"The Dance of the Marketplace"

by Michael Raul Bolaños

B.A., Washington University in St. Louis, 1979

Submitted in partial fulfillment of the
requirements for the degree of

Master of Architecture

at the

Massachusetts Institute of Technology

February 1983

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January 13, 1983

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ABSTRACT

Architecture as infill; or the method by which the patterns of context are synthesized in the process of intervention, stands as the base of this thesis.

The work uses and defines the marketplace as a building type generated through the choreography of passages and rhythmic patterns inherent in the site and inclusive to the performance of human events.

The thesis can be understood as a personal journal of observations; the collection of thought and documentation on the choreography of public formaking in the marketplace.

Finally, the work attempts to synthesize the themes of passage, pattern and performance in the design of an adaptive reuse marketplace within the Watertown Arsenal.

Thesis Supervisor: Shun Kanda
Title: Associate Professor of Architecture

ACKNOWLEDGEMENTS

Special thanks to my family and friends for their support and encouragement through this time,

to Shun Kanda and Gary Hack for their guidance and encouragement,

and to George whose "pacienza" proved that "better days are coming."

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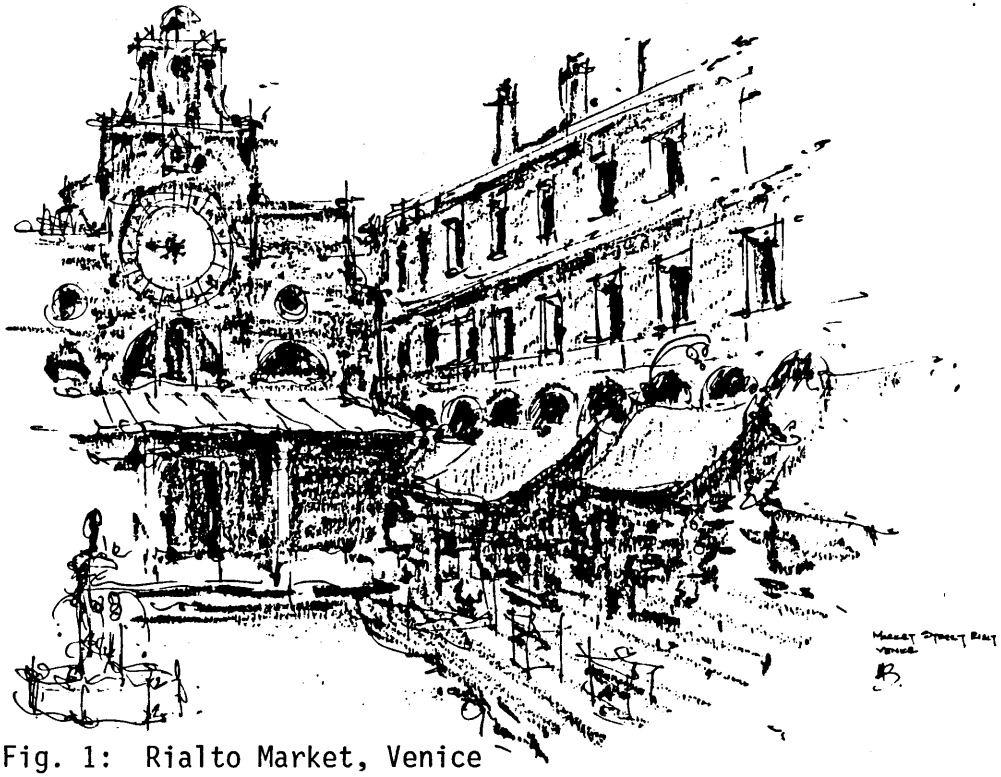


Fig. 1: Rialto Market, Venice

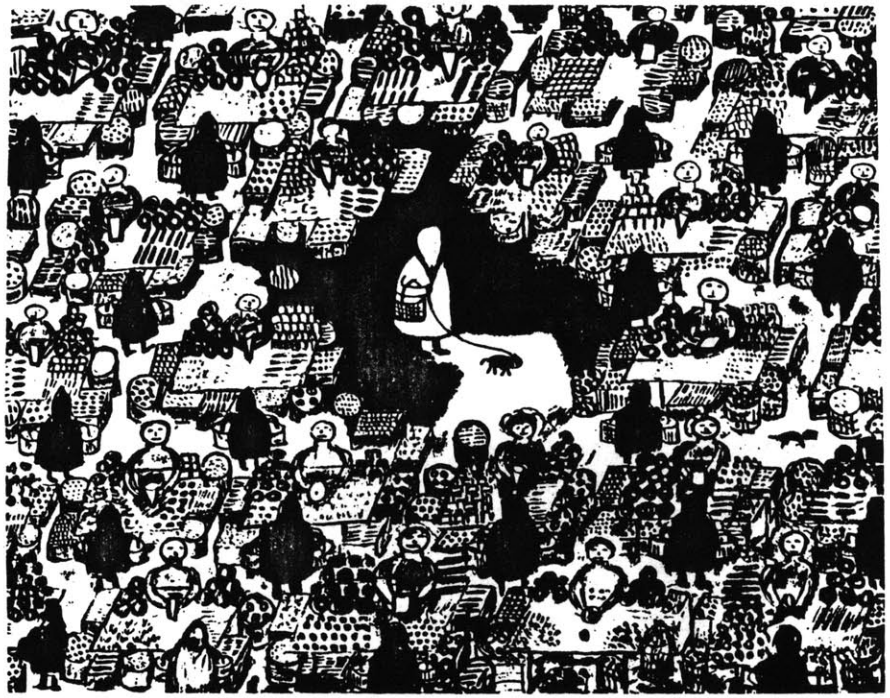


Fig. 2: The Market, H. Bleek, 1931

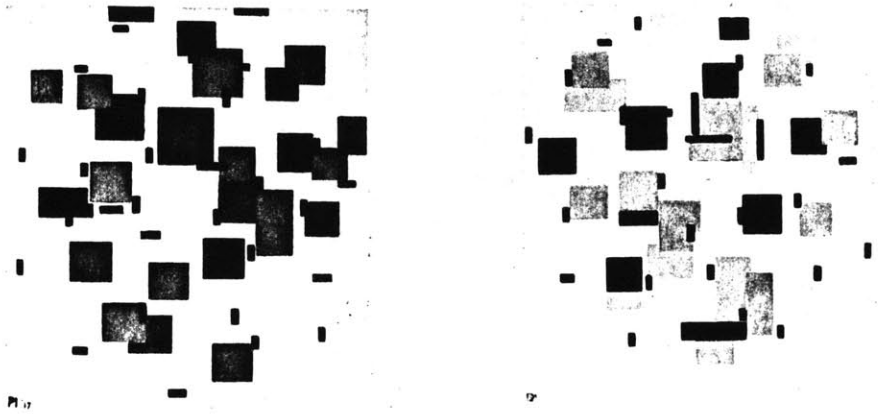


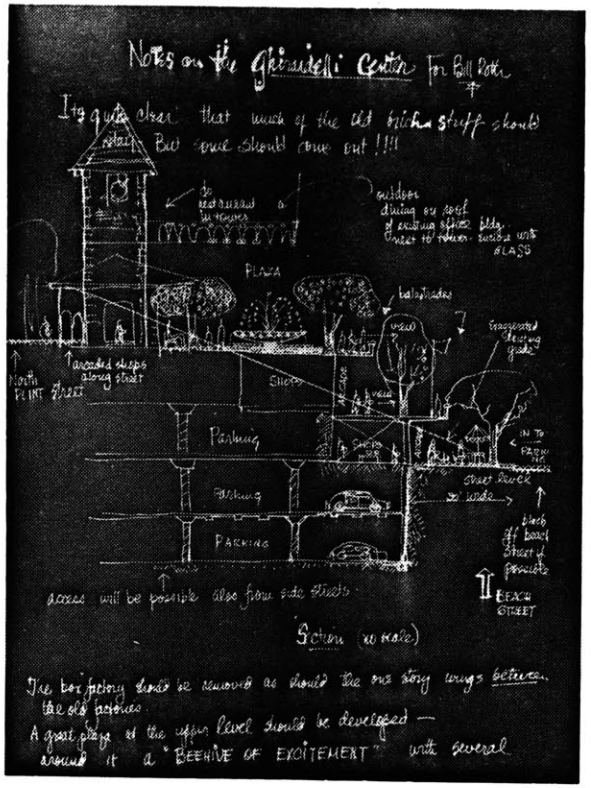
Fig. 3-4: Composition in Color, P. Mondrian, 1917

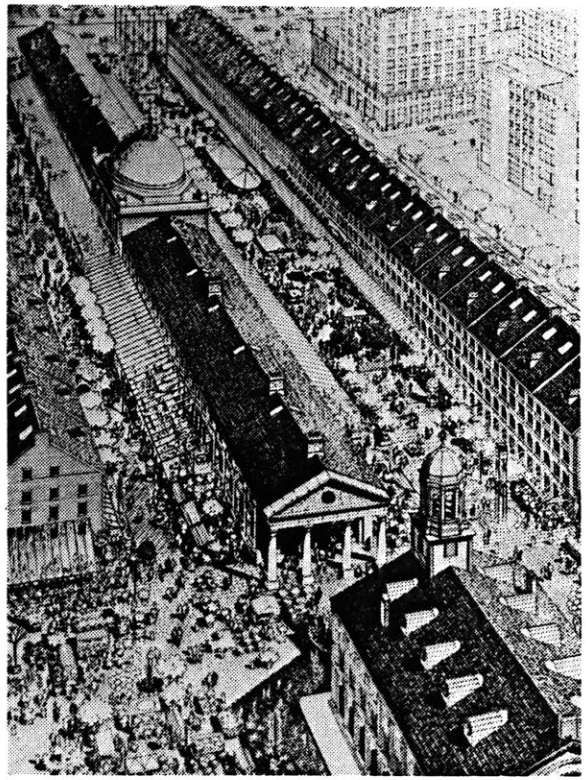
Building for and through change is undoubtedly one of the most important principles in the generation of contemporary architectural form. Change is a function for the future. And if architectural form is to adapt to the dynamics of the future, it must be conceived and nurtured through the concepts of flexibility.

Flexibility is a way of thinking. It is more than the mere provision of moveable pieces, rather it is a means for reinterpretation. As needs and uses change so our structures should possess the capacity for reinterpretation, through a framework of design by which growth becomes a natural process of evolution.

Fig. 5: Notes for Ghiradelli Square, L. Halprin

Fig. 6: Perspective, Faneuil Market, B. Thompson, Arch.





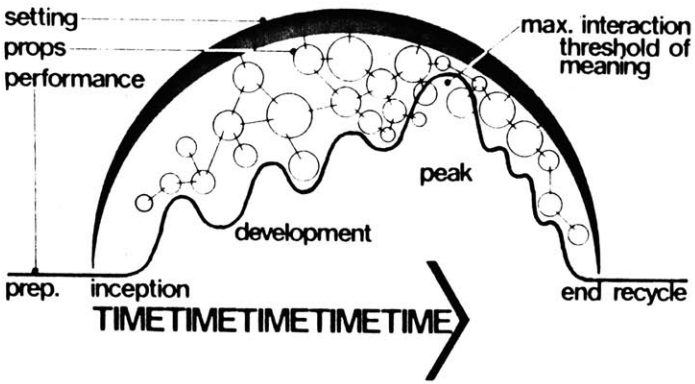


Fig. 7: Performance/Setting Interaction Diagram, A.R. Williams

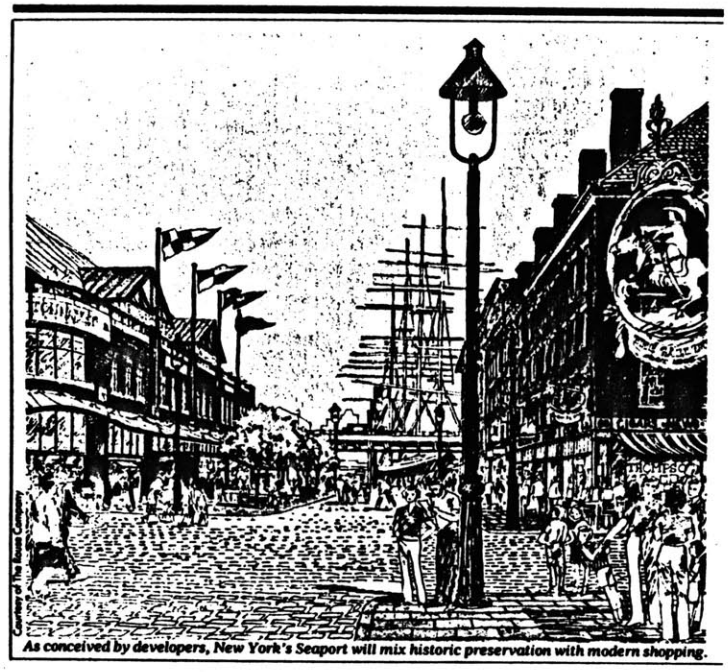


Fig. 8: Perspective, South Street Seaport, Rouse Corp., Developers

The concept of flexibility not only provides an architecture which transforms in relation to use, but is an essential quality of 'the theater.' Form becomes setting. And it is in this capacity that we come to understand our urban environment as a dynamic container for a range of 'events' and human exchange.

A growing interest has been shown in recent years towards the recycling and inhabitation of neglected and obsolete building structures. This apparent reevaluation is the result of multiple social, economic, and political incentives. These once dated structures are being rediscovered as containers appropriate to the new uses of contemporary society, i.e., information and cultural headquarters, commercial centers and residential complexes.

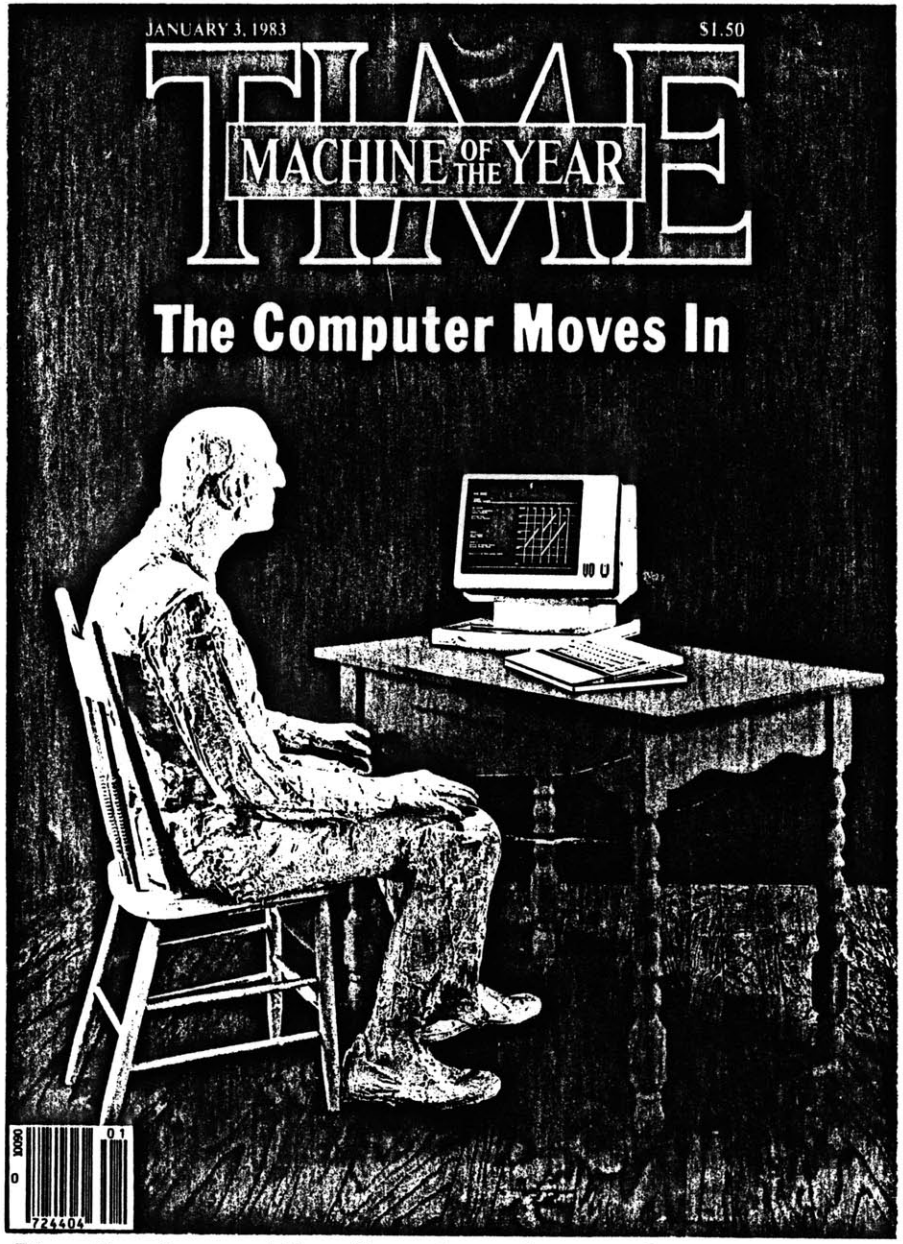


Fig. 9: Cover, Time Magazine, Jan. 3, 1983

Adaptive reuse is a phenomenon of our time. It is the attempt of a society thrust into the vortex of technological stockpiling, which clutches at its past. These graspings of the past for values, or merely meaningful symbols, demonstrate a longing for what in retrospect was a more secure time.

