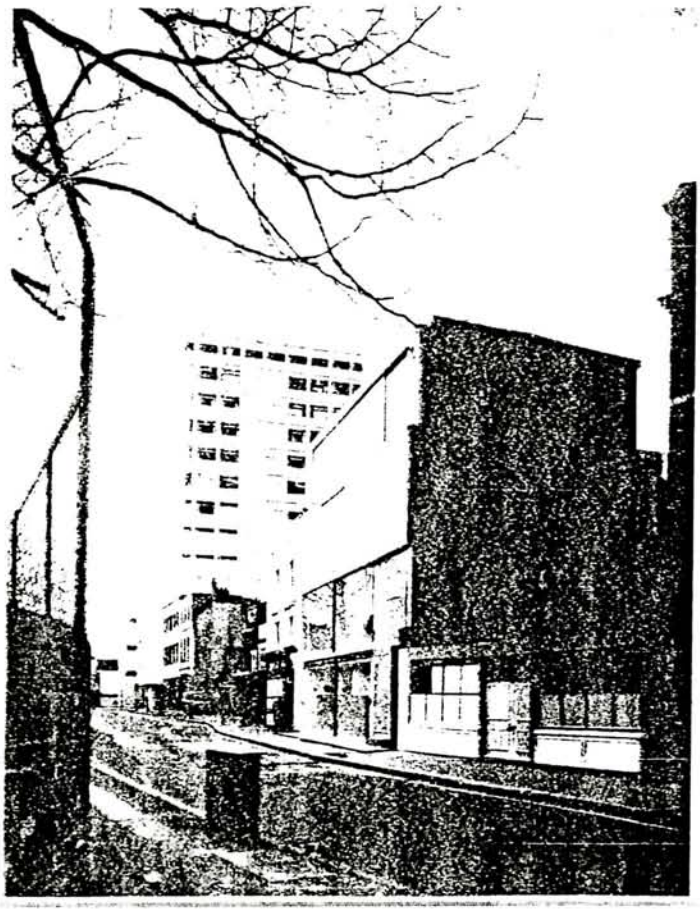
Tony Fretton

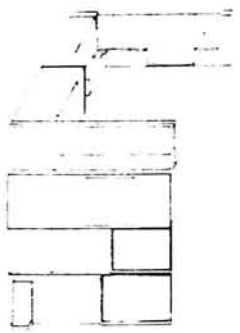
Lisson Gallery
67 Lisson Street, London

THIS GALLERY AND STUDIO SPACE INVESTIGATES THE TYPE OF SHOP-FRONT WHICH MEDIATES BETWEEN IT AND A NEIGHBORHOOD OF MIXED COMMERCIAL USE.





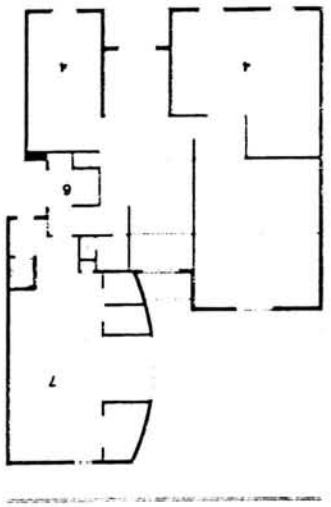


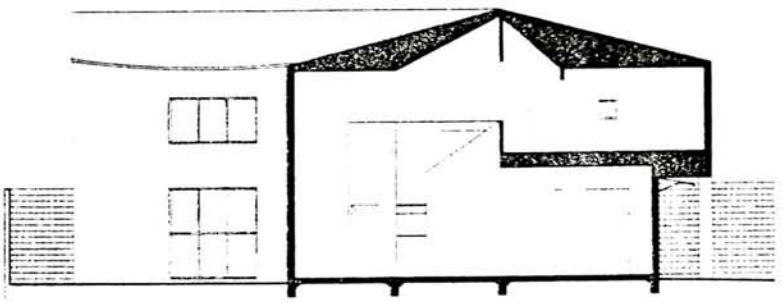


Precedents

Carlos Jimenez

Lynn Goode Gallery
Houston, Texas

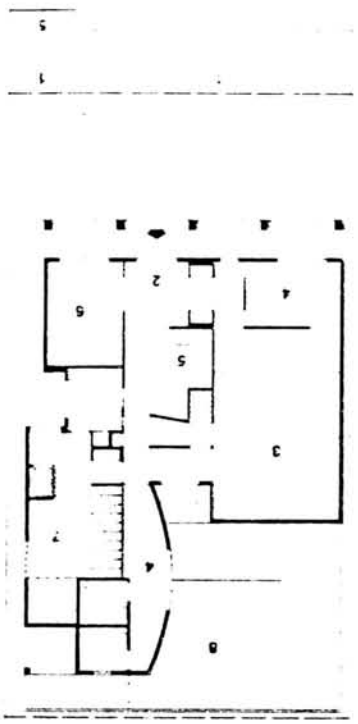


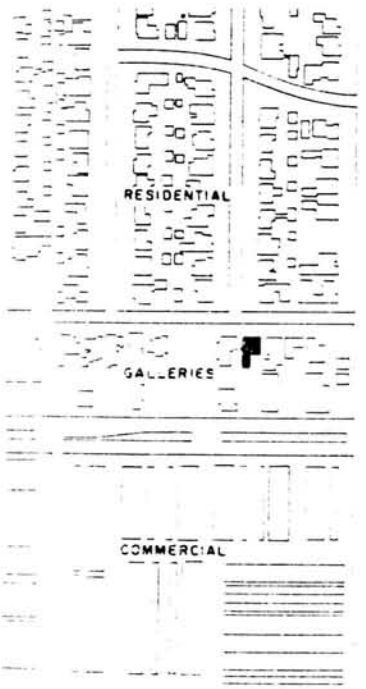


THIS SMALL GALLERY BEGINS TO RECONCILE THE EDGE BETWEEN THE RESIDENTIAL AREA AND THE COMMERCIAL AREA

IN ITS FORM IT RECALLS THE HOUSE AS CAN BE SEEN IN SECTION.