The link with 'the theater' in adaptive reuse concepts is especially important in an age of selfish isolation, resource management, and environmental control. As technology continues in its direction to provide the tools for autonomous like support we, as designers of the physical world must strive to maintain settings for human interaction.

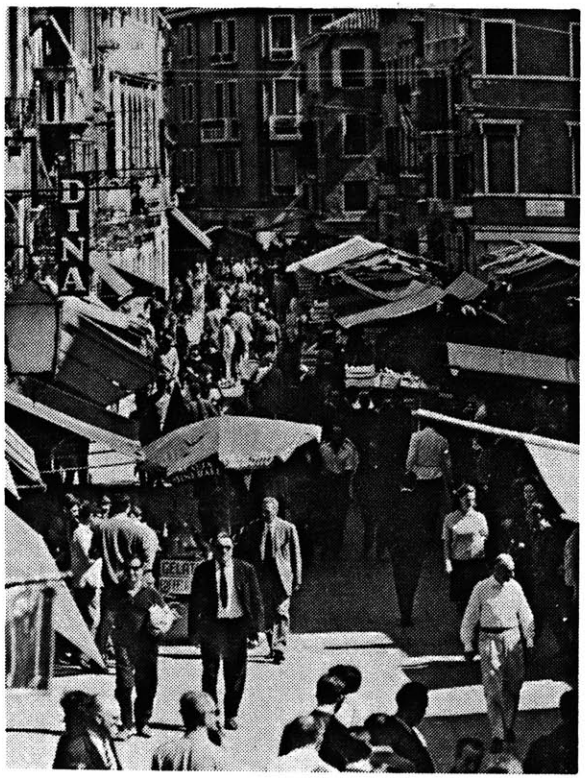


Fig. 10: Rialto Market, Venice

"The contradiction has to do with the way we live in the 20th century. We conduct public and political exchange through television, not in a plaza. We receive information through electronics and papers, rarely going to a speech. Social exchange is more exclusive parties and dinners. Longer distance requires faster speeds. We come downtown to work in our office - plaza is a place to pass through not linger. Market places appear where people live or can get to them. Shopping is organized in supermarkets and department stores. The best of these places are controlled chaos, but are not in our urban plazas. Urban plazas embody our dreams of overcoming our loss."[1]

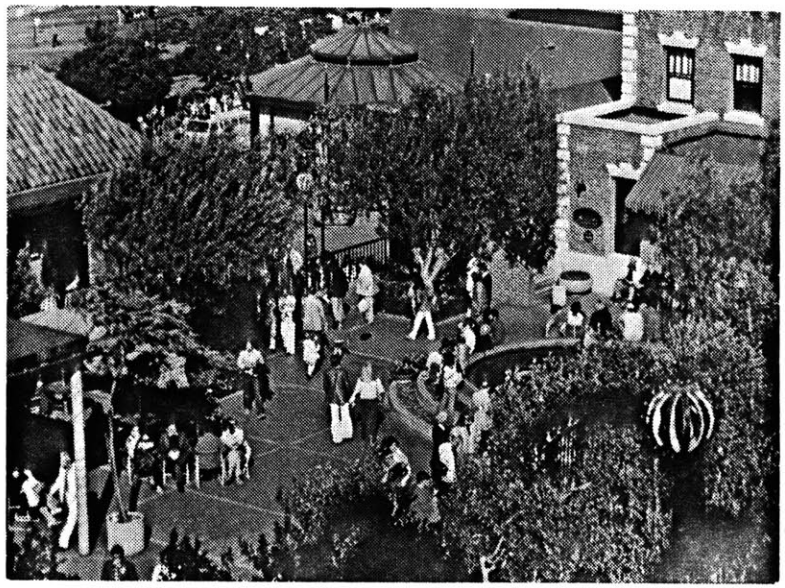


Fig. 11: Ghiradelli Square Plaza

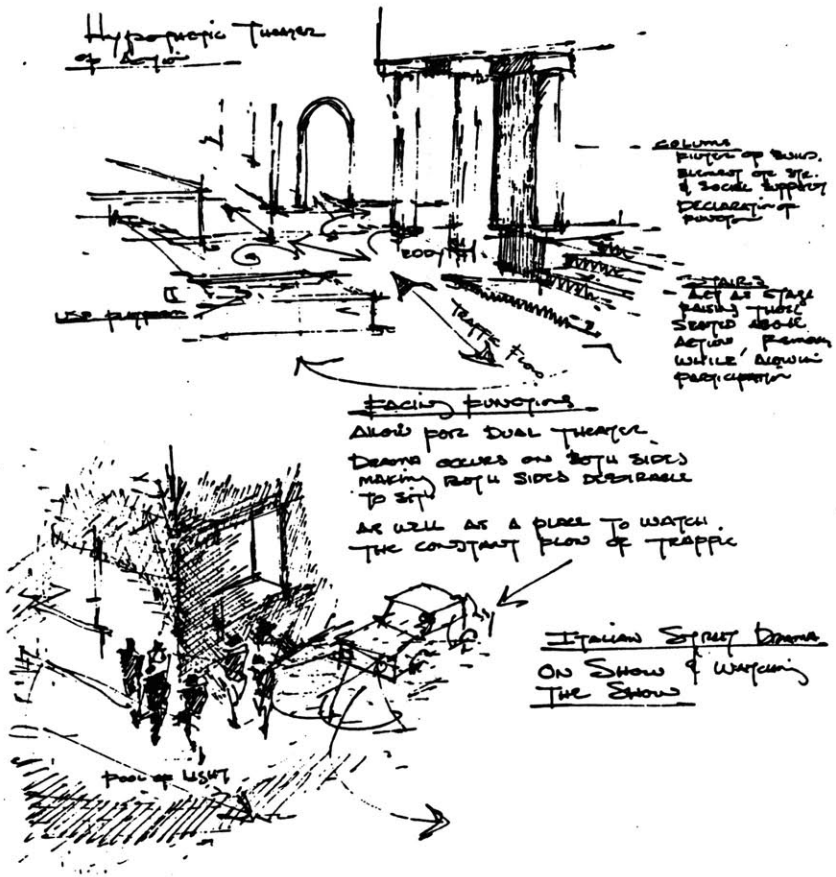


Fig. 12: Urban Theater Diagram

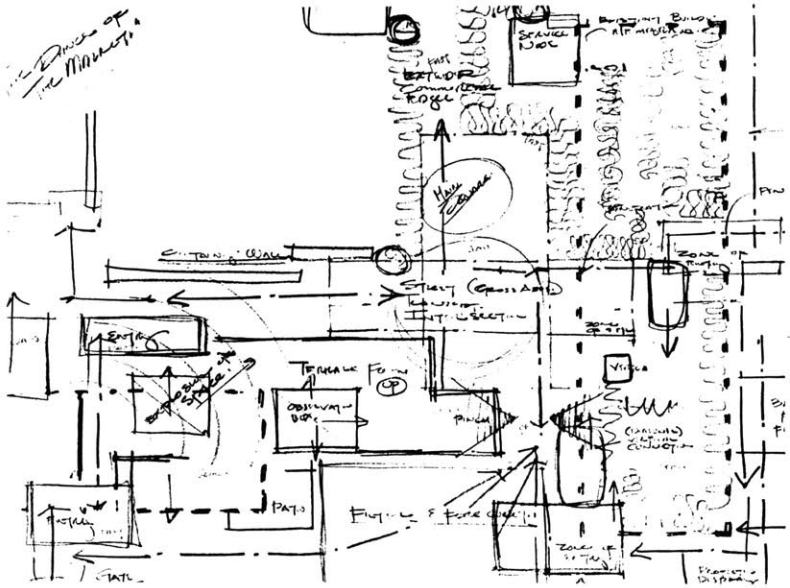


Fig. 13: Choreographic Diagram, Arsenal Design Project

Given that one accepts the need to construct stages for public exchange, this thesis explores one means by which a form language can develop in the context of adaptive reuse. It is a discovery of place and observation on public form. But most importantly it is the beginnings of a definition which links the theory of performance with the choreography of formaking.

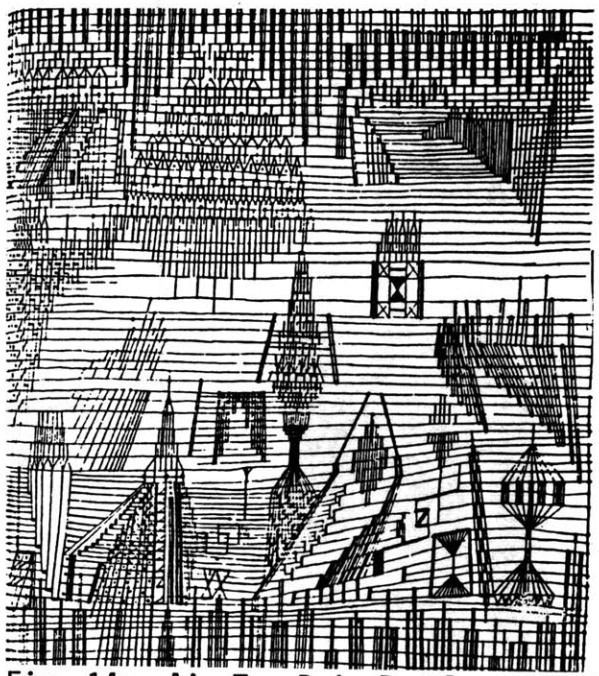


Fig. 14: Air-Tsu-Dni, P. Klee, 1917

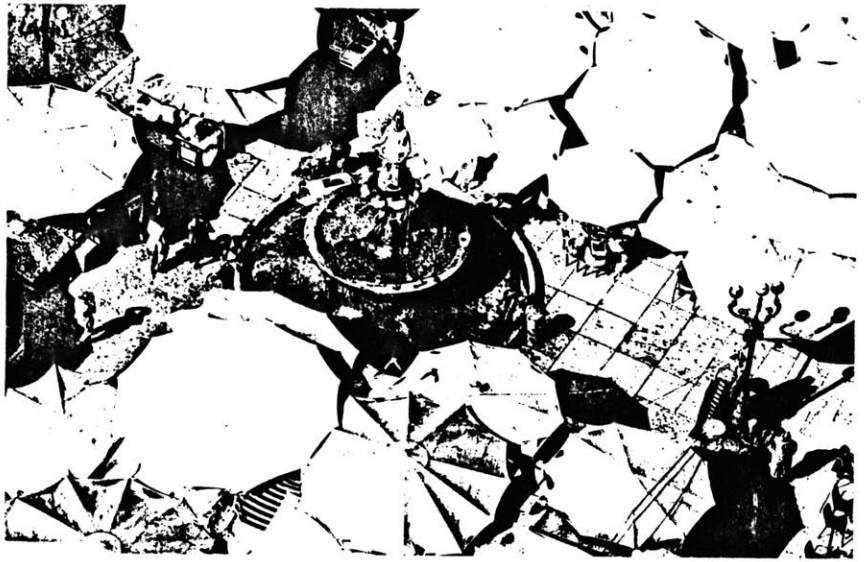
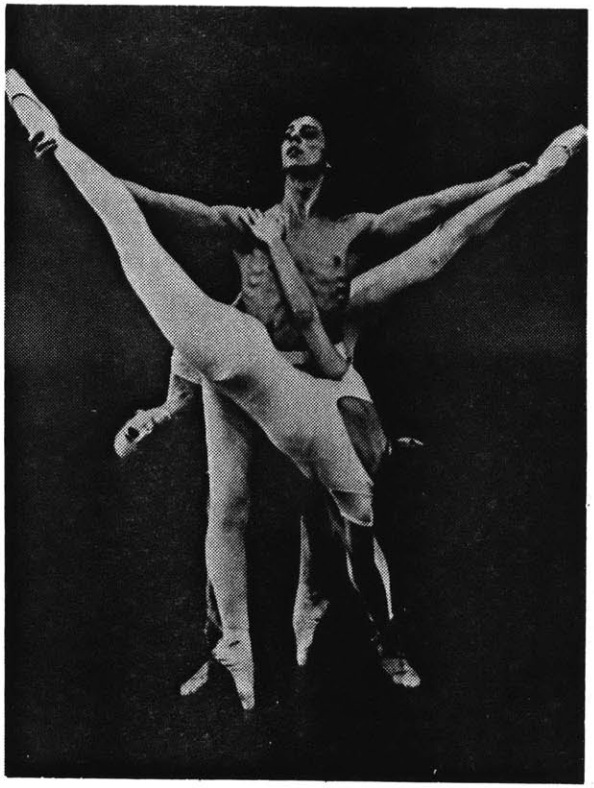
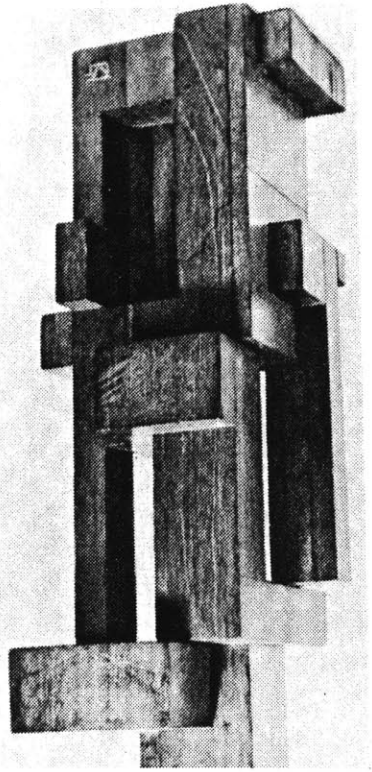


Fig. 15: Vegetabel Market, Verona

Exchange of human activity and physical form occurs through systems of 'movement.' The dynamics of collision, and the interface of the building edge activate our environment. And it is through a recognition of rhythm in the 'movement' of form that we learn to generate patterns appropriate to the given site.

"The town is a set of contexts made of streets and built systems whose relationship is of direct reciprocity. Each context is different from all the others because this relationship is different. Nevertheless, the borders of the contexts are vague and also moveable, they overlap at the edges and lap one another following the seasons, the days of the week, the hours of the day, the pulse of activities within the building, acting directly or indirectly on the outside thus bringing more or less activity in the streets."[2]





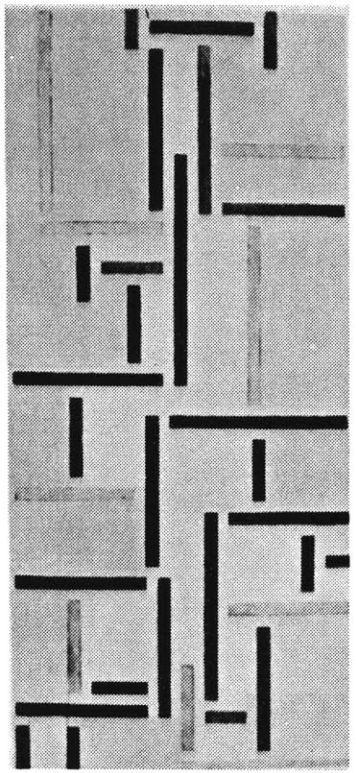


Fig. 16: "The Gods Amused" Eliot Field Ballet

Fig. 17: "Construction of Volume Relations" G. Vantongerloo, 1921

Fig. 18: "Ryhthm of the Russian Dance" T. Van Doesburg, 1918

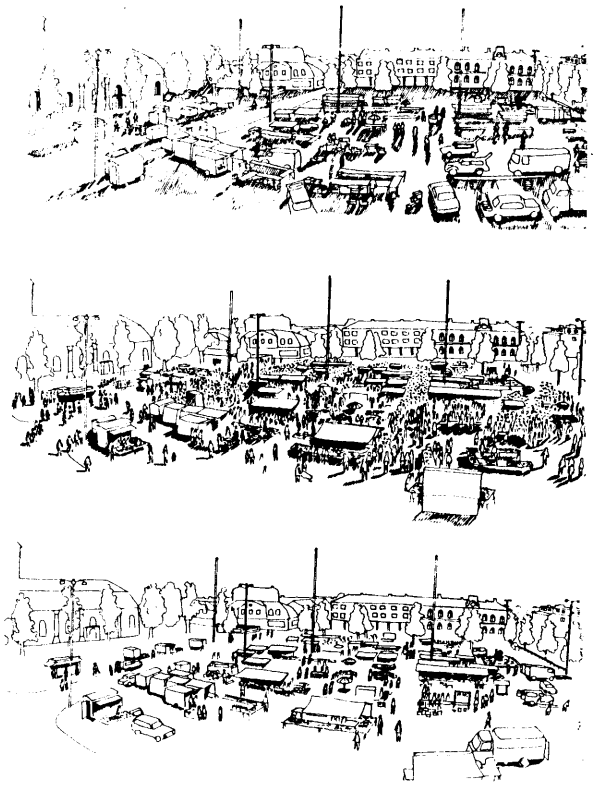


Fig. 19: Market Use Diagram, Varberg, Sweden

'Movement' implies transition of use and meaning, thereby consistent with the drama of the public environment. In this view architecture no longer stands as a physically static element but becomes a kinetic relationship of space, form, and use.