1. Parking
2. Entrance
3. Main gallery
4. Gallery
5. Reception
6. Office
7. Storage
8. Courtyard

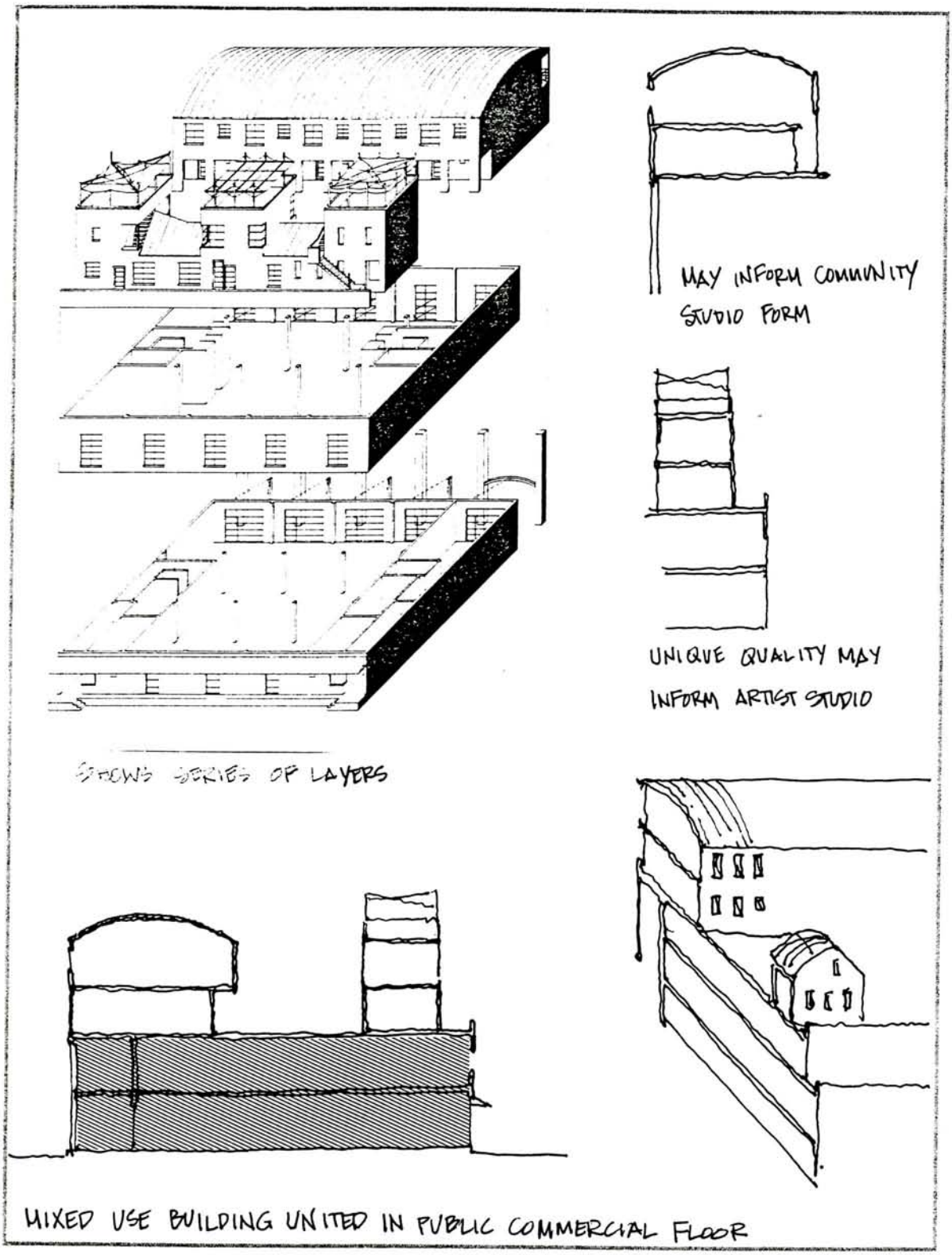




Precedents

Steven Holl

Hybrid Building, Seaside



Precedents

Sir John Soane

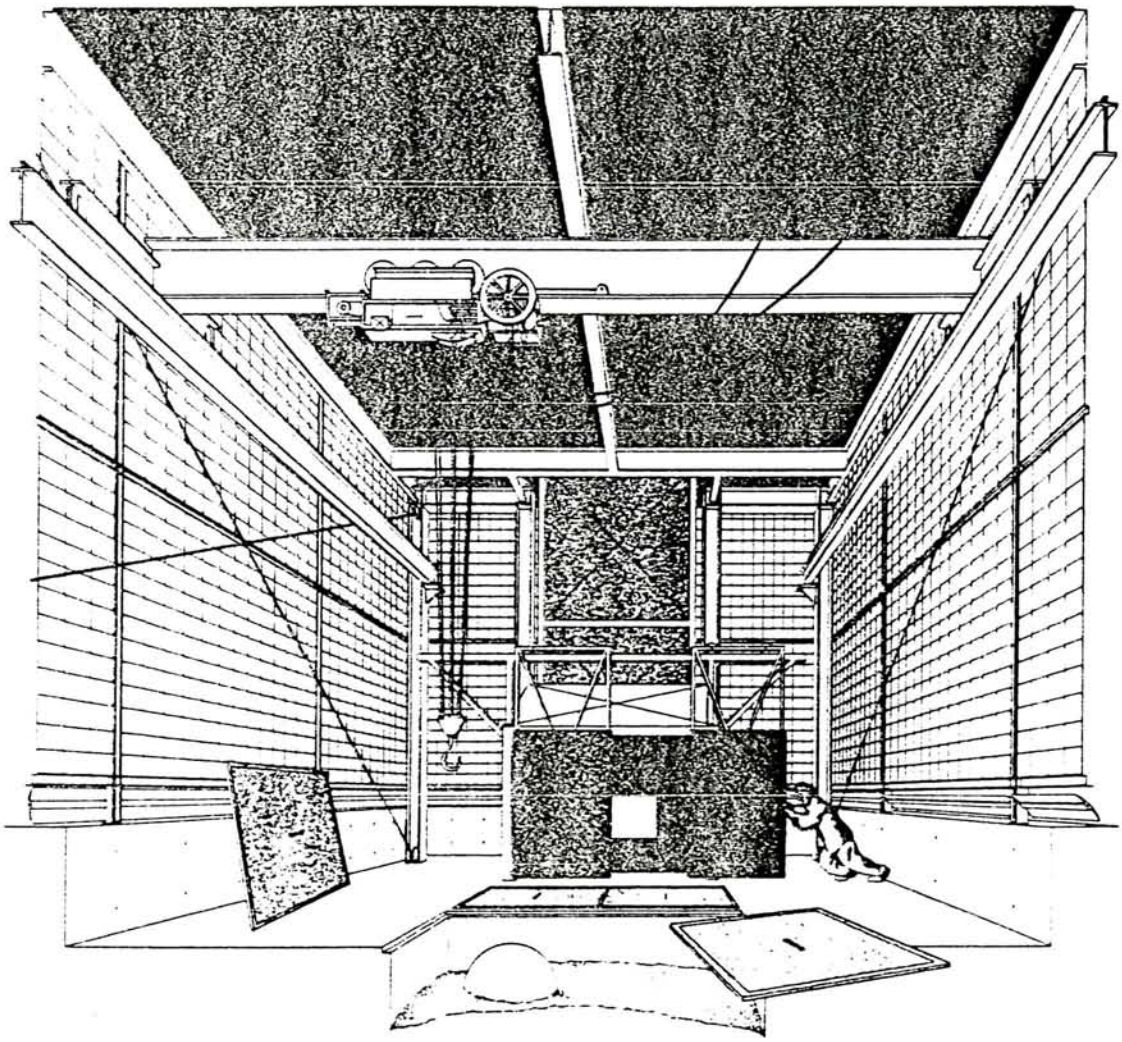
Soane Museum, Lincoln Inn Fields

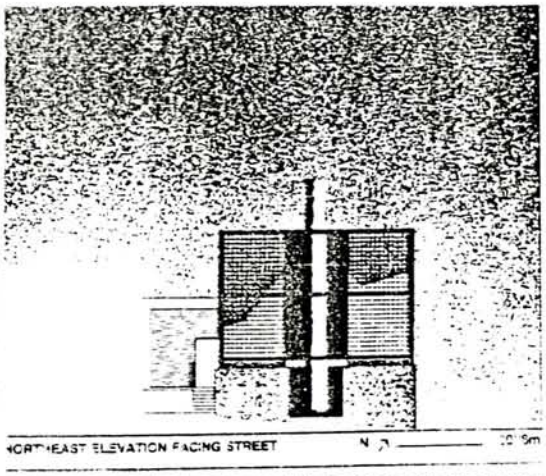
QUALITY OF LIGHT FOR DISPLAY EXPLOITED IN SECTION

Precedents

Jim Jennings Arkhitekture

Barclay Simpson Sculpture Studio
California College of Arts& Crafts





AN APPROACH TO THE DESIGN OF LARGE ASSEMBLAGE SPACE FOR SCULPTURE STUDIOS. THE EMPLOYMENT OF A CRANE TO AID IN PRODUCTION OF SCULPTURE AND MOVEMENT OUT OF THE SPACE THROUGH INDUSTRIAL SIZE DOORS.

Resources and References

- Bureau of Parks and Recreation of the City of Rochester
  400 Dewey Avenue
  contact: Alan Colletta
  716-428-6770

- William Delavan Jr.
  Delevan Center, Inc.
  501 W. Fayette Street
  Syracuse, NY 13204
  315-476-9001

- Department of Engineering of the City of Rochester
  Rochester City Hall
  Church St.
  contact: Tim O'Connell
  716-428-6848

- Landmark Society of Western New York
  130 Spring St.
  Rochester, NY 14608
  716-546-7029

- Rochester Historical Society
  485 East Avenue
  716-271-2705

- Rochester/ Monroe County Convention and Visitors Bureau
  126 Andrews St.
  716-546-3070

- Rochester Public Library Local History Division
  Rundel Memorial Building
  South Avenue
  contact: Ruth Naparsteck, City Historian
  716-428-7340

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Applicable Technical Information

Chemical Storage

Storing chemicals is really a two-part problem. The simpler problem is where to store unmixed chemicals such as developer or fixer. An easy solution is to keep them in a storage cabinet somewhere outside of the darkroom, which will protect boxed or half-used containers from the high humidity. The more difficult problem involves storing mixed chemicals. If you are a prodigious photographer and process through developer, stop bath, fixer #1, fixer #2, hypo-clearing agent, and toning, as well as negative developers, wetting agents, and possibly color photography chemicals, storage of mixed chemicals can be a troublesome matter. The basic rules that should be considered when planning for mixed chemical storage are:

1. The chemicals should be stored in containers that do not react with their contents.
2. The chemicals should be stored conveniently near where they are used, such as a shelf over the sink.
3. They should be accessible. If you mix in large quantities for economy or because you use a lot, it's easier to plan on containers with spigots than it is to lift 5-gallon containers every half hour.
4. Containers should be airtight and preferably have a system to keep all air away from the surface of the chemicals. When air interacts with chemicals it oxidizes them —an undesirable effect —so the less surface exposed to the air the longer your chemicals will last. The two best techniques for accomplishing this are containers that collapse as solution is removed, which keeps the air out, or floating lids for rigid storage containers.
5. The bottles for the chemicals should be opaque or amber colored because light speeds the degradation of the chemicals.

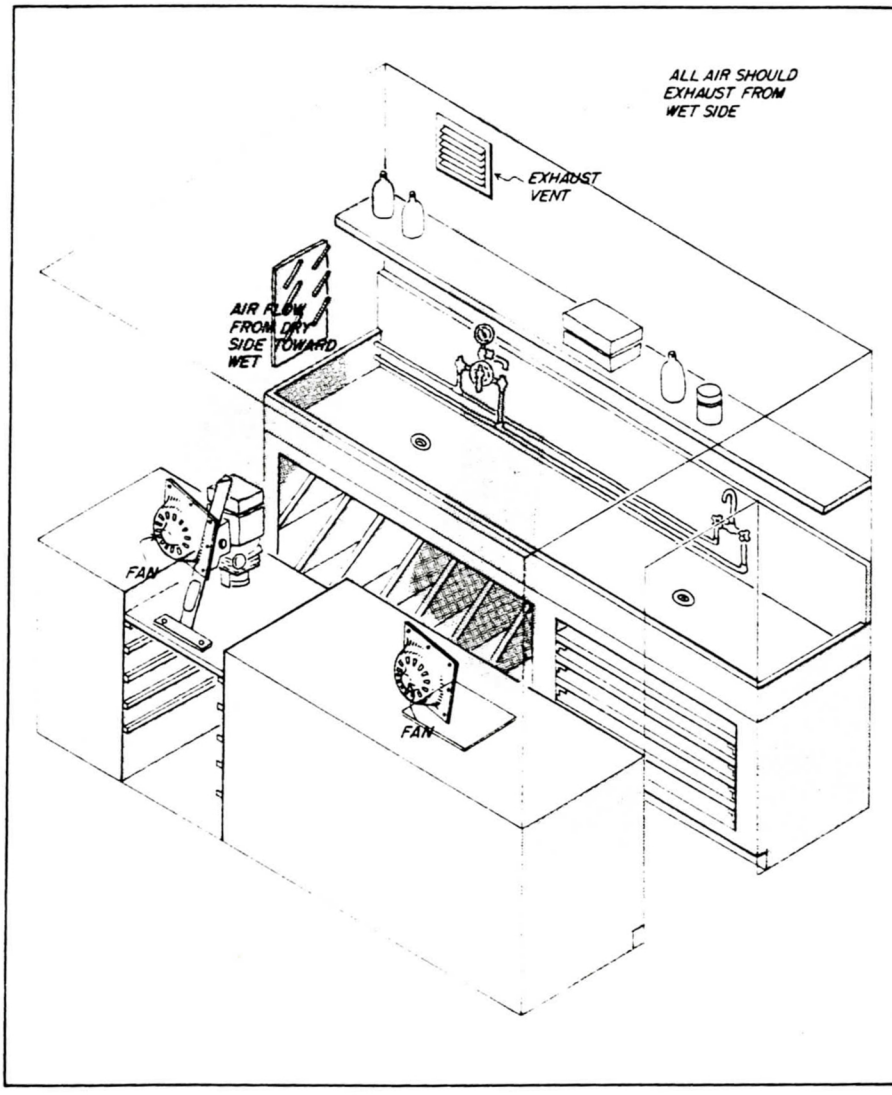
Bulk Storage. Large quantities of mixed chemicals can be stored in plastic storage tanks. To make sure they are stored properly, use a tank with a floating lid. This lid prevents air from coming in contact with the stored chemical and weakening it. If the tank is more than 1 gallon it is almost a necessity to have a spigot with which to draw off chemicals. These Nalgene tanks are good examples of bulk chemical storage tanks.

Photo courtesy of Nalge Company, Division of Sybron Corporation.

Storage Containers. These Falcon chemical containers have become the standard in the field. They are well made, durable, and have a convenient labeling system that allows you to identify the chemical, the date it was mixed, and any other pertinent information.

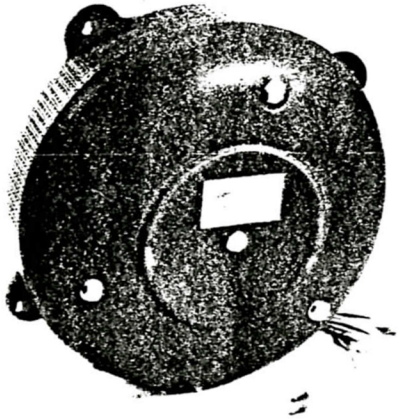
Air Evacuation Bottle. Falcon has also developed a way to keep chemicals at top form longer. These bottles allow you to squeeze the air out thus prolonging the life of the chemicals by keeping air from contacting the surface.

Darkroom Air Flow



Darkroom Air Flow. If the fan is mounted to blow into the room, the fan should be installed on the dry side of the darkroom and the vents on the wet side. The air entering the room will keep it at a positive pressure and air will flow out of the cracks in the room, which keeps the dust out.

Should you decide to use the fan as an exhaust fan blowing air out of the room, it should be mounted on the wet side so that the moist air from the sink and chemicals exit immediately without being distributed throughout the room.



Ventilator Fan. Special darkroom fans such as this Starfield ventilator from Porters are specially baffled to prevent light leaks. This fan has a capacity of 200 cfm, which is sufficient to change the air every 6 minutes in a darkroom 10' x 16' x 7' or smaller.

Exhaust Vents. Darkroom vents should be light-proof. Spiratone supplies these "Darkroom Breather" vents in four sizes: 10 x 8, 12 x 12, 18 x 8, and 24 x 12.

Humidity and Temperature Indicator. This combination humidity and temperature indicator from Abbeon Cal. Inc. is a good item for the darkroom. Then again perhaps ignorance is bliss.

Air Quality

The quality of the air in the darkroom directly affects both the quality of work done there and the health and enjoyment of the photographer. Several aspects of the darkroom air have to be considered.

Humidity

The ideal darkroom humidity is between 45 and 50 percent. In some parts of the country this is easy to maintain without controls, but sometimes control is an absolute necessity. Air that is too damp will rust equipment and make it perform inaccurately; air that is too dry will create static electricity problems and increase problems with dust. A dehumidifier can help a damp room (a side benefit is that the water run off from the dehumidifier can be bottled and used as distilled water for negative processing). A room that is too dry can be corrected with the addition of a humidifier.

Temperature

The ideal darkroom temperature is approximately 68°F, the temperature at which most photographic chemicals are used. If temperatures vary considerably, time is spent worrying about water baths, comfort, and the timing of the various developmental processes. To control the temperature you can install heaters or air conditioners. Air conditioners are especially useful because they will also filter and dehumidify the air as they are cooling it. If you use an air conditioner try to have the air flow from the dry side to the wet side so that steam and vapors rising from the sink are not carried over to the dry side. Be sure to buy an air conditioner that can operate on fan only so that the room can be ventilated without being cooled.