In the same manner by which the dance is created through the juxtaposition of rhythms, gestures, and emotions so architecture becomes a choreographic event. It establishes a structure and use rhythm, gestures of form and volume, and the emotional sensuality of materials. These relationships the observer must interpret through engagement.

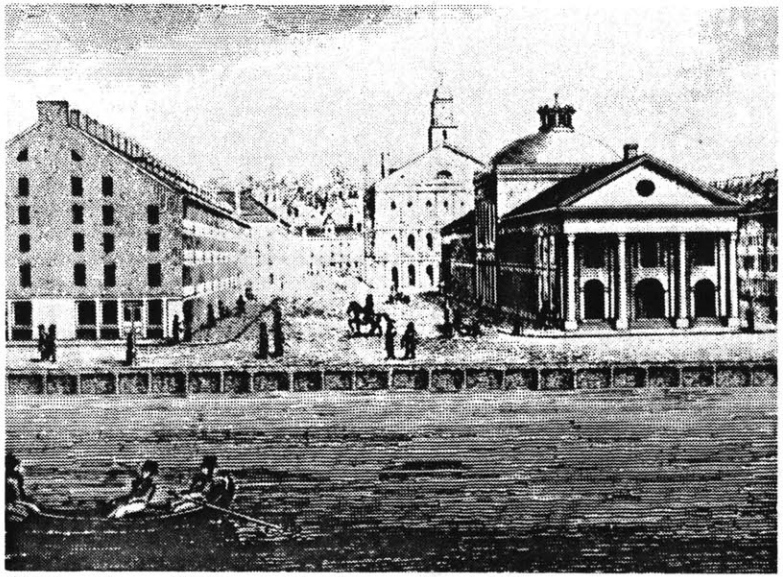


Fig. 20: Quincy Market, Boston

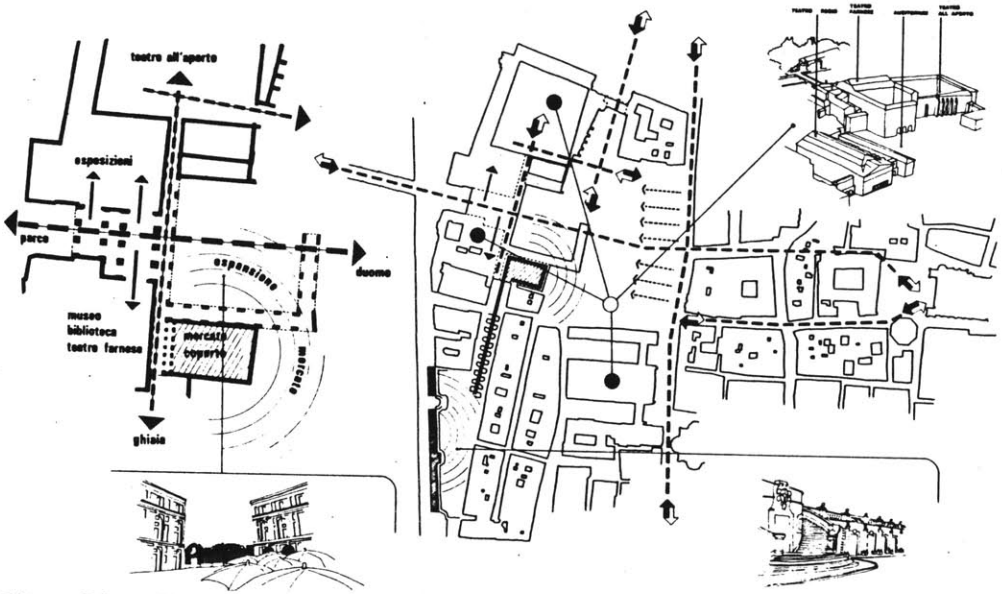


Fig. 21: Movement and Energy Systems, Piazzale Della Pace, Parma, G. De Carlo, Arch.

Architecture is not a passive vessel. It speaks to society and commands an opinion. Therefore like any compositional form, it must respect the rules of its frame, and provide the grammar for communication. Architecture, thereby, cannot stand in isolation but must weave itself into the vocabulary of the time and place.

The development of a methodology for architectural 'reading' stands at the heart of this work. It is the process by which the rules, patterns, and rhythms, implicit and explicit, in the physical environment are discovered. These materials and energies are then intelligibly assembled into a structure which can accommodate evolving and changing human needs. It is therefore imperative that we, as designers, learn to see beyond the shells of form and into the forces which propel them to being.

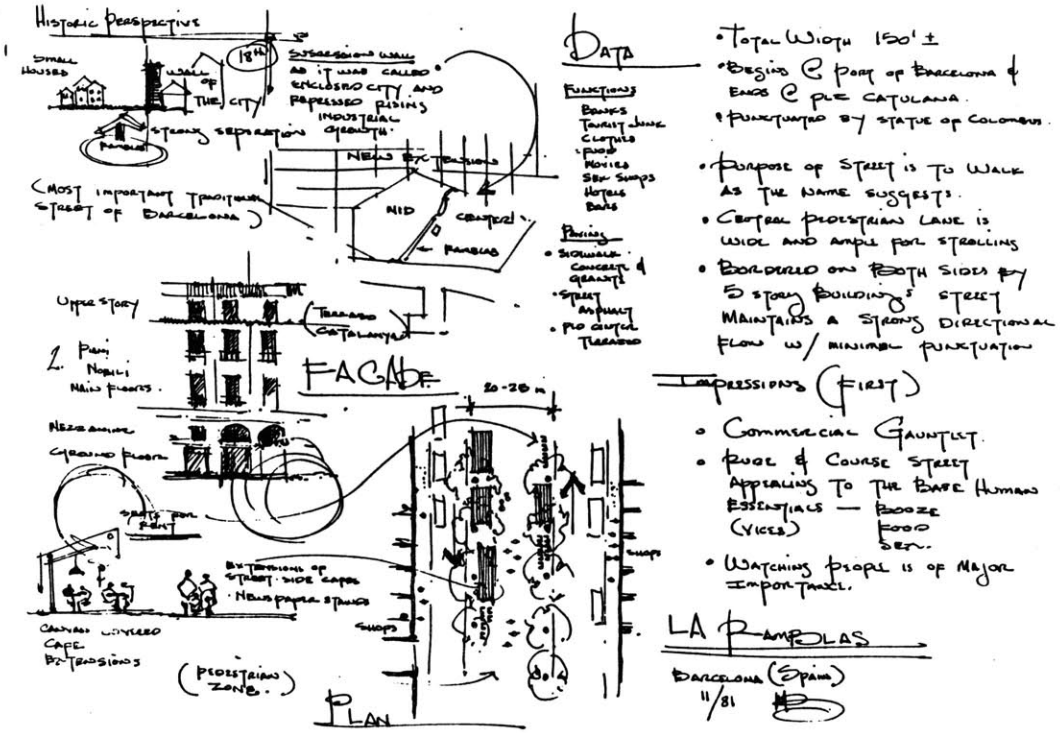


Fig. 22: Las Ramblas, Barcelona

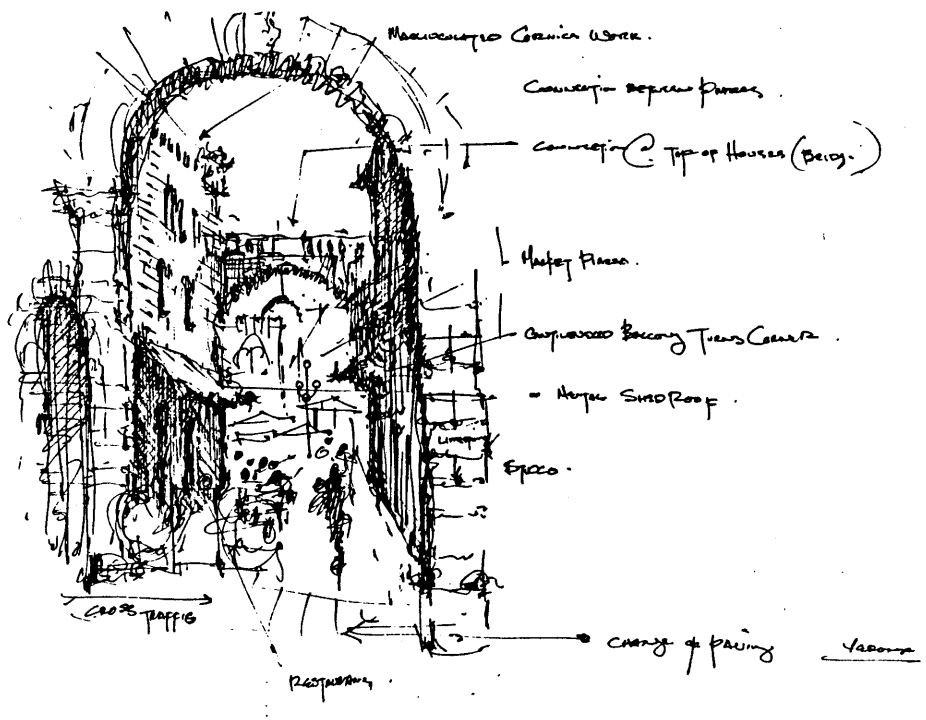


Fig. 23: Transitional Passage, Piazza Erba, Verona

"The reading of architectural form implies a global judgement on the destiny of the urban context they belong to, and therefore the need for a series of choices. In this sense, the reading of architectural form is design as well as analysis."[3]

The following work can be understood as this process of discovery. It is to be read as a journey through the streets of public formaking, the development of an attitude, and the eventual synthesis of rhythms into new form.

The marketplace has served as the catalyst of this exploration. Given the market's public profile, its dependence on traffic and transportation, and its flexible capabilities it becomes the perfect instrument for adaptation in the urban context and consequently this work. While the focus of this thesis has centered on formaking in the marketplace, the observations and relationships given

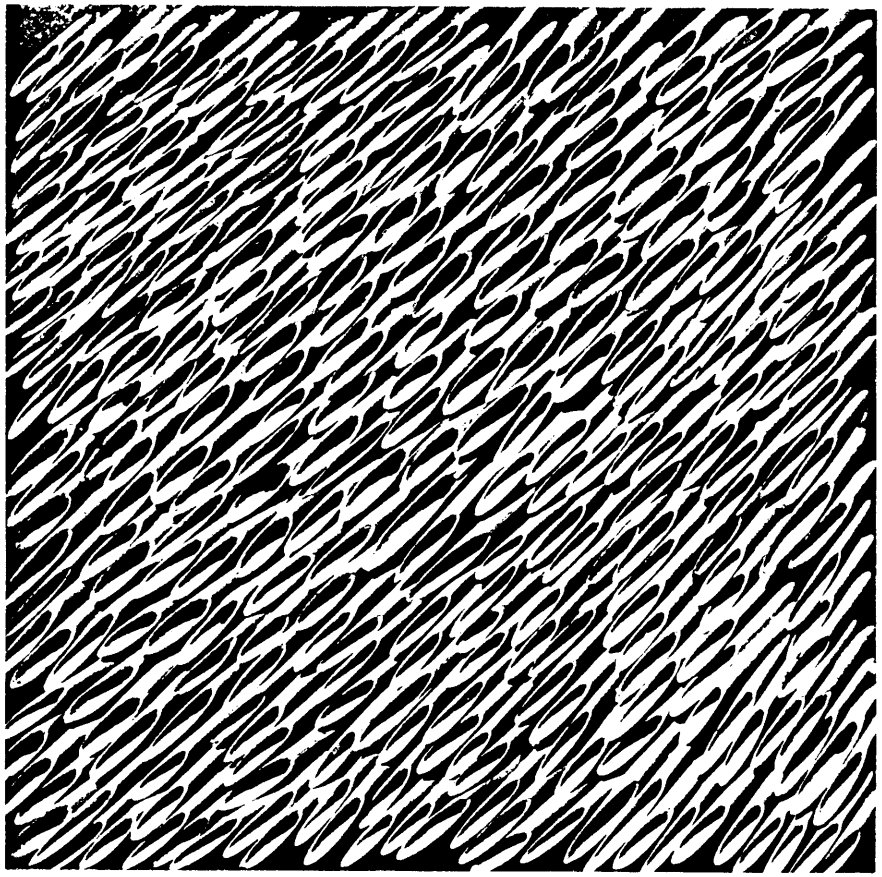


Fig. 24: Montage of Cut Straws, J. Hansen, 1934

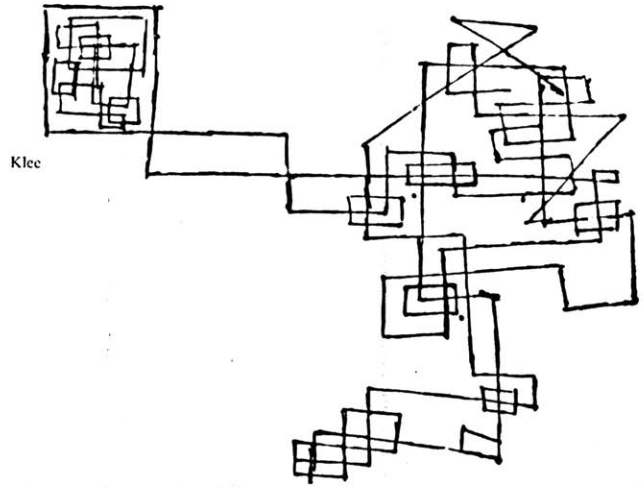


Fig. 25: "The Thinking Eye" (Diagram), P. Klee

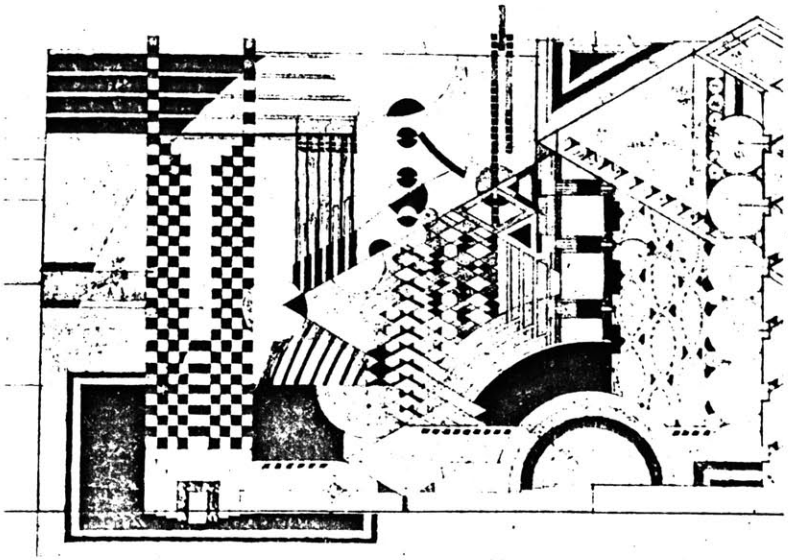


Fig. 26: Corbeling Detail, Imperial Hotel, F.L. Wright

here could apply to a range of public building types and spaces.

In the course of my investigation I have defined three relationships which I believe to be the most effective means to an architecture of context, adaptation and performance. First is the principle of the path which recognizes the construction of public corridors as a theme for the development of adaptable urban form. Secondly, is the discovery and structuring of rhythms; both static and dynamic, which allow growth through repetition combining certain lawful changes in the relation between elements. And finally, is the extension of form or adaptation through an understanding of the performance inherent and proposed on the site. A form/function relationship interested in a finer scale of sensory awareness; and the building of form as a product of the 'event.'

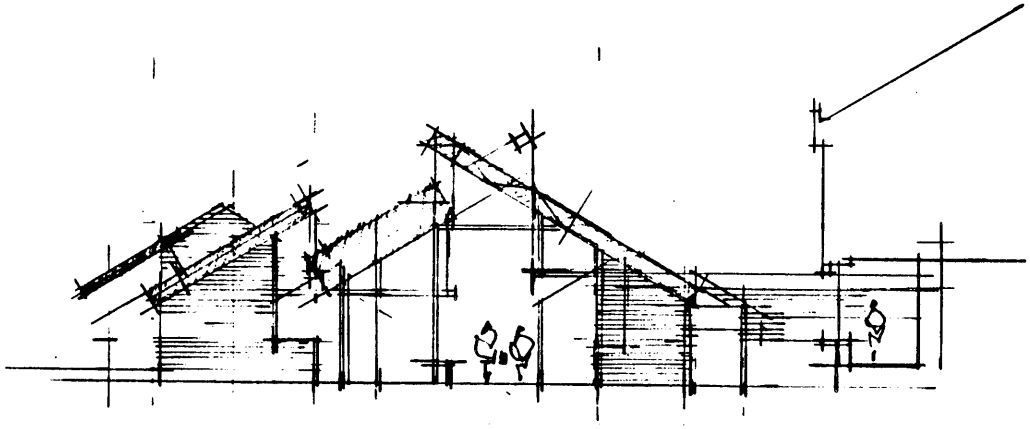


Fig. 27: Study, Market Form, Arsenal Design Project

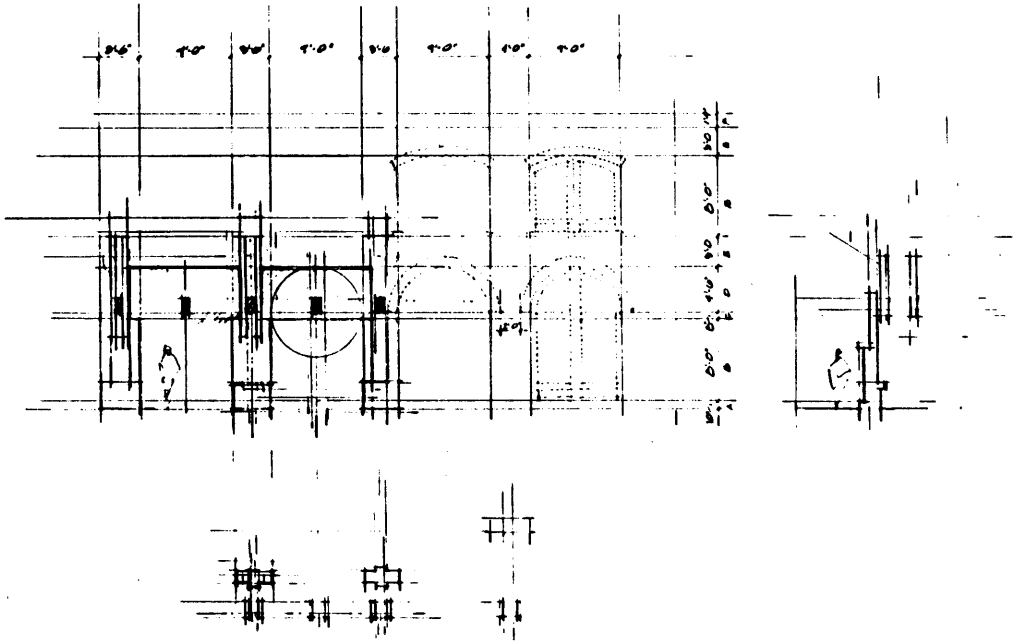


Fig. 28: Elements/Rhythm Study, Arsenal Design Project

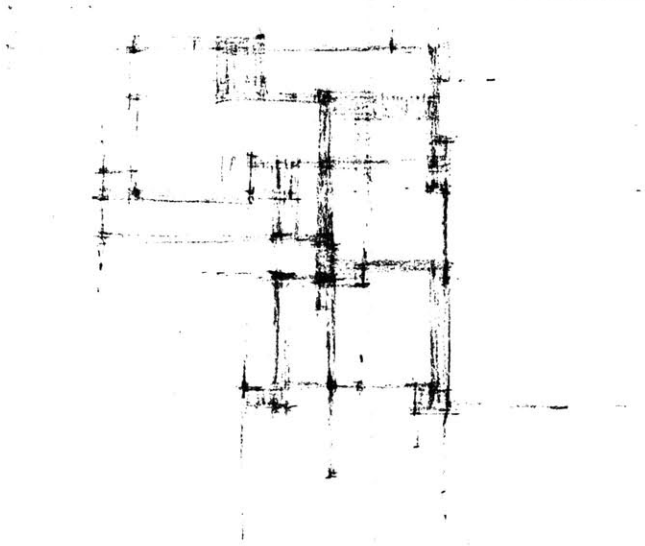


Fig. 30: Path/Layout Study, Arsenal Design Project

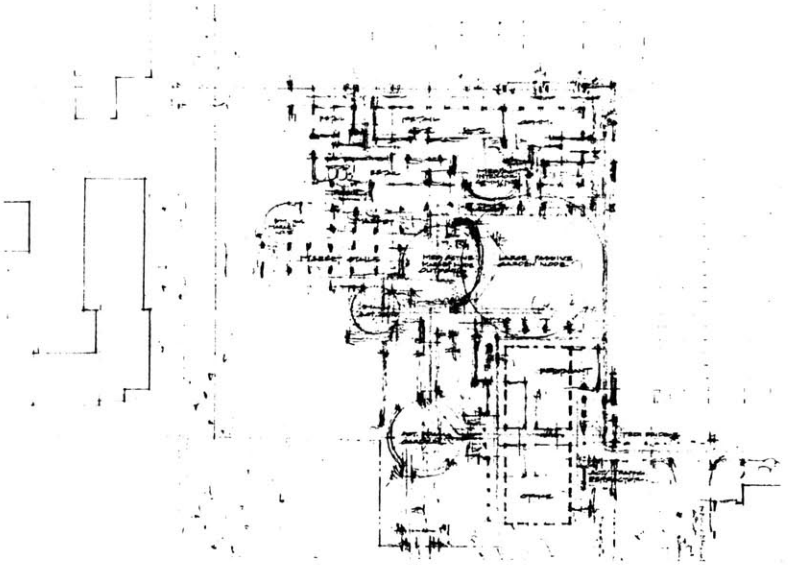


Fig. 29: Path Study, Arsenal Design Project

Using these themes as design principles, observation, analysis, and design is organized in a working sketchbook format. Points and intentions are stated in general, and in relationship to the marketplace. Connections, examples and related illustrations are placed along side these issues. And the summation of material in the end, is synthesized in the production of the design.

This work is not to be understood as a methodology for public formaking, rather it is a personal journal of the issues and motivations by which this author sees, synthesizes, and generates form for the public domain.

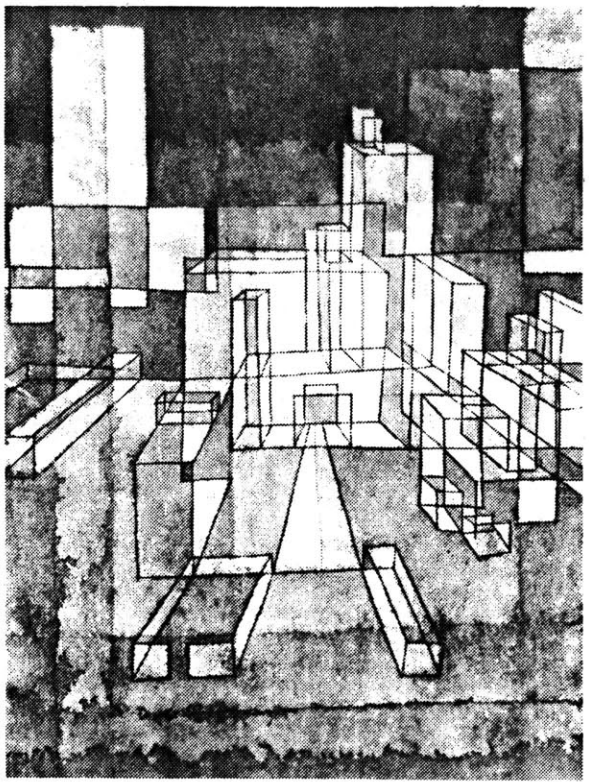


Fig. 31: "Perspective of the City," P. Klee, 1928

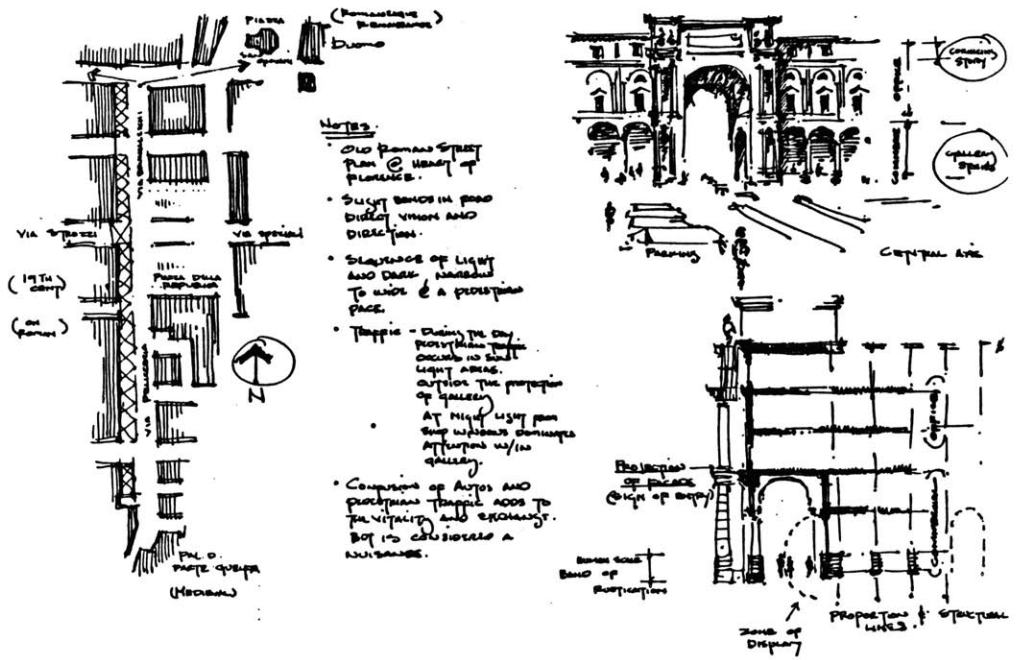


Fig. 32: Mercato Vecchio Analysis, Florence

Fig. 33: Uffizi Gallery, Florence

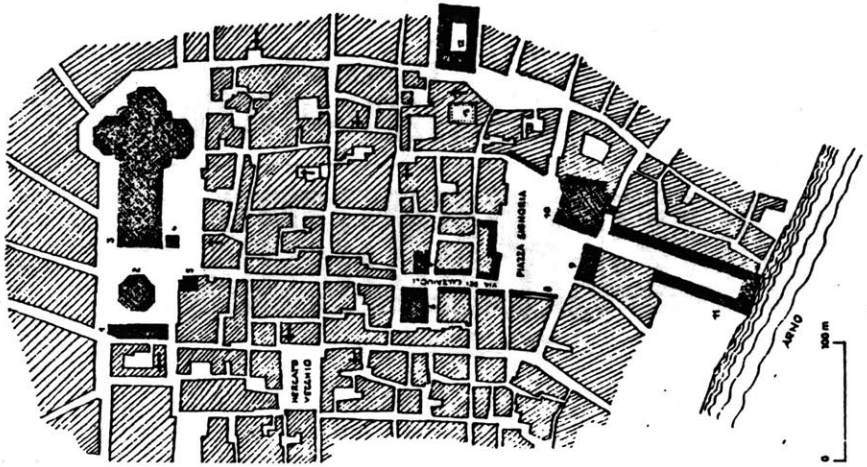


Fig. 34: Street Plan, Florence

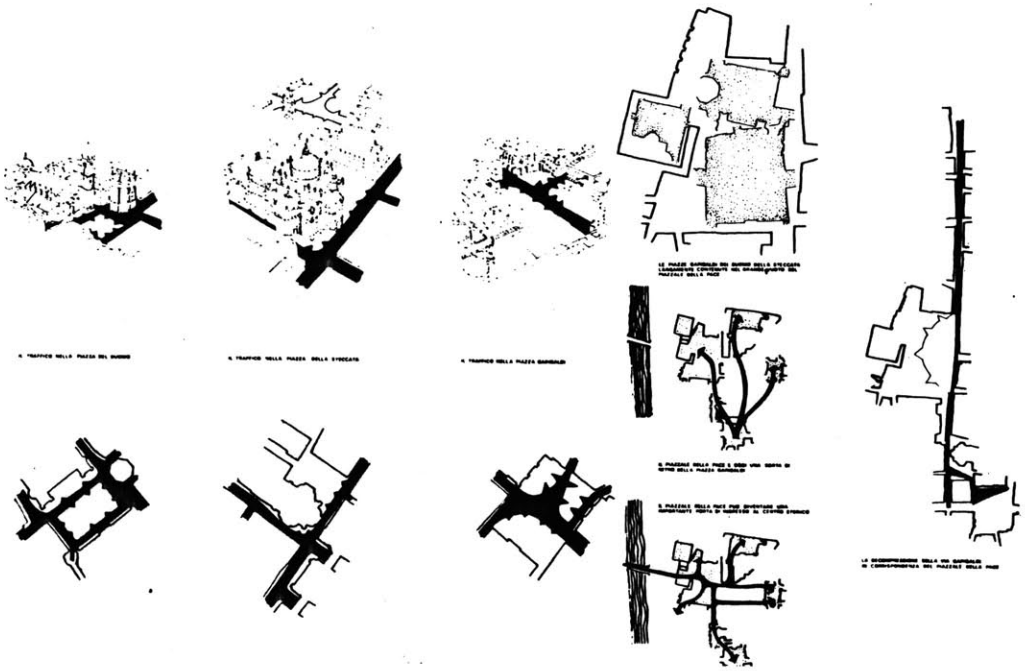


Fig. 35: System of Streets and Squares, Parma, G. De Carlo, Arch.

The street or path is a route along which something moves, i.e., the traffic of use; the dynamics of climate and environment; and the patterns of physical form. The street as a linkage system exists in direct reciprocity with urban form. It establishes direction, sequence and the hierarchies of public space. Consequently the properties of the public path do not remain outside the lines of architectural closure but are brought into the public building type, i.e., marketplace.

Recognition of public paths implies connection to local and regional contexts. They exist as a means of linkage in the chain of urban space.