Ventilation

The minimal controls required in a darkroom concern air flow and turnover. The air in the darkroom must be changed every 6 to 8 minutes for comfort. To make this possible a fan and vents must be installed. The fan should always be filtered and the air stream should enter the darkroom from the dry side. Outlet vents should be over the sink on the wet side. This arrangement increases the pressure in the room so that unfiltered air from outside does not carry dust into the darkroom. The flow from dry to wet side keeps the vapors from the sink contained and the outlets over the sink provide a way for the air to be carried from the room. All vents and fans should be light-proof.

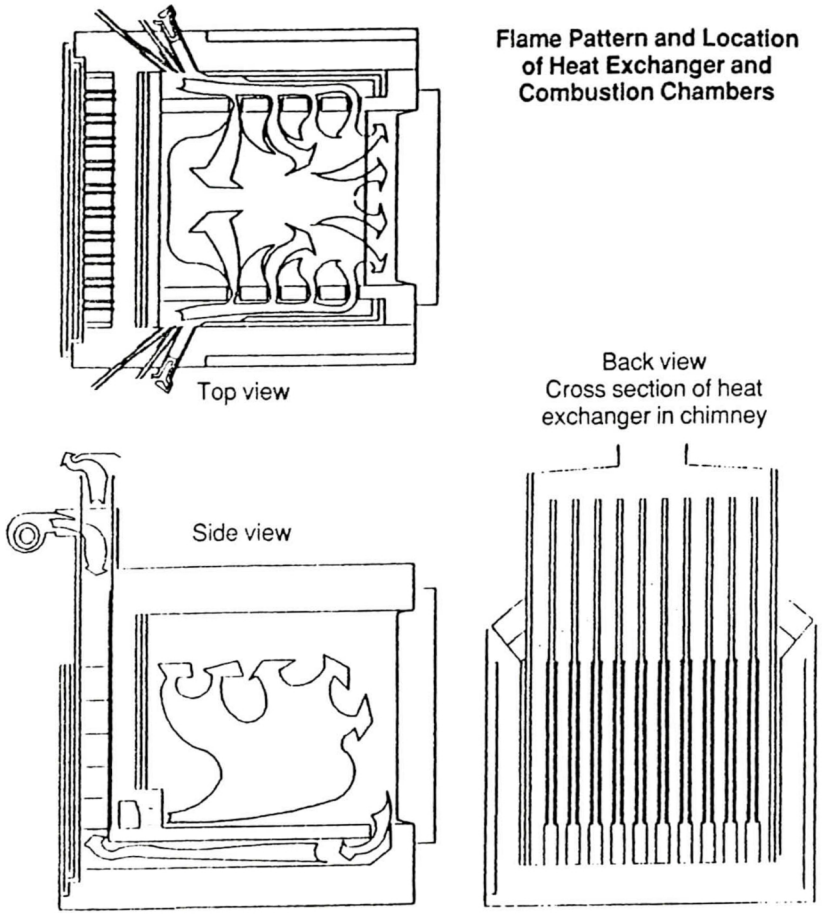
How to Find the Size Fan You Need

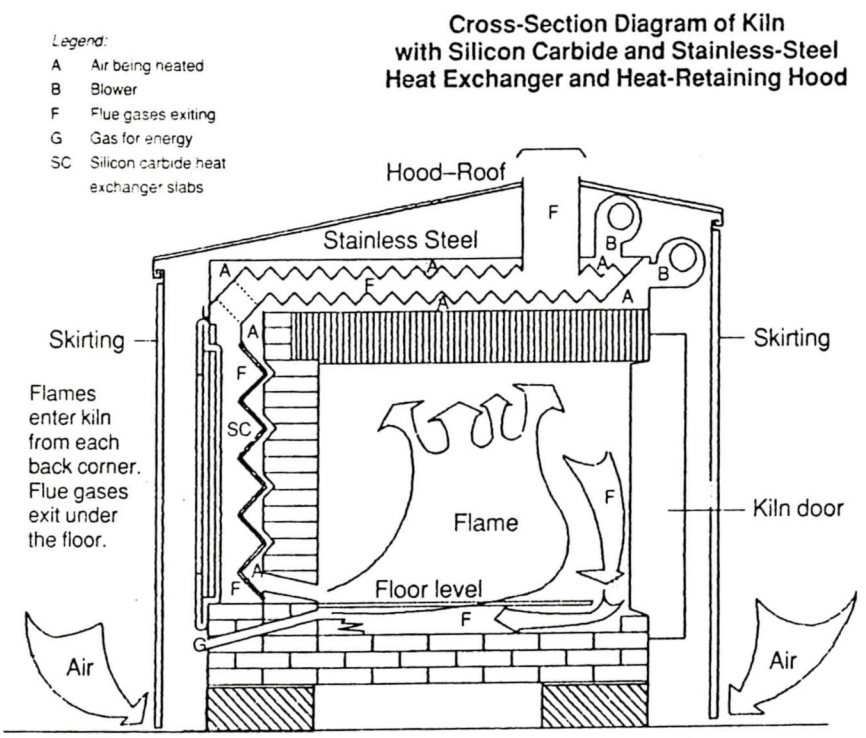
Air in the darkroom should be changed every 6 to 8 minutes. To determine the size fan needed you have to know the number of cubic feet in the room. Fan capacities are rated in cfm (cubic feet per minute). To determine the cubic feet in your darkroom, measure the room's width, length, and height. Multiply these dimensions to give you the total cubic feet in the room. Divide that figure by 6 to determine how many cubic feet per minute the fan must move if it is to change the entire room every 6 minutes. Example: if the room is 8′ wide, 10′ long, and 7′ high: 8 x 10 = 80; 80 x 7 = 560 cubic feet. 560 divided by 6 = 93 cubic feet per minute. The fan should be approximately 100 cfm rated.

Dust

Dust must be kept out of the room, or removed, if any dust seeps in. The best device is an electrostatic air cleaner to filter particles out of the air.

Electrostatic Air Cleaner. Eliminating dust from the darkroom can be a full-time job. If you don't get it out of the air you have to get it off of the negatives. If you don't get it off of the negatives, you have to spot the prints. If dust is a problem, you can install either a wall mounted or tabletop electrostatic air cleaner such as this Labaire model from Leedal. It works by charging dust particles so that they will adhere to a collector with an opposite charge. Because the dust builds up on these collectors, you should also consider their ease of cleaning. This model collects particles down to .01 microns. The collecting screen is washable.





Alternative designs: the top drawings show a 10-air-slot design made from 100 6×6-inch silicon carbide tiles fitted into the brick rear wall of the kiln. The bottom drawing shows an angled-tile design with the kiln placed inside a sheet-metal hood with removable skirts. In both kilns, the rear cover is 4 inches of refractory fiber and the top portion of the exchanger is 26-gauge stainless steel.

er—located on the cool end of a pipe aimed at the flame. If it doesn't see flame, it shuts everything down.

A pilot "candles" the kiln overnight to dry the ware before turning on the blowers and the main gas supply. Once the kiln is firing on the main flame, the pilot is turned off and its air port closed. The UV sensor monitors the main flame.

Overfiring With a standard kiln, overfiring isn't a problem. My children and I went fishing at Emma Lake one day. The fish started to bite and I totally forgot the kiln was due to be turned off. It fired an extra four hours. There were a few runny glazes, but the kiln wasn't damaged. The bluegills weren't bad either.

A good heat exchanger in the chimney closes the holes in the top and bottom of the kiln. Twenty extra minutes overfires the kiln, and four extra hours could cause a meltdown.

As "absent-minded potter" protection, I installed a Dawson Kiln Sitter near the bottom of the kiln. To avoid the nuisance of early shutoff, I trigger the kiln sitter with a cone rated slightly hotter than I plan to fire.

Environmental Responsibility Lately, many people are once again buying gas-guzzling cars, and potters may be losing some of their interest in environmental responsibility as well.

Electric firing is among the least efficient and most polluting. Only about 35% of the power used at the generating plant ends up at the kiln. Generator and transmission inefficiencies account for 65%. Since 1958, yearly sulfur dioxide emissions have more than doubled, and power plants burning fossil fuels contributed a major portion.

I'm hoping my experiences with fuel efficiency will give other potters some ideas and perhaps inspire idealism. We need to work together to create the new "hill-climbing" kilns to close the holes of waste.

The author *Marvin Bartel (Goshen, Indiana) has built or served as design consultant for more than a dozen kilns during the past 20 years. While he holds a U.S. patent on the heat exchanger system described in this article, he encourages its use in kilns built by individual potters for studio production.*

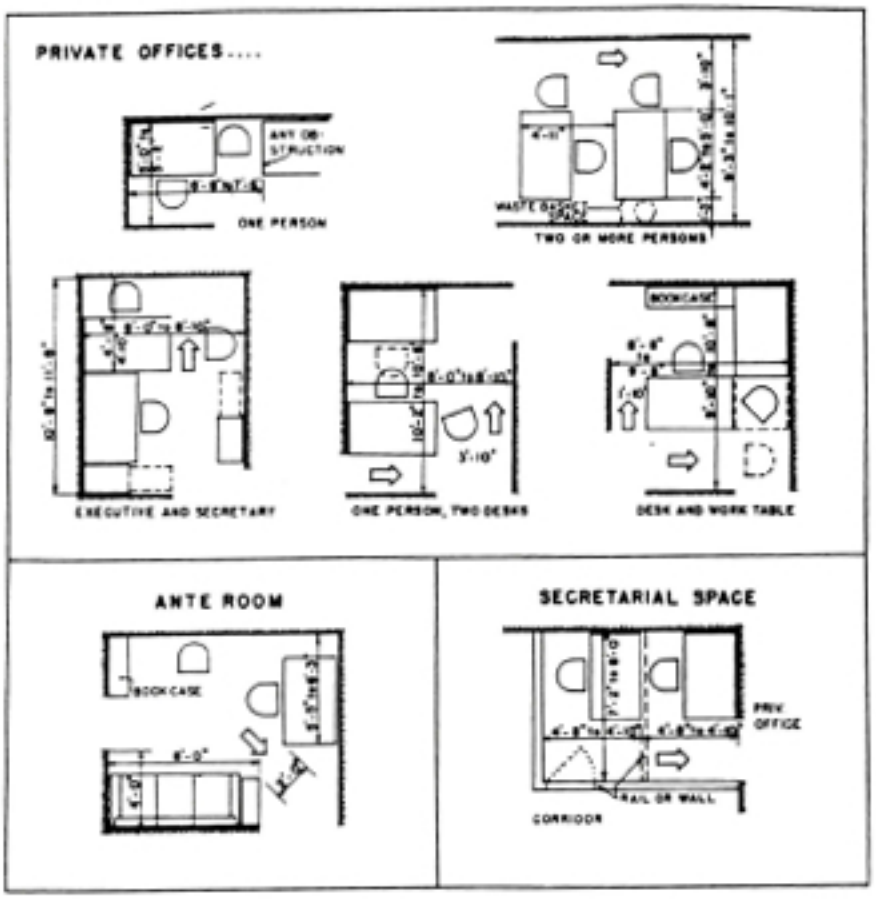


Fig. 1 Clearances in various types of offices.

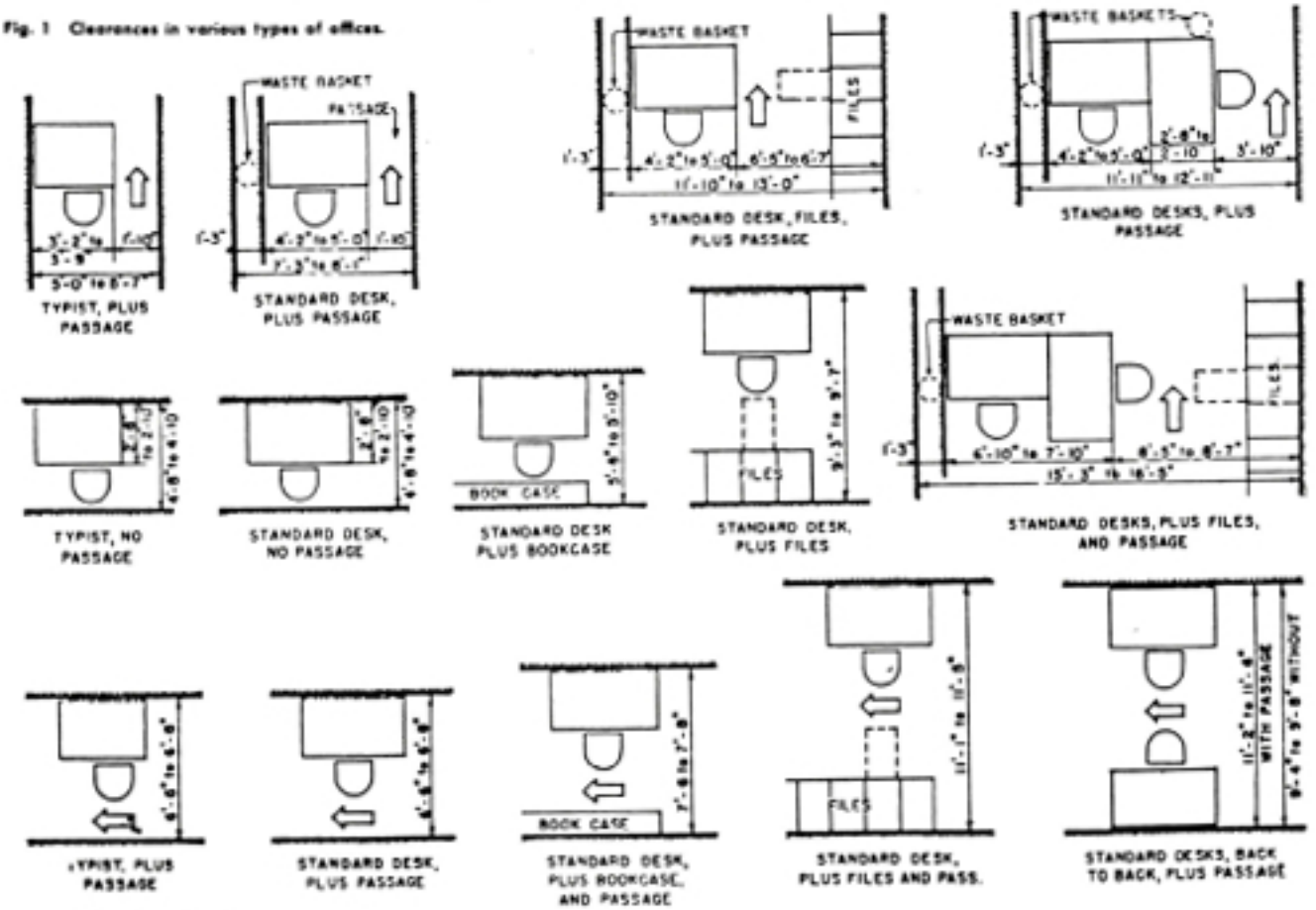


Fig. 2 Desk clearances.

The Office Planning Module

The space allocations in the facilities program are usually based on a consistent space module. The module is derived from analysis of needs, compatibility with manufacturers' standards, and an existing module if a headquarters building is being expanded. The modular approach is most applicable to offices, so the office module will control the planning of the building.

The greatest advantage of modular planning is the flexibility that can be attained. The basic module is extended to the structural grid and to ceiling and underfloor systems, thus making for ready change or interchange of space. There is a minor penalty in overall space in modular planning versus exact sizing of individual spaces. However, considering a headquarters' vulnerability to change, the benefits outweigh the disadvantages.

The 5' × 5' office-planning module is commonly used, and it is the basis for sizing most partitions, work stations, ceiling and underfloor systems. The schedule below shows applications of the 5' × 5' module to typical office sizes and comparisons to the offices based on 4' × 4' and 6' × 6' modules.