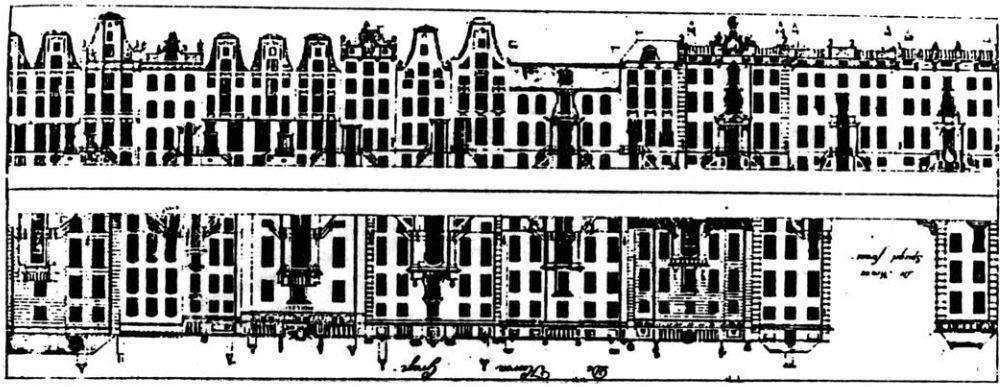


Fig. 36: Housing Along Heeren Canal, Amsterdam

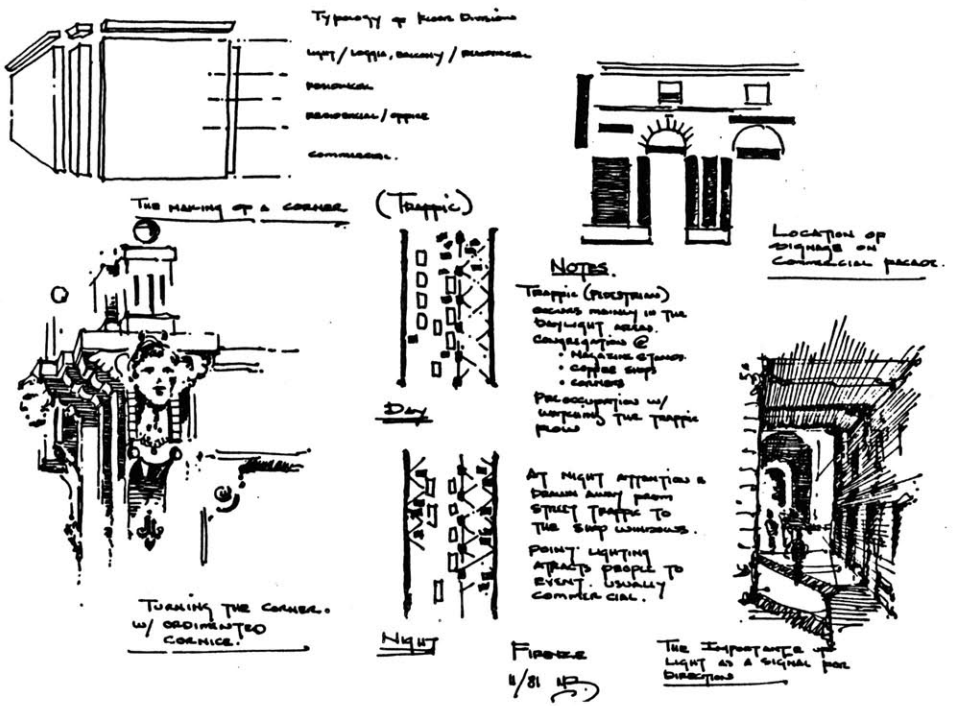


Fig. 37: Element Study, Mercato Vecchio, Florence

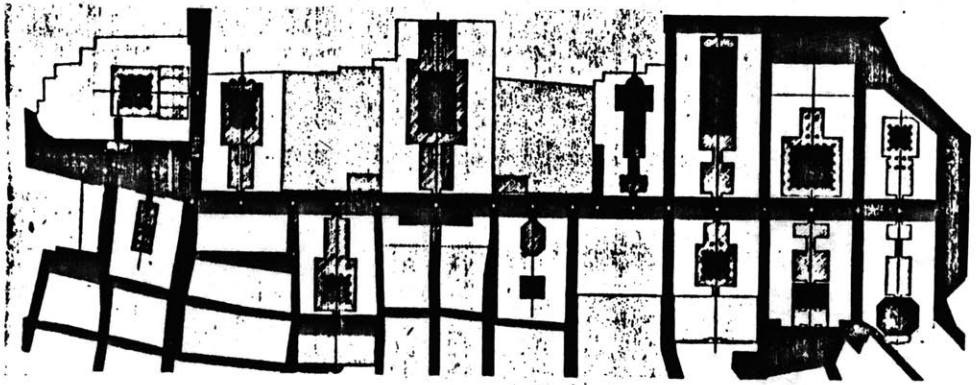


Fig. 38: Strada Nouva, Genoa

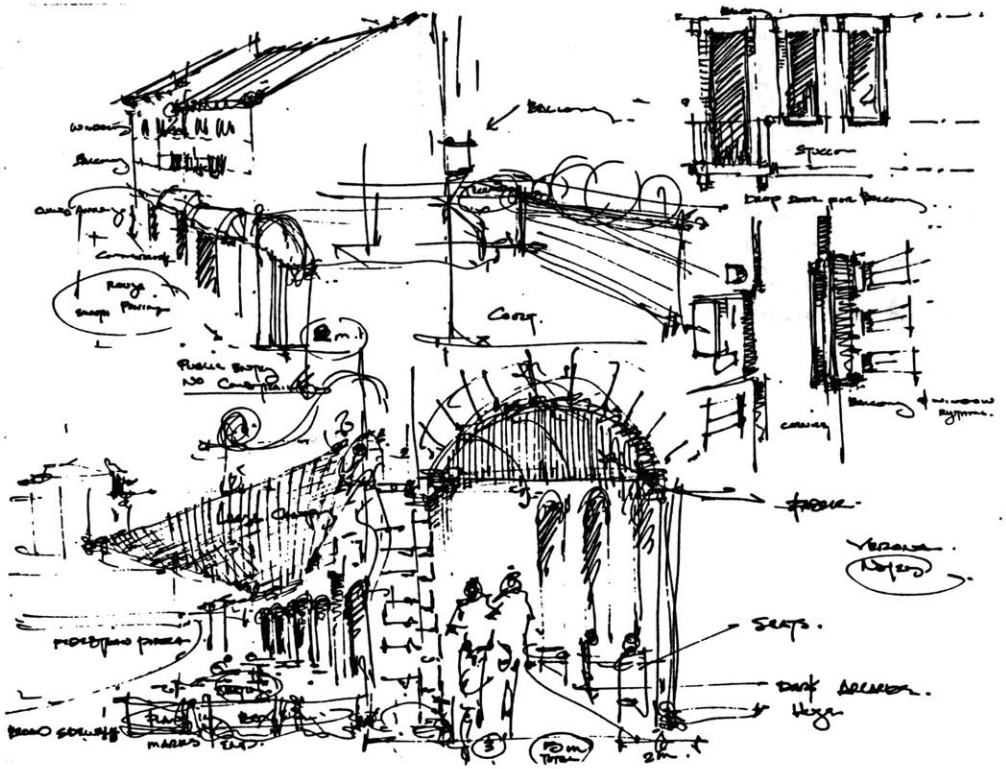


Fig. 39: Edge Studies, Verona

The public path is not uniform. Its identity results from a collection of smaller public and private identities, which as a whole define the public realm.

The character of the public path is also determined by its range of spatial definitions and territorial overlaps.

Patterns of form, light, sound and smell trigger our perception of a place. The public path must be rich in these perceptual clues, which in turn stimulate the experience of the urban environment.

The maximum exchange of form and movement occurs along the edge of the path. Architecture as a physical manifestation results from the dialogue between contexts, occurring most visably at their points of overlap, i.e., the path/building edge. Growth and adaptation consequently occur along these zones of friction.

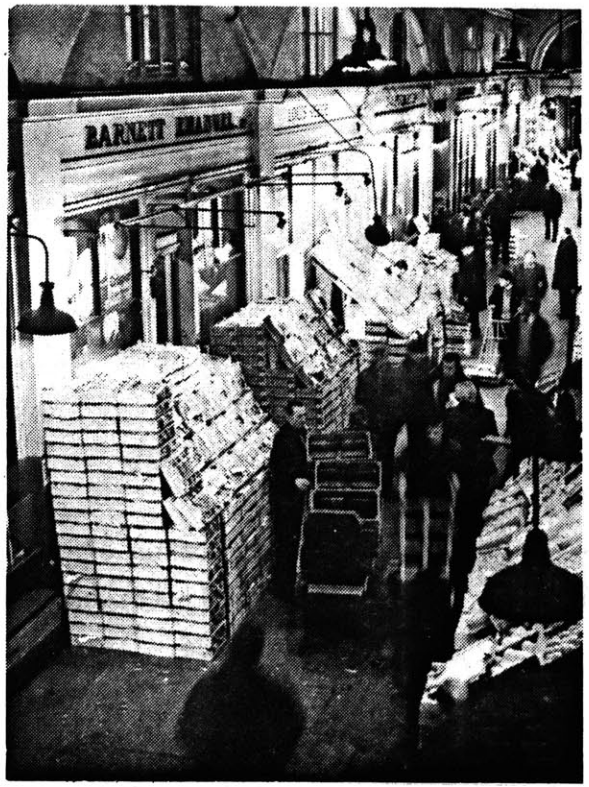


Fig. 40: Gallery, Convent Garden Market, London

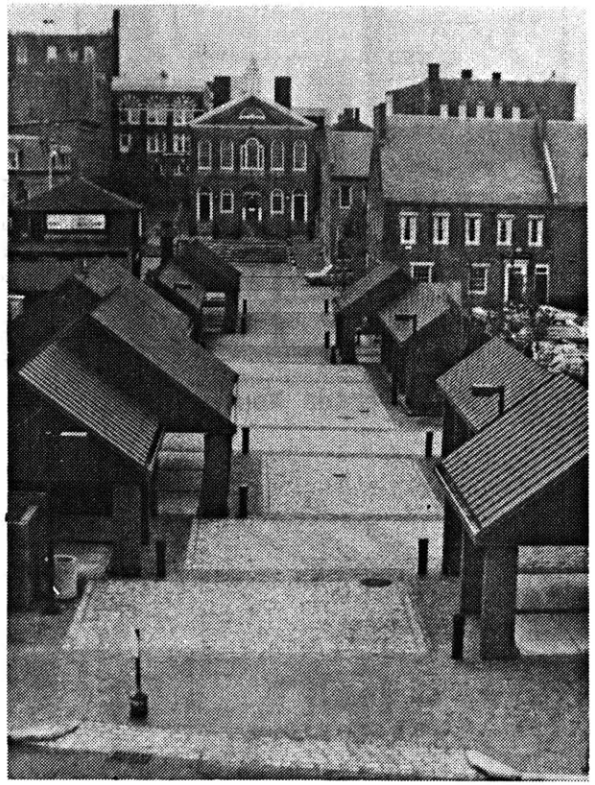


Fig. 42: Marketplace, Salem, Mass.

Fig. 41: Flexible Geography of the Market, Diagram

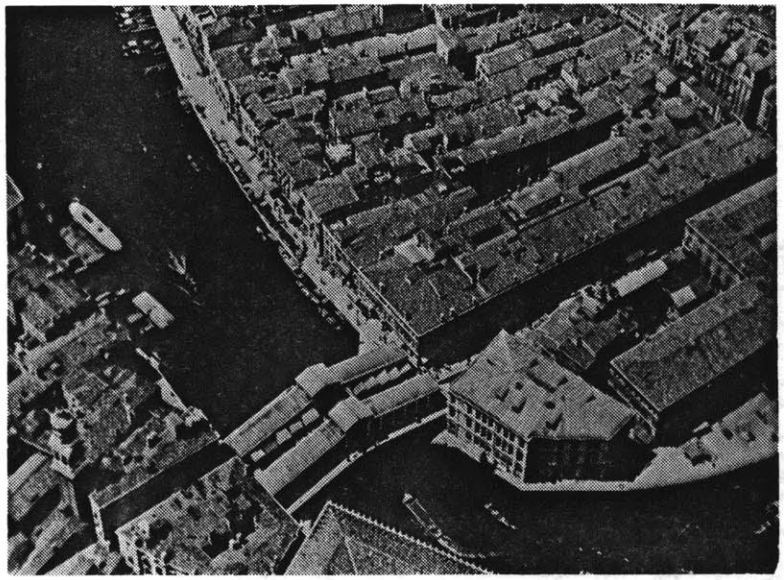


Fig. 43: Rialto Market, Aerial Photo

Fig. 44: The Campo, Siena

The marketplace due to its nature as a zone for commercial exchange and services, more than any other building type owes its form to the dynamics of the street.

Markets have traditionally been located at the intersection of major streets or along the zone of interface between one mode of transportation and another, i.e., seaports, rivers, transit stations.

The path in the market becomes the stage. The movement of customers and goods creates a spontaneous performance, determined in part by the restraints and definitions of the passage.

Fig. 45: Getreidegasse, Salzburg

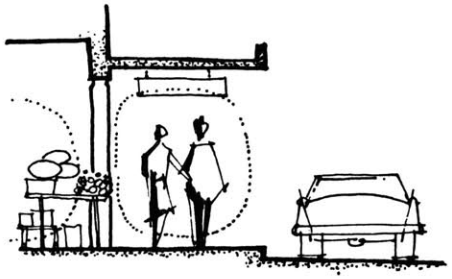


Fig. 46: Single Loaded Corridor

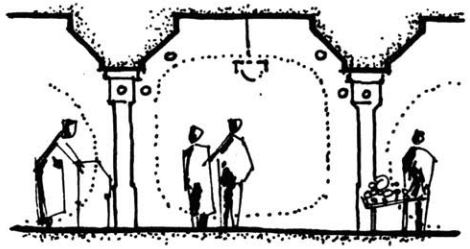


Fig. 47: Double Loaded Corridor

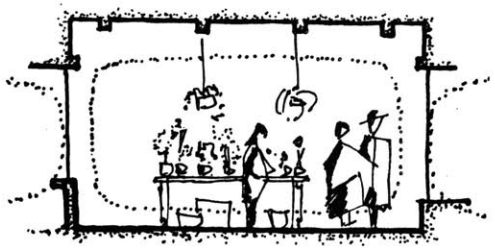


Fig. 48: Double Loaded Corridor with Island

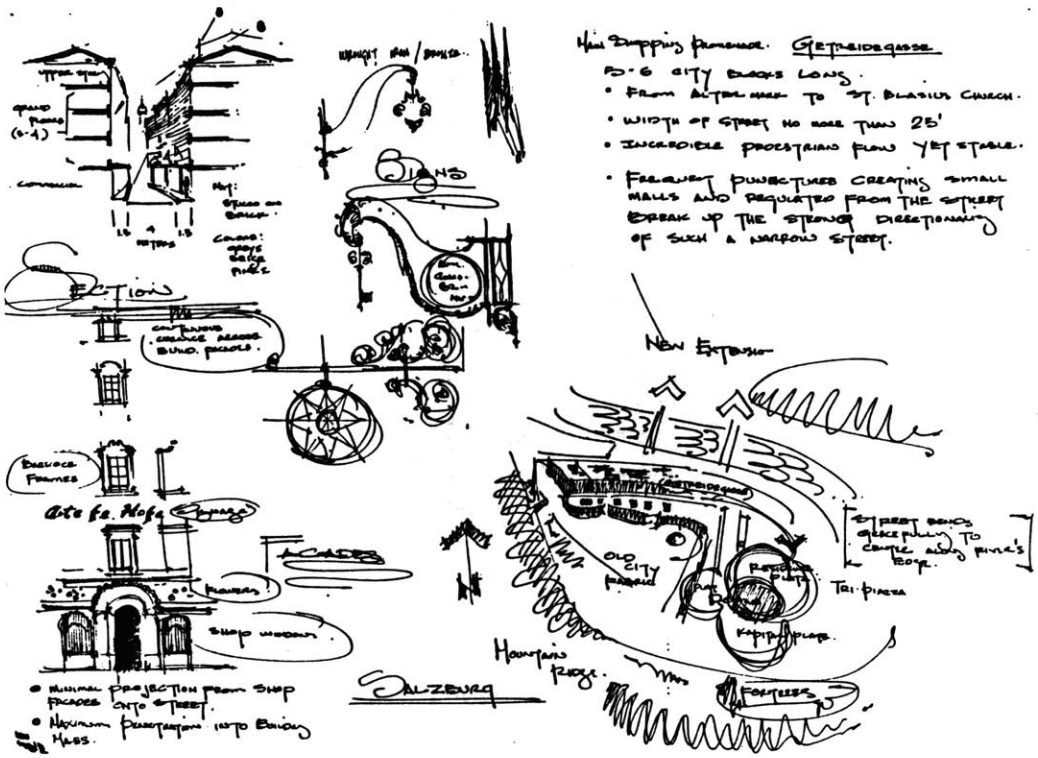


Fig. 49: Getreidegasse Diagram

Activity in the market takes place along the ground floor. This is due, in fact, to the volume of exchange transacted, and the desire on the part of the merchants to incorporate themselves into the easy flow of street traffic.

Market paths can be as narrow as four feet or as wide as forty. Any path wider than forty becomes too broad for the random exchange of pedestrian movement from side to side.

The character of the market path is defined through the domains of the individual merchant; the systems of display; the nature of merchandise; and, the quality of exchange.

Fig. 50: Interior Baltimore Harborplace Market, B. Thompson, Arch.

Fig. 51: Via Delle Fogge, Verona

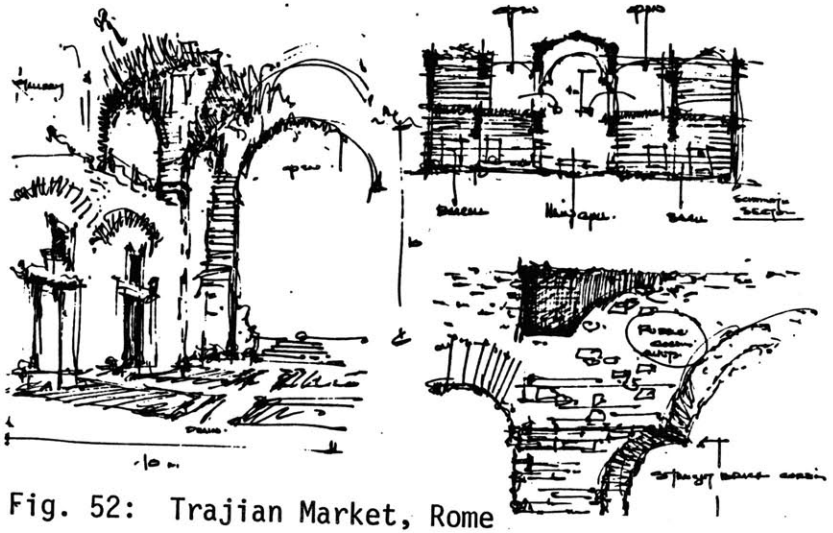
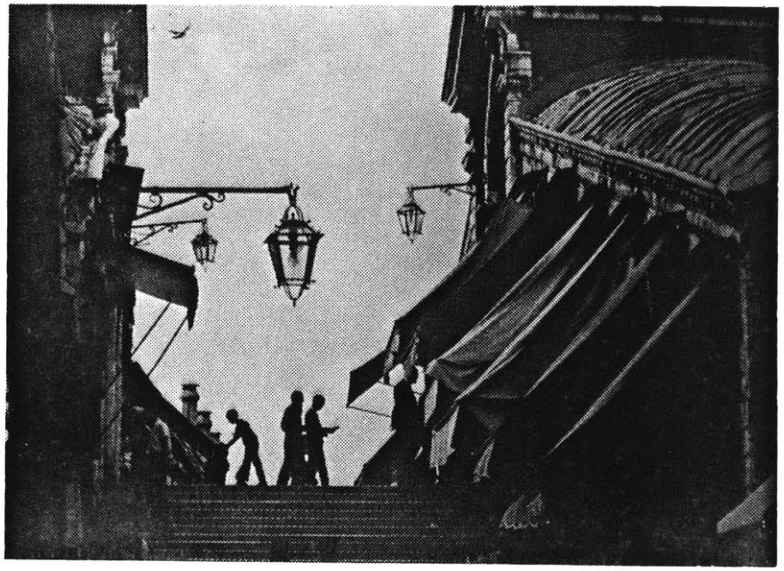


Fig. 52: Trajian Market, Rome



Illumination or light is another important factor in the experience of the passage. The market for the most part is a daylight activity. The building of light, in order to best define the public thoroughfare, is most important. Subsequently light is used to signal sequence of travel and the hierarchies of form along the path. Artificial lighting is also used as task illumination, signage, and as design elements along the path.

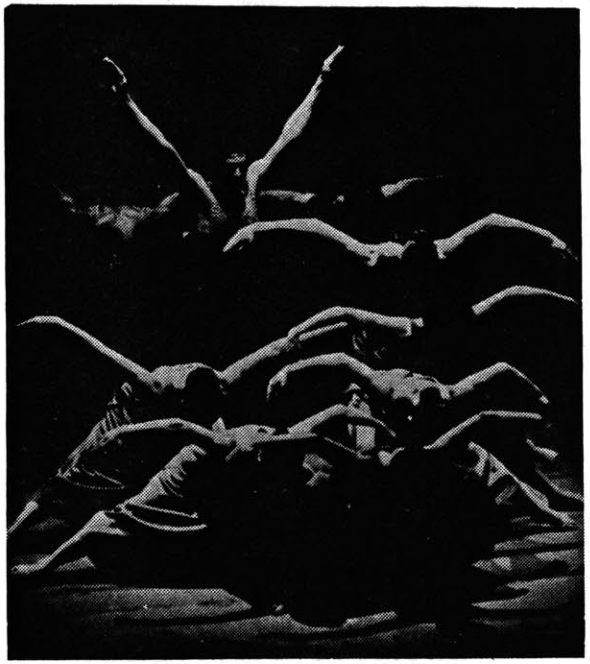
Fig. 53: Commercial Street, Verona

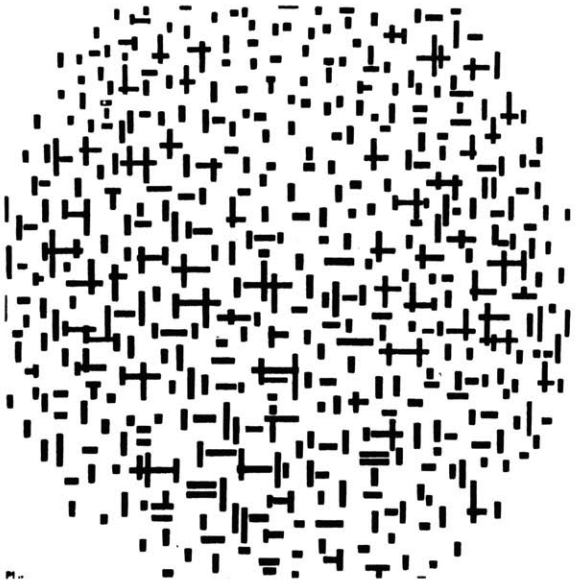
Fig. 54: Rialto Bridge, Venice

Fig. 55: Piazza Erba, Verona

"The 'grammar' of a structure is based upon the elements and relations it admits."[4]

"Rhythm as an element of composition is tied closest to the manipulation of repetitive spatial and structural elements in the design solution."[5]





Rhythm as an element of composition is probably one of the most observable in all nature and art. Its appearance is both static and dynamic, as recognizable in the qualities of space, form and structure, as it is in poetry, dance, and season, which may only be seen through the flow of time.

Fig. 56: "Relavations" Alvin Ailey Comp.

Fig. 57: "Pier and Ocean" P. Mondrian, 1917

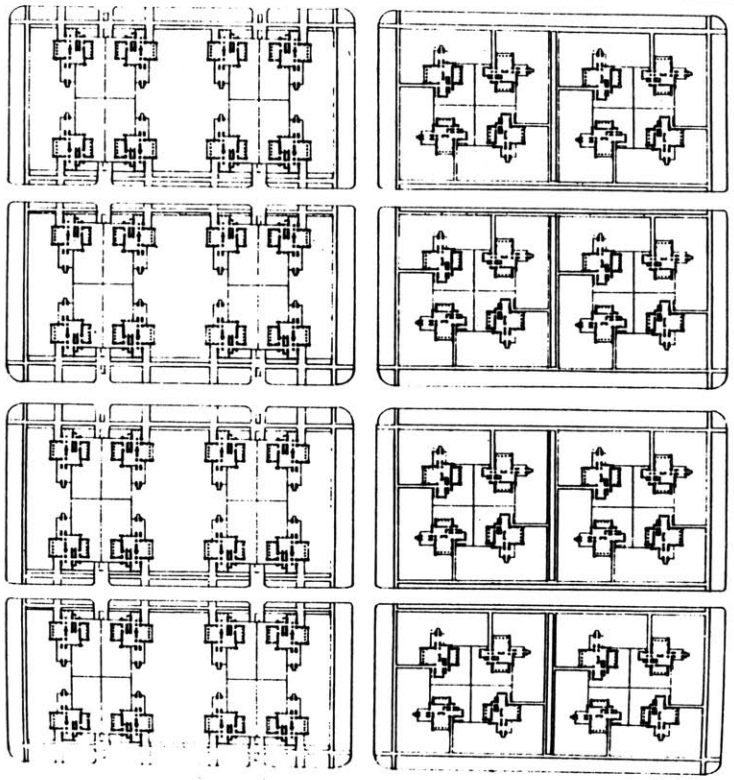
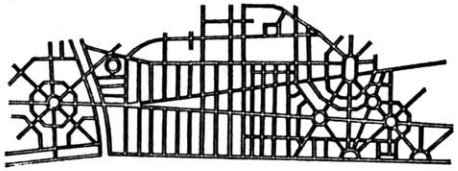
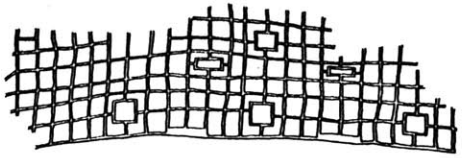


Fig. 58: Housing Patterns, F.L. Wright

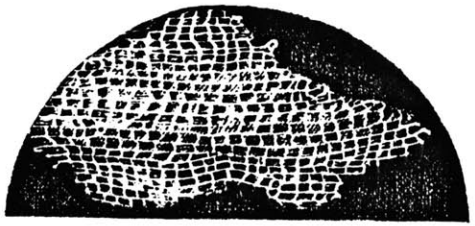
Plan of London before the Great Fire



Sir Christopher Wren's proposal for the reconstruction



Dr Robert Hooke's proposal



The cell structure of cork as seen through Hooke's microscope and illustrated in *Micrographia*

Fig. 59: Urban Fabric Growth Patterns

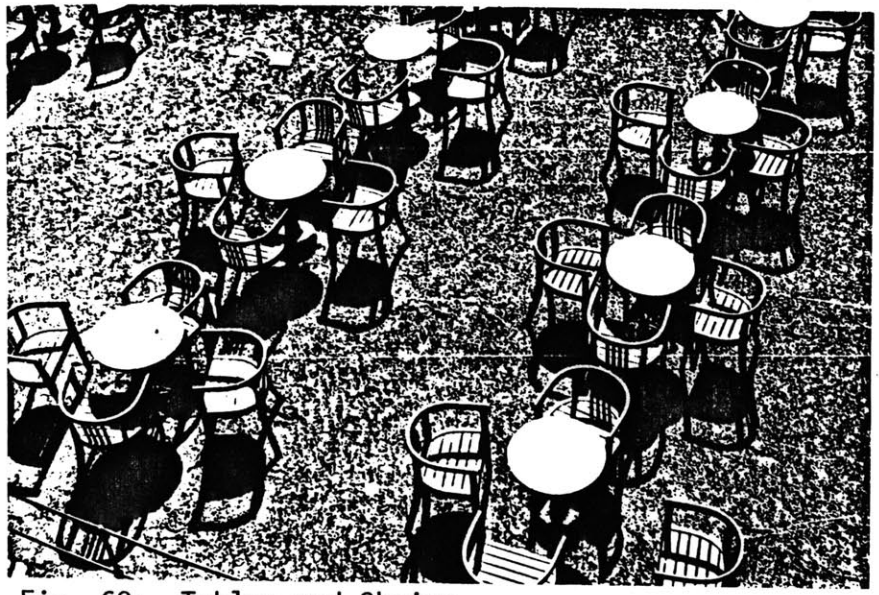


Fig. 60: Tables and Chairs

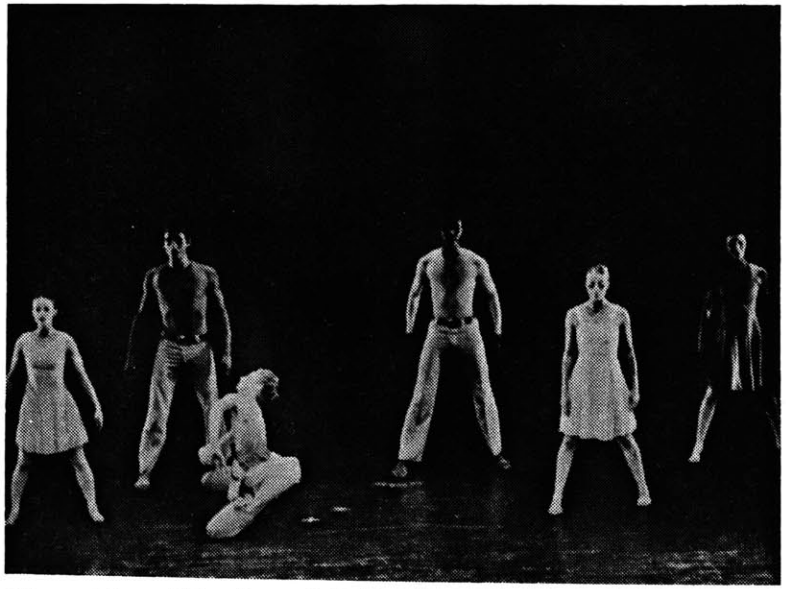


Fig. 61: "Esplanada" Paul Taylor Comp.

"Architectural designs are grown as natural plants grow, the individuality of each is integral and as complete as skill, time, strength and circumstances permit.

"This method does not out of necessity produce a beautiful building, but it provides a framework as a basis which has organic integrity."[6]

The basic rule of rhythm is the establishment of the beat, or the repetition of spatial and structural order. This then may be distorted and superimposed with grace notes or even major pauses. The one condition is that order be apparent if the variations and counterpoints are to have any meaning at all.

The building of form is a means of self-expression as is all art. But in order for architecture to become a clearly articulated means of communication it must accept the laws of rhythm, scale and balance common to its context.

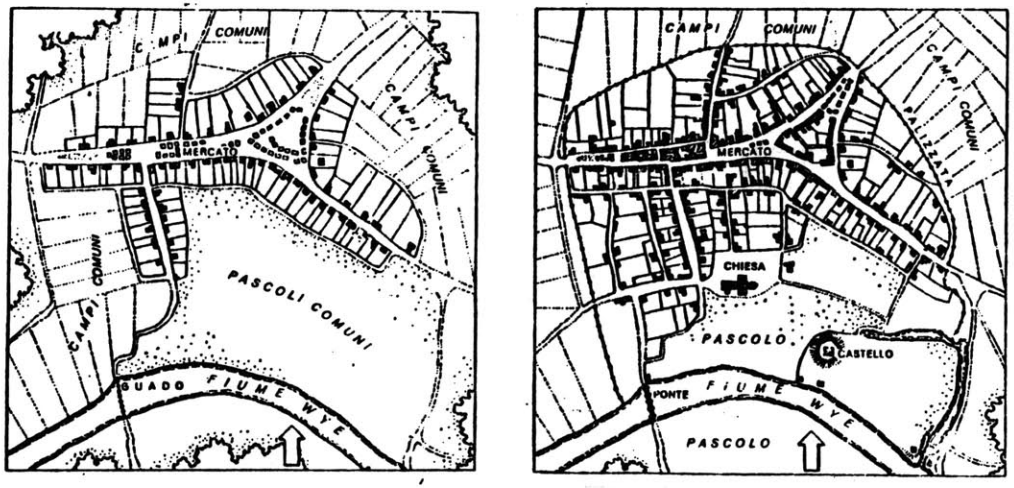


Fig. 62: Growth of the Town of Hereford

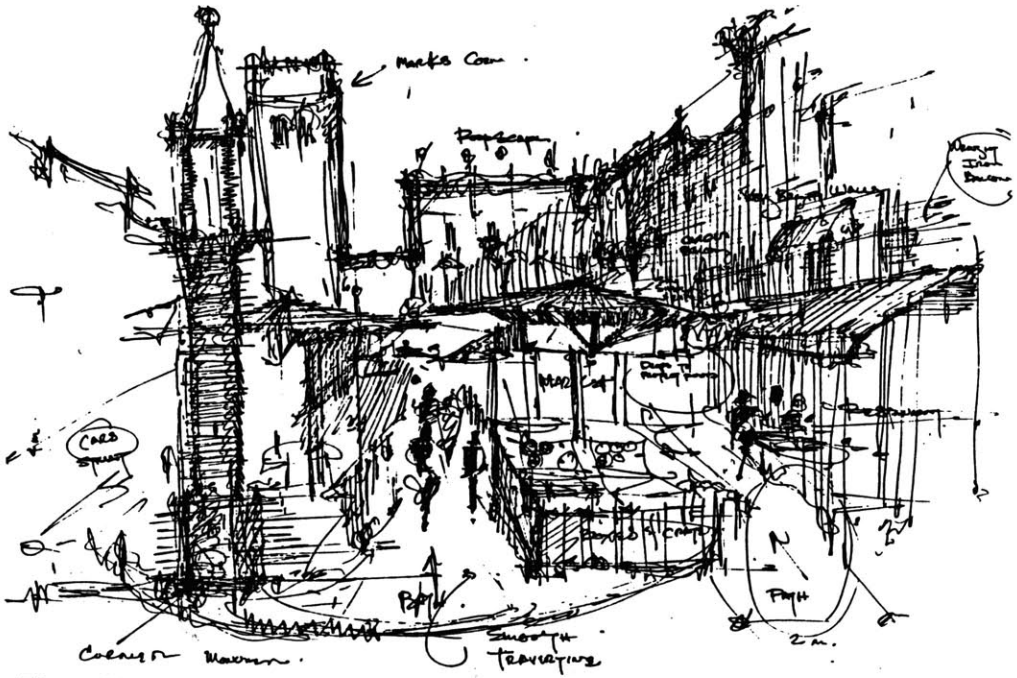


Fig. 63: Market Assemblies

Adaptation, to and from any form, results from the recognition of these rules. Adaptation must extend the patters and rhythms of its context, and incorporate them into the new form language.

To understand the structural rhythms of the marketplace and its methods of adaptation, we must once again return to the street.

Market exchange was of major importance in the survival of the early urban community, and thereby took its position in the center of town. It is from the frequency and strength of these market activities that the city was to adjust itself.

Early market forms were the added result of individual shelters, assembled parallel to the linear flow of the public path.