It may be seen that a 5' × 5' grid, using a consistent depth of 15' for the larger offices, affords a good range of sizes and requires minimum perimeter for average-size spaces. Considerations in selecting and applying a module include the following measures:

It is usually necessary to depart from the module at corridors and core spaces in which case a "half module" should be used.

The Type D offices are the smallest that should be considered for rooms with full-height partitions. Placing them on the perimeter necessitates breaks in aisles, or wasted space, unless the offices occupy a full end or side of a floor.

The types of offices on the perimeter should be kept to a minimum number; avoid, if possible, creating a variety of sizes using half-modules.

Different grades of offices can be created by varying the furniture and furnishings within spaces of similar size.

Staying on the module is most important for spaces with full-height partitions. Working positions in regular office areas should be planned in general conformance with the grid, but some latitude is possible in a flexible underfloor system.

	5 × 5			4 × 4			6 × 6		
Type	D × W	Square feet	Perimeter	D × W	Square feet	Perimeter	D × W	Square feet	Perimeter
A	15 × 25	375	25	16 × 24	384	24	18 × 18	324	18
B	15 × 15	225	15	16 × 16	256	16	18 × 12	216	12
C	15 × 10	150	10	16 × 12	192	12	12 × 12	144	12
D	10 × 10	100	10	12 × 8	96	8	—	—	—

THEATER DESIGN CRITERIA

The planning of seating areas in places of assembly should involve the following considerations:

1. EFFICIENCY: The floor area efficiency in square feet per seat is a function of the row spacing, the average chair width, and the space allocation per seat for aisles. See following pages for further discussion of these factors.

Efficiency (F) = seat factor + aisle factor

$$F \text{ (sq ft/seat)} = \frac{W_s T}{144} + \frac{IT}{144} \times \frac{1}{S_{avg}}$$

where W_s = average seat width (in.)
T = row to row spacing (tread) (in.)
I = average aisle width (in.) (42 in. width is typical)
S_{avg} = average number of seats in a row per single aisle: 8 or fewer—inefficient layout; 14 to 16—maximum efficiency (multiple aisle seating); 18 to 50 and more—continental seating.

2. CAPACITY AND AUDIENCE AREA: Audience area = capacity x efficiency.

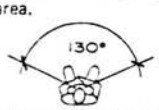
35-75	Classroom
75-150	Lecture room, experimental theater
150-300	Large lecture room, small theater
300-750	Average drama theater in educational setting
750-1500	Small commercial theater, repertory theater, recital hall
1500-2000	Medium large theater, large commercial theater
2000-3000	Average civic theater, concert hall, multiple use hall
3000-6000	Very large auditorium
Over 6000	Special assembly facilities

3. PERFORMING AREA (not including adjacent support area) (sq ft):

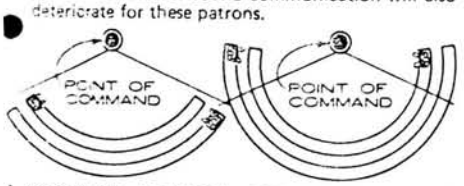
	MINIMUM	AVERAGE	MAXIMUM
Lectures (single speaker)	150	240	500
Revue, nightclub	350	450	700
Legitimate drama	250	550	1000
Dance	700	950	1200
Musicals, folk opera	800	1200	1800
Symphonic concerts	1500	2000	2500
Opera	1000	2500	4000
Pageant	2000	3500	5000

4. ORIENTATION OR SEATED SPECTATOR: Head strain is minimized by orienting chairs or rows of chairs so that spectators face the center of action of the performing area.

5. ANGLE OF VISION OF SPECTATOR: The human eye has a peripheral spread of vision of about 130°. This angle of view from chairs in the front rows will define the outer limits of the maximum sized performing area.



6. ANGLE OF ENCOUNTER: The angle of encounter is defined by the 130° peripheral spread of vision of a single performer standing at the "point of command." Patrons seated outside the spread of this angle will not have simultaneous eye contact with performer. Natural sound communication will also deteriorate for these patrons.



7. DISTANCE BETWEEN PERFORMANCE AND LAST ROW OF SPECTATORS: Achievement of visual and sound communication is enhanced by minimizing this distance while satisfying the preceding parameters.

H. Frink; Frink and Bauchat: Architects; Philadelphia, Pennsylvania

SCREEN PROJECTION

- The minimum distance between the first row and the screen (D_F) is determined by the maximum allowable angle between the sightline from the first row to the top of the screen and the perpendicular to the screen at that point. A maximum angle of 30 to 35° is recommended.
- The maximum distance between the screen and the most distant viewer (MDV) should not exceed eight times the height of the screen image. An MDV two to three times the screen width is preferred.
- Screen width (W) is determined by the use of the appropriate aspect ratio between the screen image width and height.
- Curvature of screens may reduce the amount of apparent distortion for a larger audience area. Curvature of larger screens may help to keep the whole of the image in focus and may provide a more uniform distribution of luminance.

ZERO ENCIRCLEMENT (PROSCENIUM STAGE, PICTURE FRAME STAGE, END STAGE)

- The angle of audience spread in front of a masking frame is determined by the maximum size of the corner cutoff from a rectangularly shaped performing area that can be tolerated by seats at the side.
- Audience may not fill angle of encounter from point of command.
- Audience farthest from performing area.
- Large range in choice of size of performing area.
- Provisions for a large amount of scenic wall surfaces without masking sightlines.
- Horizontal movement of scenery typically made in both perpendicularly and parallel to centerline.
- Possibility of short differences in arrival time between direct and reflected sound at the spectator. This may be beneficial to music performances.

90° TO 130° ENCIRCLEMENT (PICTORIAL OPEN STAGE, WIDE FAN, HYBRID, THRUST STAGE)

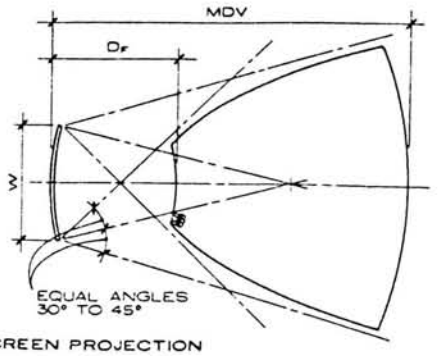
- Audience spread defined and limited by angle of encounter from point of command.
- Performing area shape trapezoidal, rhombic, or circular.
- Audience closer to performing area than with zero encirclement.
- Picture frame less dominant.
- Range in choice of size of performing area.
- Provision for an amount of scenic wall surfaces possible without obscuring the performing area.
- Horizontal movement of scenery is possible in directions at 45° to and parallel to centerline.
- Shape of seating area places maximum number of seats within the directional limits of the sound of the unaided voice, beneficial for speech performance.

180° TO 270° ENCIRCLEMENT (GREEK THEATER, PENINSULAR, THREE-SIDED, THRUST STAGE, 3/4 ARENA STAGE, ELIZABETHAN STAGE)

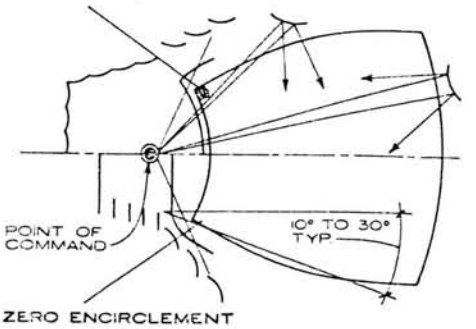
- Audience spread well beyond angle of encounter from point of command in order to bring audience closer to performing area.
- Simultaneous eye contact between performer and all spectators not possible.
- Minimum range of choice in size of performing area.
- Provision of a small amount of scenic wall surfaces possible without masking sightlines.
- Horizontal movement of scenery is possible only parallel to centerline.
- Large encirclement by audience usually demands actor vomitory entrance through or under audience.