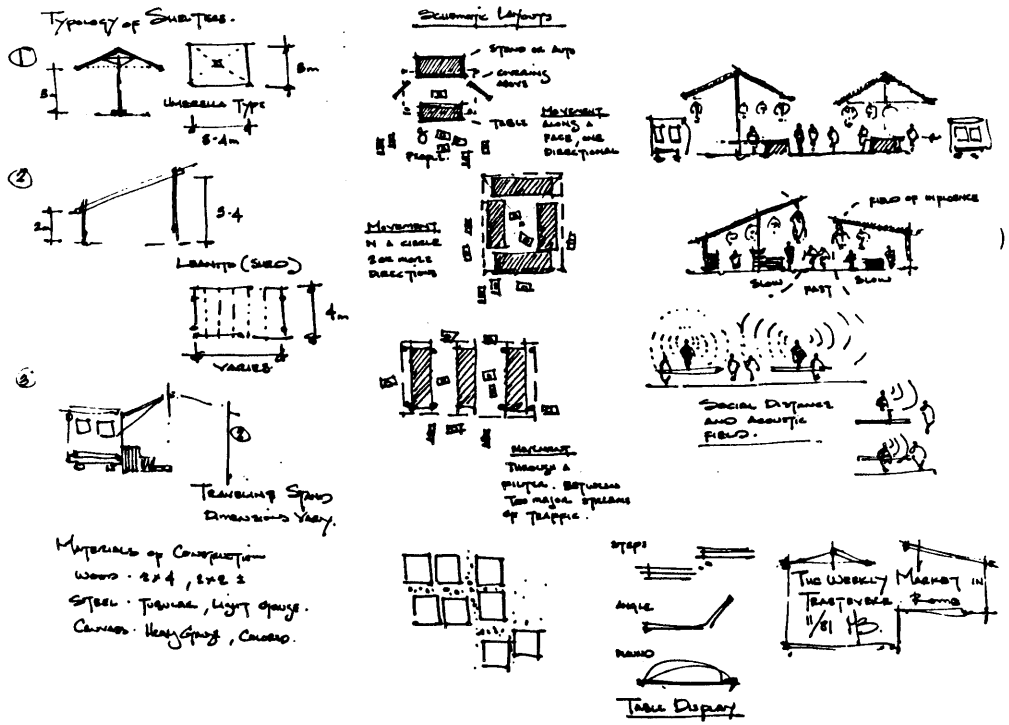


Fig. 64: Market Shelters, Trastevere Market, Rome

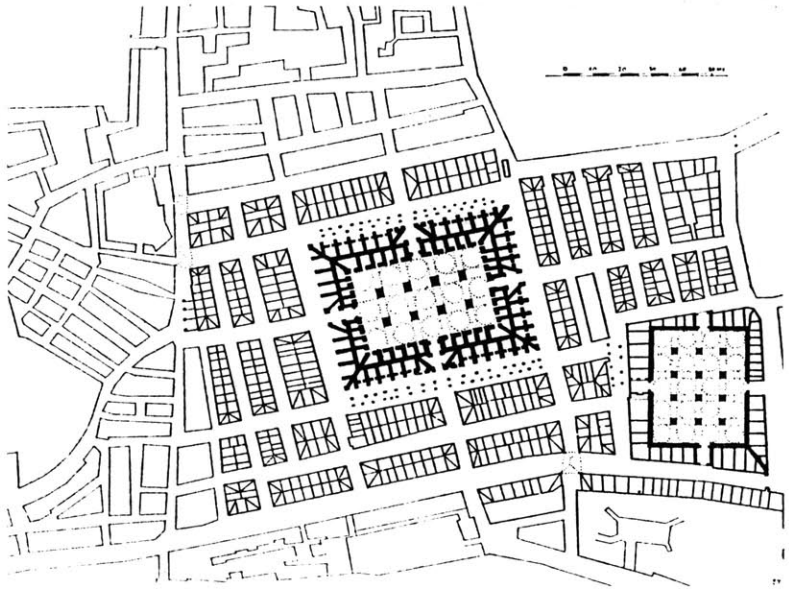


Fig. 65: Bazaar, Istanbul

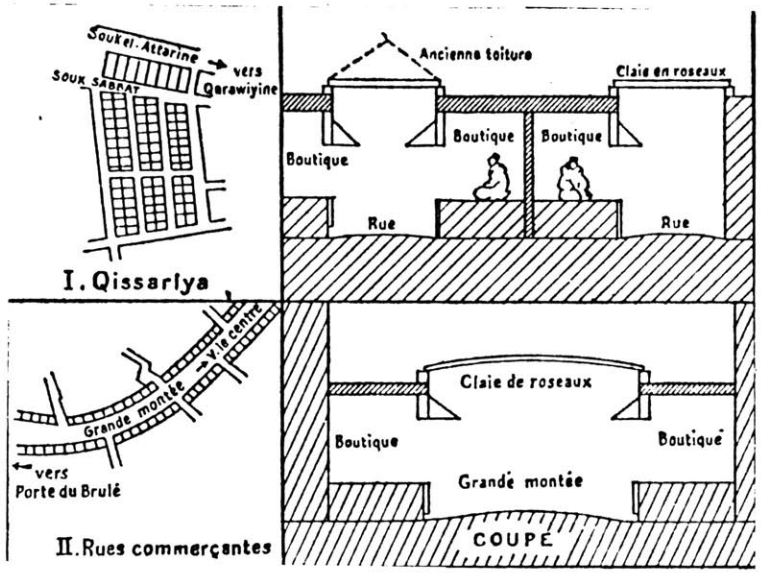


Fig. 66: Bazaar, Fez

Pushcarts, canopies and tents were utilized as sheltering systems for the street market. These temporary, flexible building frameworks of wood and fabric proved an effective means of protection, storage, and adaptation.

Due to their complete flexibility as building forms, it was necessary that certain order develop for their deployment. Patterns arose in response to the collisions of territory, climate, season, and length of operation, though in time municiple conventions were established for their arrangement.

As markets developed in size and importance so their formal structure transformed to best accommodate these new urban patterns. Streets gave way to plazas. And in the process produced an urban structure which provided greater range of stability, use, and spatial symbolism.

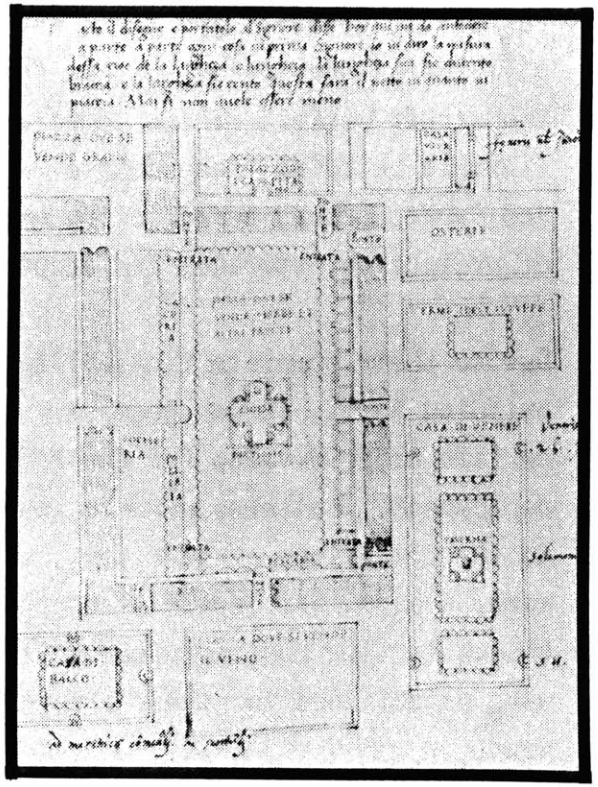


Fig. 67: Market Design, Filarete, 1460

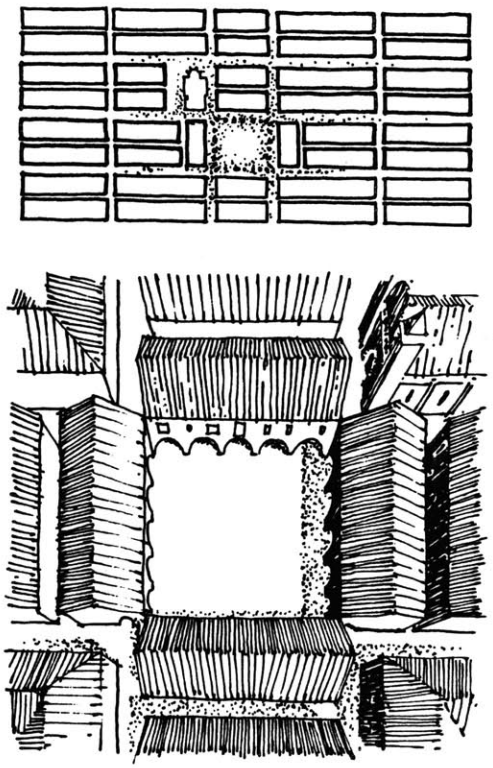


Fig. 68: Open Market Arcade, Monpazier in Perigord

Fig. 69: Fish Market, Venice

While central market plazas continued to use the temporary shelters of the street market for their internal definition, their edge conditions softened. The cloistered arcade is an example of a form system which when used in conjunction with the plaza provides a network by which the movement of traffic, and the linkage of structural systems is stimulated and protected. The transition between interior and exterior becomes broader and as a result open to the interpretations of the performer.

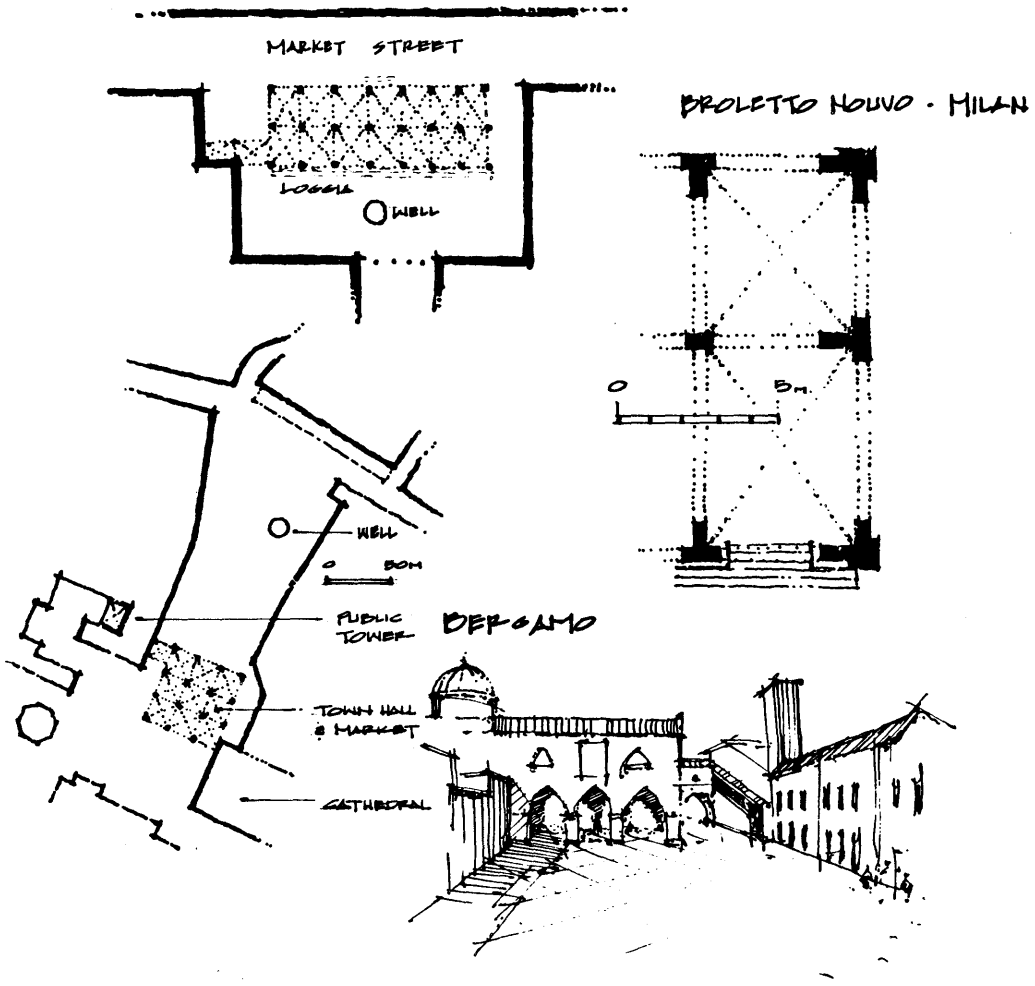
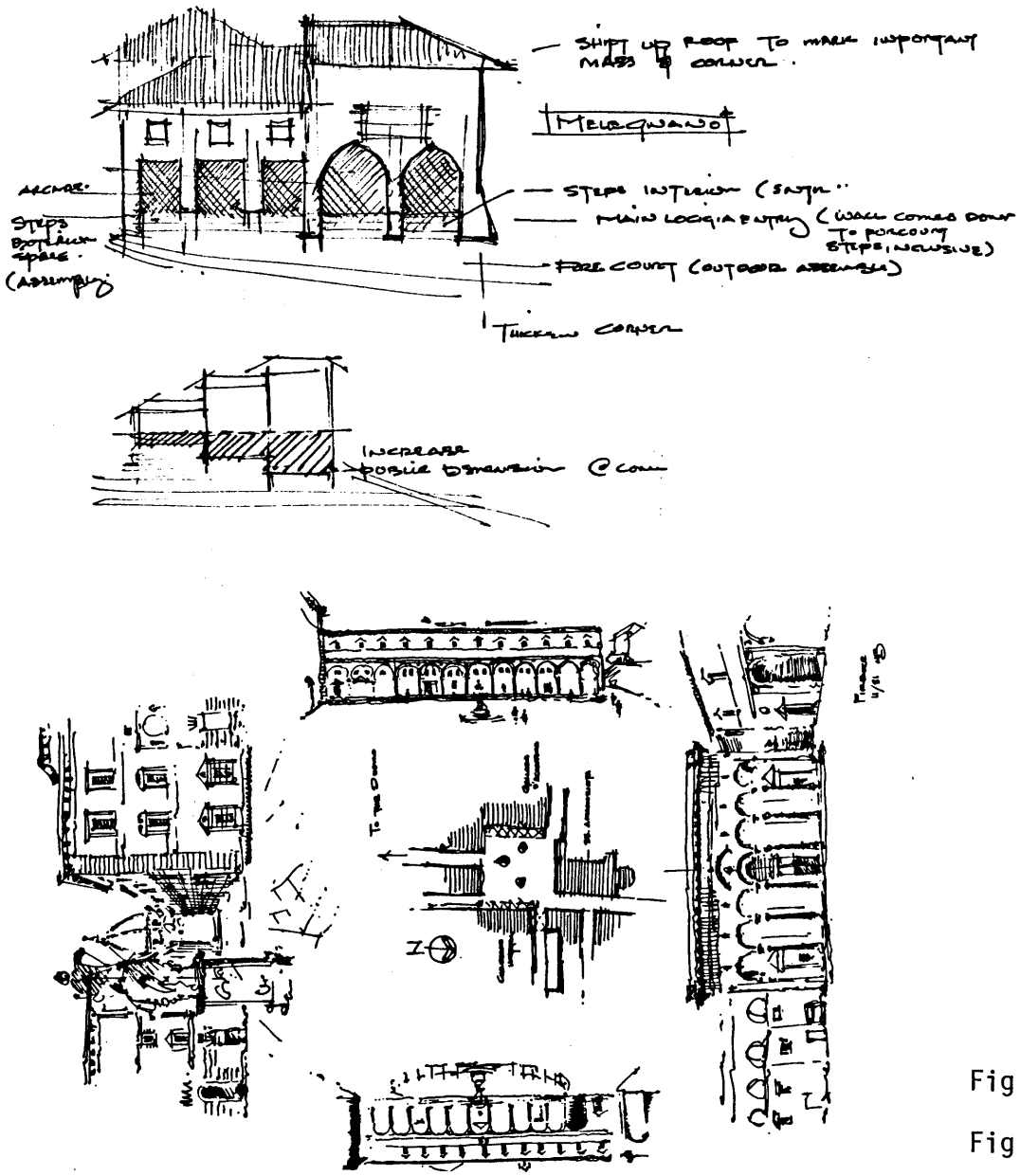


Fig. 70: Italian Loggias

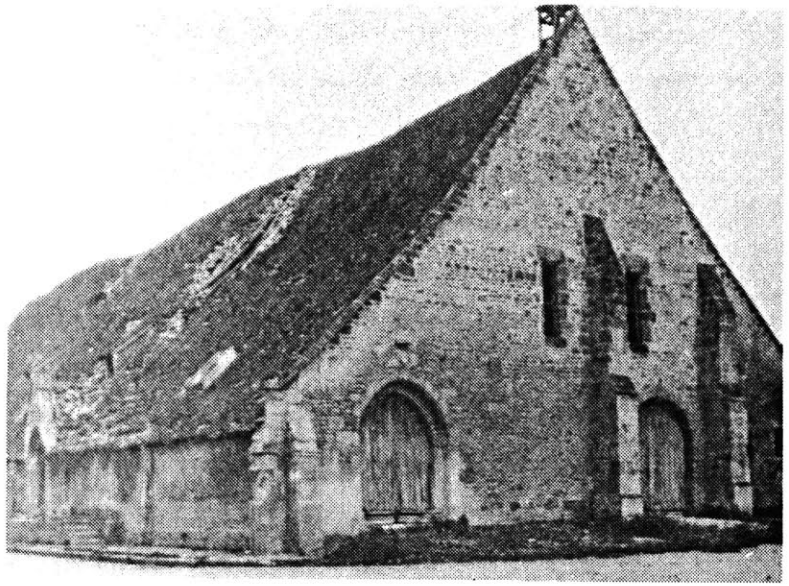


The Italian loggia is another example of a permanent open framework for the implementation of market and municiple activities. These one-story, masonry structures were located in the chain of public urban spaces. Their use as markets were complimented by religious processions, political assemblies, and special 'civic' events. Through a simple order, multi-directional focus, and the consistency of scale elements these containers allowed for reinterpretation through various interest groups. Their nature as permanent structural frameworks in the urban system reinforced their meaning and sense of place.