360° ENCIRCLEMENT (ARENA STAGE, THEATER IN THE ROUND, ISLAND STAGE, CENTER STAGE)

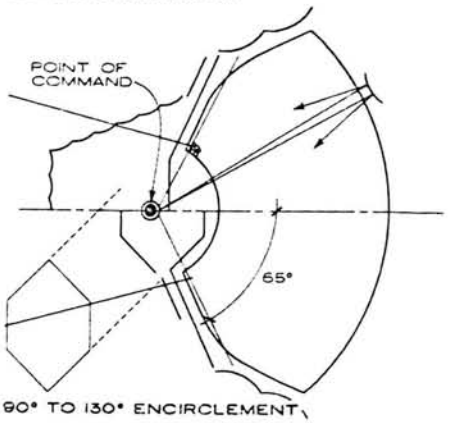
- Performer always seen from rear by some spectators.
- Simultaneous eye contact between performer and all spectators not possible.
- Audience closest to performance.
- No range of choice in size of performing area.
- No scenic wall surfaces possible without obscuring the view of the performing area.
- Horizontal movement of scenery not readily possible.
- Encirclement by audience demands actor vomitory entrance through audience area.



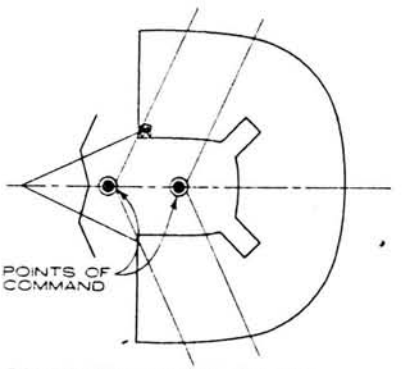
SCREEN PROJECTION



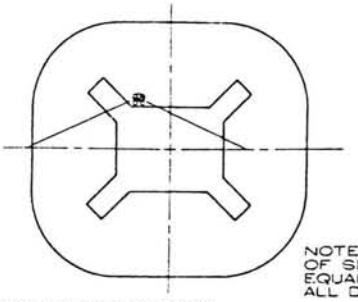
ZERO ENCIRCLEMENT



90° TO 130° ENCIRCLEMENT



180° TO 270° ENCIRCLEMENT



NOTE: AREA OF SEATING EQUAL FOR ALL DIAGRAMS

360° ENCIRCLEMENT

STAGE

Stage dimensions and volumetric relationships have a fundamental effect in establishing the geometries of the House. This section will build on discussion of the House to help determine what makes one Stage configuration different from another.

The physical characteristics of the Stage are functions of its intended use. Seven performance types pertinent to Frontal Stage criteria will be looked at briefly to see where they differ.

A. General Considerations

Variations among Stage forms have two levels of impact on Room design—Vision parameters (location of audience) and Hearing parameters (location of boundary surfaces).

1. Vision Parameters These are related to the dimensions of performing (acting) area:

- Width/depth/shape of acting area.
- Height of proscenium (if any).
- Elevation and/or rake of stage.
- Location of acting area relative to proscenium.

2. Hearing Parameters These are related to boundaries of the Stage enclosure:

- Size/shape of enclosing shell (if any).
- Nature of coupled volumes (if any).
- Absorptive properties of enclosure.
- Location of sound source relative to enclosure.

The corresponding functional elements depend on the use for which the Stage is designed. A few categorical terms will be of help in comparative treatments of stage types. Performing (acting) area is the portion of stage space meant to be seen. The stage enclosure defines a volume contiguous with the stage space, communicating with the house. Together, these constitute the bare minimum Open Stage. The stage floor may be stepped or sloped ("raked"). If a wall divides the stage space from the house the opening in it is the proscenium and the volume behind it is stagehouse.

For Music, an enclosure within the stagehouse is a shell, its overhead extension into the house a forestage canopy. If a portion of the remaining stagehouse volume communicates with the house, it is said to be coupled.

For Drama, scene space surrounds the acting space, and is surrounded by working space within the stagehouse—around, above or below. An open stage can have scene and working space, but scenic material may not be withdrawn vertically unless there is a proscenium wall and flyloft—i.e., a stagehouse—separable from the audience house by a fire curtain closure. Below stage working space (trap room) must also be separated from the house except through the proscenium. An orchestra pit communicates with the house in front of the proscenium and fire curtain.

B. Functional Requirements

The following are desirable Stage characteristics for various performance types. Discussion here stresses key functions and design rationale.

1. Legitimate Drama The medium includes speech, action and scenic context. The human figure is extremely important; scenic illusion refers to this for dimensional scale. Dominant movement across the acting area, entering left and right, makes other entries special events. Drama usually works through sustained continuity over a series of unfolding, developing events and situations; the ability to control changes in context, pace, center of attention and atmospheric tone is essential.

Performance Space Acting area is approximately 35′ w × 20′ d (40′ × 25′ usual maximum). This defines the downstage zone of most action; however, the full stage depth is utilized. It has a level floor that can be built upon, normally 30–36″ above front row of house. Traps are recommended in key acting area.

Enclosure A stagehouse is recommended, with a proscenium portal 35′ w × 26′ (can be larger). Stagehouse configuration is related to scene handling methods; flyloft is recommended strongly.

Scene/Working Space Wrap-around scene space is required for flats, drops, wagons. Allow ample horizontal working space for the largest set piece plus actors' passage, waiting areas, technicians' workspace, counterweights and pinrail, curtain space and switchgear. Use inside clearances and keep the plan shape compact and rectangular. Overhead working space must accept the longest flown piece plus borders plus gridiron and line space plus manhigh passage above grid. Understage working space should be at least eight feet clear height. If any portion of working space is omitted by design, stage level allocation should be increased 50%.

2. Dance The medium consists of action with music and some scenic context. Large movements of dancers in two directions (to-fro, side-side) physically occupy a region 15 feet above the floor. Dancers' entry from scene space on all sides is important. Scenery is often minimal, but not stage lighting. Although recorded music can be used, a dance facility should provide for a live orchestra. A dance concert usually consists of a series of separate pieces or events with rest periods between during which the stage is reset and the audience must be otherwise occupied. The technical qualities that help sustain continuity during performance should be versatile and sophisticated, especially lighting controls. Also, music is to be heard on stage distinctly.

Performance Space Acting area is typically 50′w × 40′d, although 40′ width will accommodate modern dance and small troupes. Higher sightlines (lower stage in steeper house) improve perception of deep movements. Construction of a resilient dance floor is essential, e.g. on built-up criss-crossed sleepers with neoprene cushions between. Sponge mats are not springy enough, and injuries can result. Often, a removable linoleum, vinyl or hardboard surface is put down, with seams taped.

Enclosure A high proscenium is needed in large Rooms for clear view of the dancers' space, or no proscenium at all in intimate Rooms. Stagehouse requirements relate to scenery components.

Scene/Working Space Scene space at each side is usually devoted to entry legs and tabs for the depth of the stage. A cyclorama or backdrop is frequently used. Unimpeded crossover passage is very important, preferably wide enough for costumed dancers to pass each other without disturbing drapery, etc. Wing space must accommodate assembled dancers. An orchestra pit is very desirable, for 20–50 musicians.

3. Music-Drama Speech, music, action and scenic components are all incorporated in this form of presentation, sometimes called light opera or musical comedy. It is similar to straight drama in its storyline continuity, which demands directorial skill in successfully alternating speech, song and dance, and also relies heavily on stagecraft and technical support. The musical component is a key feature of transitions, requiring expert control. A relatively large cast and crew are typical with up to 50 people on stage at once and quantities of scenery to manage. Coordinating all this activity is a major problem requiring, besides extensive preparations, an excellent communications system during performance.

Performance Space Although principal attention is generally focused downstage, background "chorus" activity and the ability to have "cross talk" at the same time makes a wide, deep acting area desirable, about 60′ × 45′ deep. For a given production, this can be masked down. The floor should be danceable, although it needn't be very sophisticated in construction; the ability to build on and anchor to it is as important. Traps and pit-type cyclorama are desirable.

Enclosure A 30′–35′ high proscenium arch is recommended, along with flyloft stagehouse. Stagehouse proportions recognize that wingspace is as important as loft space.

Scene/Working Space Wrap-around scene space must accept a large variety of rather elaborate scenery. The dimension of this zone must allow for structural support of stand-up sets with recesses and overhangs, often in combination with flown portions. Wagon sets are very useful as well, but require substantial working space in addition to that for cast assembly, other properties and technicians. Symmetrical working space is advised, to simplify maneuvering during scene changes. Since live music is essential, provide an orchestra pit for 15–30 musicians.

4. Orchestral Music First identify the kind of orchestra for which the facility is primarily intended. Both its size and instrumental composition have a part in determining its characteristic sound, intensity, the literature emphasized, and requirements of physical arrangement. This suggests a Room designed for its "most likely" users nevertheless involves tolerances for variations. Music concerts consist of a series of uninterrupted performance periods of varying length. In the intervals instrumental components may be changed, reorganized and returned while the audience, immobilized during performance, refreshes itself. The sometimes subtle alterations must be carefully prearranged in a rehearsal situation as similar to concert conditions as possible.

Performance Space Orchestra set-ups are usually as compact as practicable, in order to hear each other, see each other, and share sheet music. Stage area averages 16–20 square feet per musician and proscenium widths range from 55–80 feet. For various groups, this amounts to:

- Ensemble or band, 30–50 musicians, 800–900 s.f.
- Medium orchestra, 50–80 musicians, 1200–1500 s.f.
- Medium orchestra and chorus, 50–100 voices, 1800–2300 s.f.
- Symphony orchestra, 80–125 musicians, 2000–2400 s.f.
- Symphony and large chorus of 100–200 voices, 2800–3500 s.f.

ORGANIZATION OF SPACE

The next step in the planning of a museum is the working relationship between these various functions. The planning of a good museum must reflect the most efficient manner in which the various tasks are carried out individually and in relationship to each other, without one adversely affecting the other. A major consideration in this planning is the matter of future expansion and construction in several stages.

The diagram (Fig. 1) illustrates the most efficient working arrangement,

To illustrate the manner in which a good small museum may be planned on the basis of the organizational diagram, three basic plans are presented as examples, ranging from the smallest possible at 1960 sq ft, up to 3823 sq ft, and therefore representing three different capital expenditures and operating costs. All plans incorporate provisions for future expansion and construction in several stages as a basic principle.

It should be further noted that the museum plans shown are based upon collections comprising smaller types of specimens and artifacts. Large equipment, vehicles, and farm machinery would require considerably more space although the basic functions outlined earlier would still apply. The following is a summary of some main features.

Basic Plan 1

This plan (Fig. 2) shows the absolutely minimum sizes of spaces required for an effective minimum museum. It will be noted that the display area is only about 40 percent of the area of the building.

Future expansion of the existing collection storage room can take place as the collections grow, while the existing display room also can be increased in size as required. Future addition of a lecture room off the lobby can also be achieved so that the educational functions of the museum can be expanded. Note that these additions can be made without complication to the roof structure of the original plan. The number of perimeter display cases shown would be ample to maintain and ensure changing displays.

Basic Plan 2

This (Fig. 3) is an expansion of Plan 1, with allowance for further expansion of the display, collection, and educational functions in the future. The number of perimeter cases shown would be ample for the story theme and changing exhibits while the center of the room may have larger items, photographic panels or special feature displays. The display room is 33 percent of gross.

GALLERY DESIGN*

The average American museum visitor (Fig. 4), if a man, is about 5 ft 9¼ in tall, and his eye level is 5 ft 4¾ in; the average woman is about 5 ft 3¼ in tall, and her eye level is 4 ft 11¾ in. Thus, the mean adult eye-level height is about 5 ft 2¼ in. With little eye movement, people usually see and recognize with ease things that are within an approximately elliptical cone of vision, with the apex of the cone at the eye-level height. Studies have shown that, in general, the

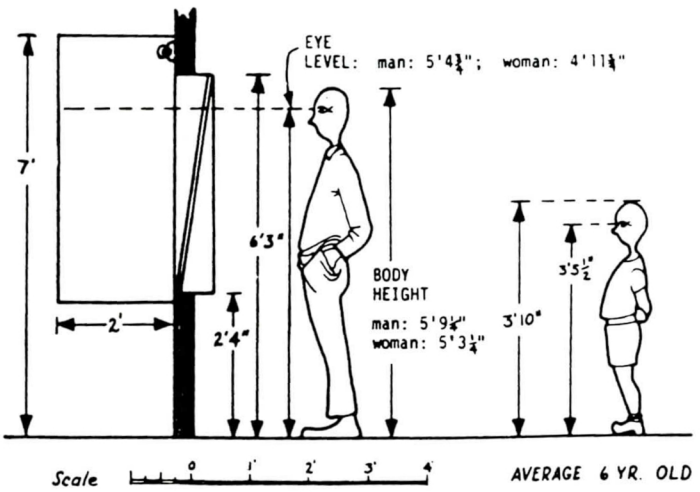


Fig. 4 Measurements of adult and six-year-old visitors in relation to cases.

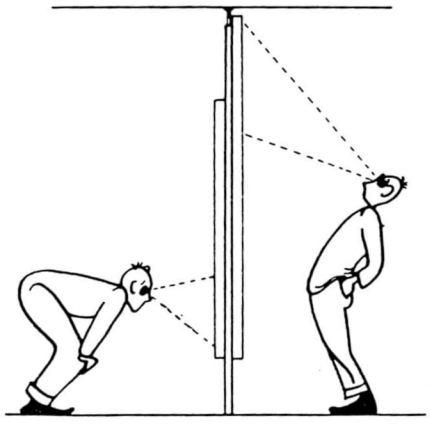


Fig. 5 Difficulties encountered in viewing details more than 3 ft below or 1 ft above one's eye level.

adult museum visitor observes an area only a little over 1 ft above his own eye level to 3 ft below it at an average viewing distance of 24–48 in (Fig. 5). Arranging objects and labels above and below these limits places a strain on seldom-used muscles and produces aching backs, tired feet, burning eyes, and stiff necks. Some quite large objects, such as totem poles or dinosaurs, will inevitably soar above these viewing limits, and, in this event, the visitor must be permitted space to back far enough away from the object to comprehend it without becoming a case for an orthopedic specialist (Fig. 6).

The flow of visitors is like the flow of water in a stream. If the cases are arranged with gently curving lines to take advantage of this pattern of movement (Fig. 7*b*), visitors will find the room more attractive and can progress easily with the line of the case. Often the arrangements can be staggered (Fig. 7*c*) which produces a certain mystery and a desire on the part of the visitor to peek around corners to see what is next. It is not always necessary to have a wide opening into a hall. Cases that are arranged to narrow the entrance a bit (Fig. 7*d*), so that the hall inside then opens out, provide a certain amount of interest.

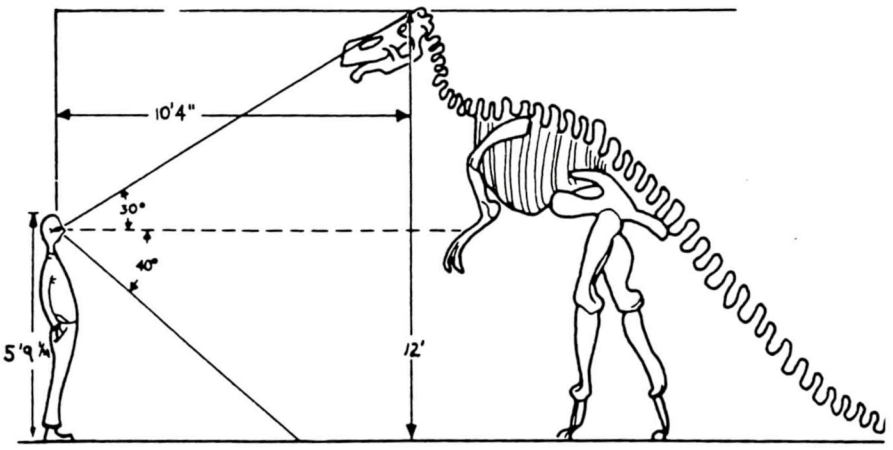


Fig. 6 Viewing distance should increase with greater size of object.

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