The need for protected and permanent containers of market activity is better demonstrated when one moves out of the warmer latitudes.

Fig. 71: Loggia/Public Hall, Melegnano

Fig. 72: Arcaded Piazza, Florence



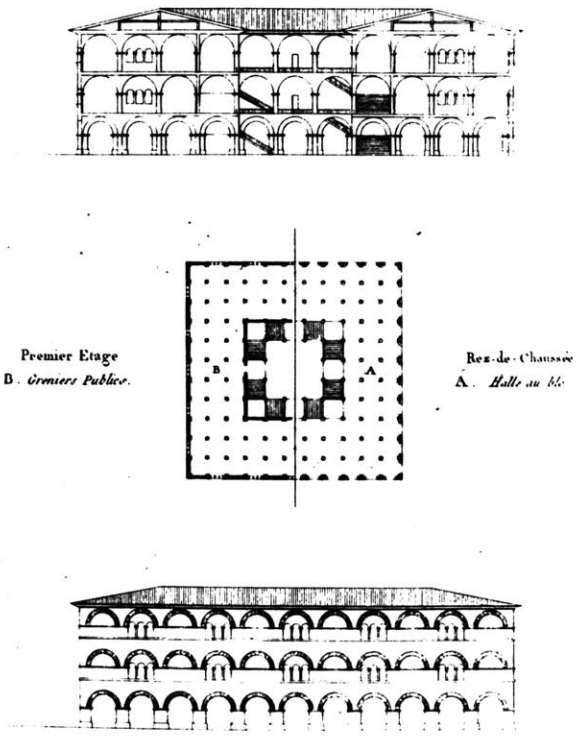


Fig. 73: Market Hall, St. Pierre-sur-Dives, 1300

Fig. 74: Design for Market Hall, J-N-L Durand, 1809

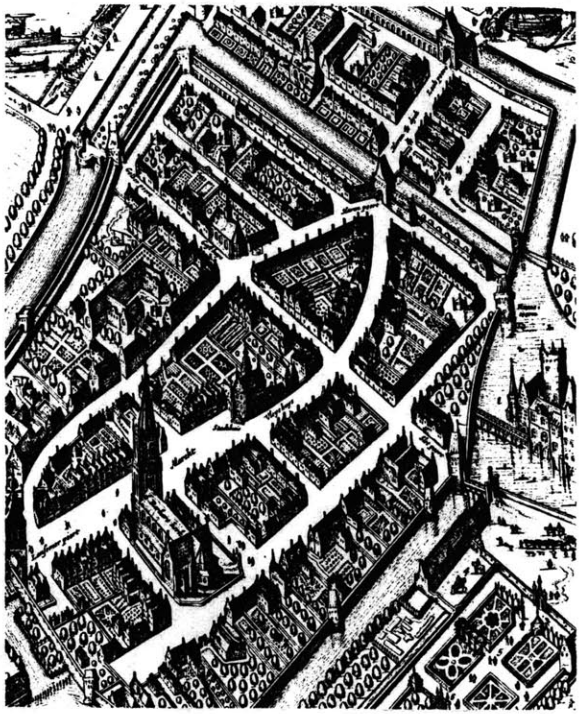


Fig. 75: German Markettown

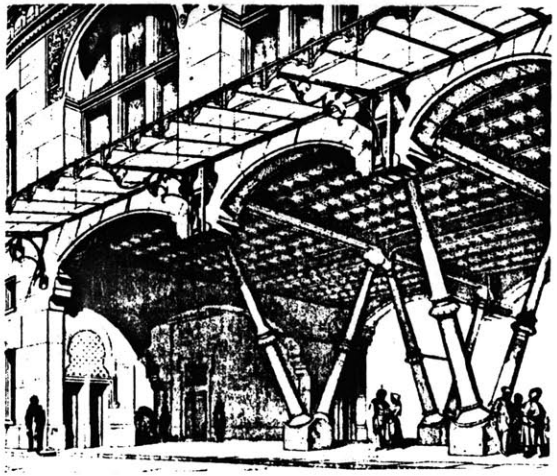


Fig. 76: Design for Marketplace, V. le Duc

The market places of the north were a series of closed forms, providing year-round enclosure, and the options for outdoor extension during the warmer months.

Types of exchange were kept separate and within their respective structures, i.e., grains, textiles, meats, etc.

The market halls were a mixed building type. Ground floor activity was predominantly commercial, while the upper floors were reserved for town and governmental functions.

This direct physical connection between political and commercial activities produced a building type which was rich in architectural symbolism, dramatic in gesture, yet distinct in spatial hierarchy and the transition between function.

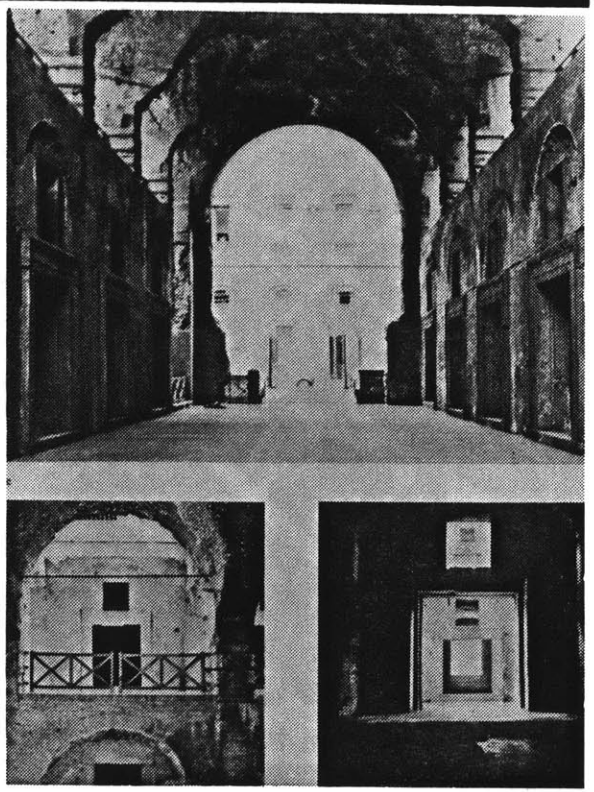
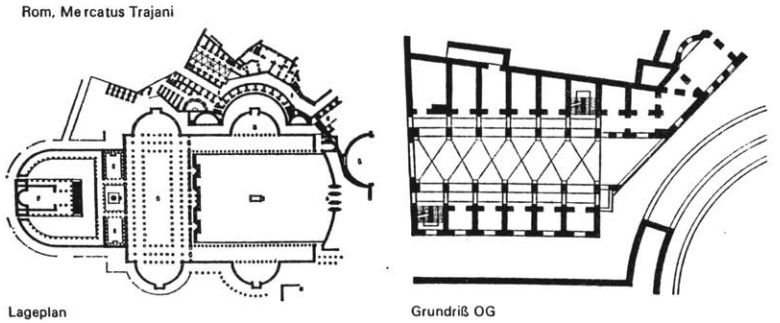


Fig. 77: Interior, Trajian Market, Rome

Fig. 78: Plan, Trajian Market



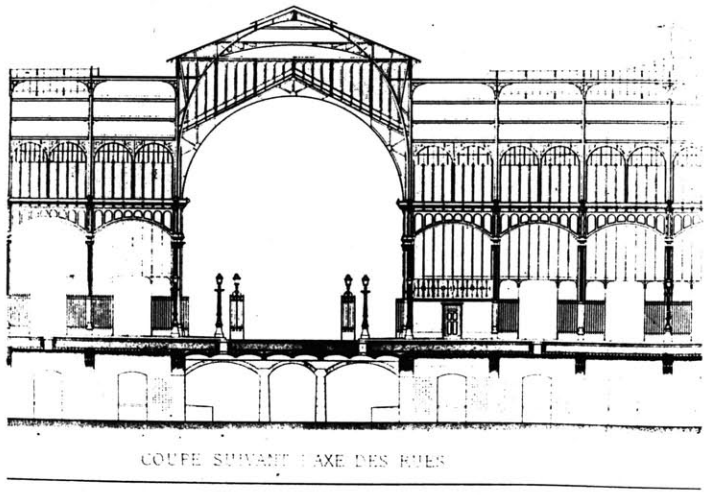


Fig. 79: Section, Les Halles, Paris

Fig. 80: Interior Perspective, Les Halles, Paris

Taking the elements and relationships of the street, the desire for multifunctional building types, and the development in building technology the market galleries of the nineteenth century came into being.

These multi-leveled galleries were not unique to the nineteenth century but take their roots back to the genius of Rome.

The rediscovery of the market gallery was propelled by developments in steel and glass technology, which allowed for large structural coverage with minimal loss of natural light.

Consequently, streets were brought inside and the possibility of use increased year-round.

Galleries were located throughout the urban fabric and as part of the city traffic system.

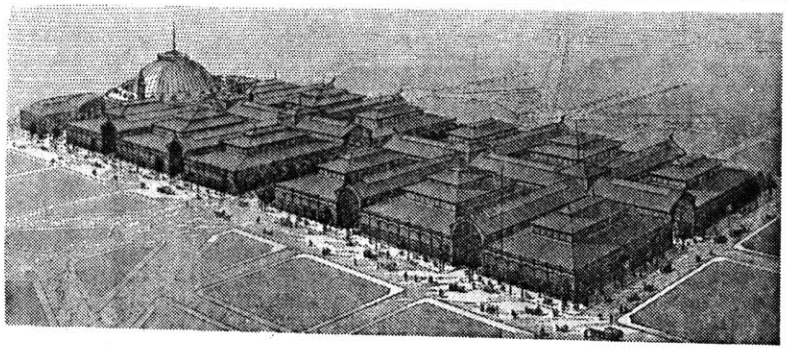
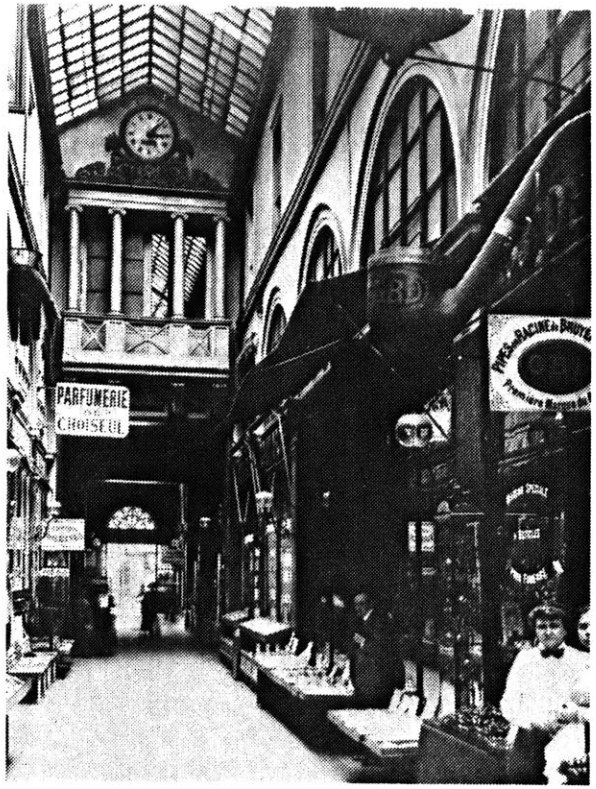
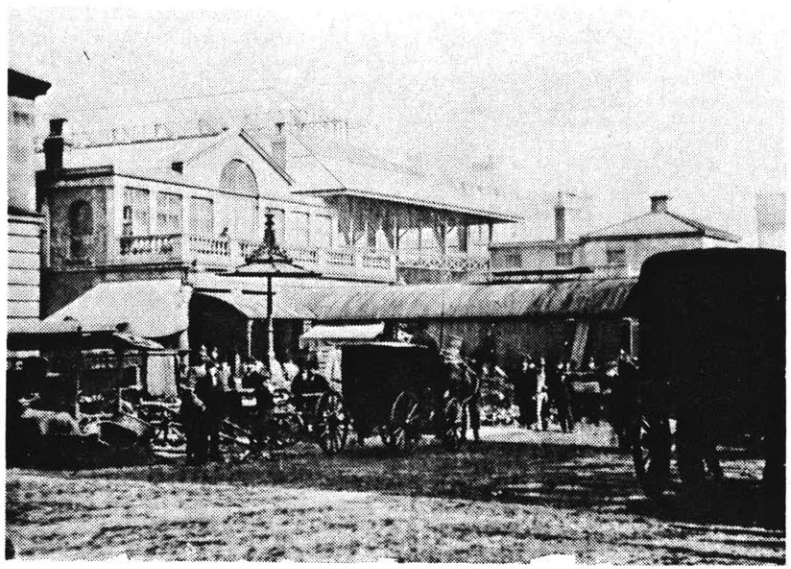
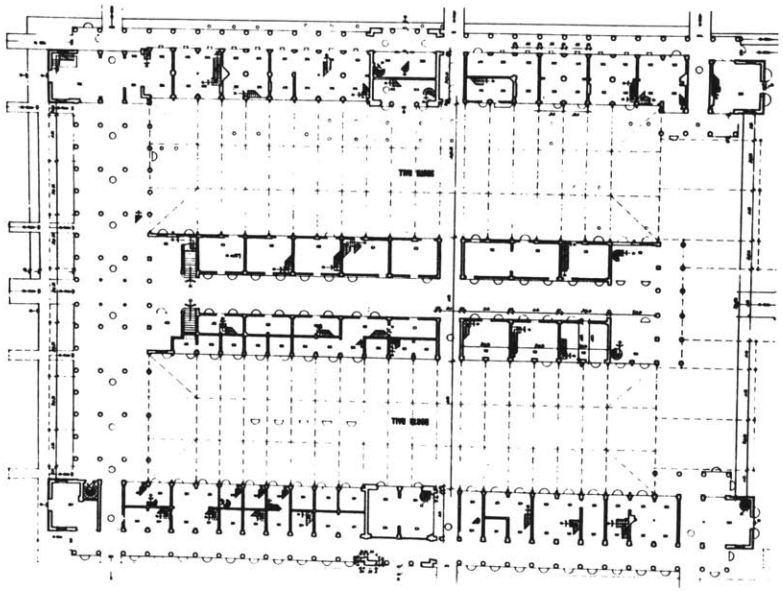


Fig. 81: Aerial Perspective, Les Halles, Paris

Fig. 82: Interior Shopping Gallery







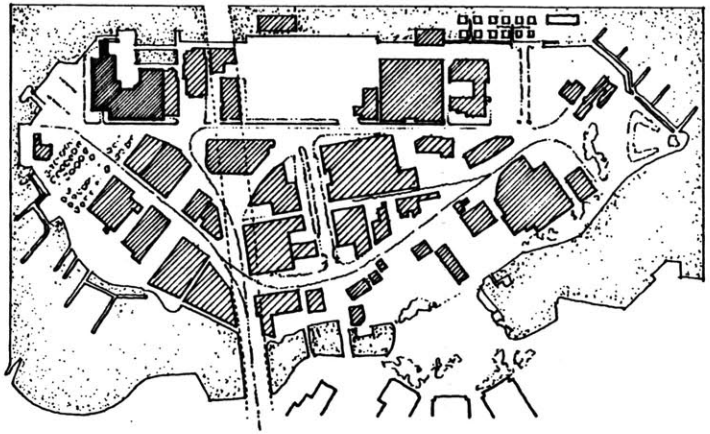
Their classical composition of space and architectural form provided a perfectly neutral yet historically dense element in the layout of the city. Implied within these structures was a utopian vision of the future in the stability of the past, through the patterns and eclectic transfer of classical architectural form.

In a similar sense, the adaptive market of the twentieth century attempts to integrate the function of the marketplace into a variety of historic containers.

Though primarily a central urban phenomenon, the market is taking a place in the outlying manufacturing and industrial centers of the city as needs and urban topography change.

Fig. 83: Convent Garden Market, London

Fig. 84: Plan, Convent Garden Market



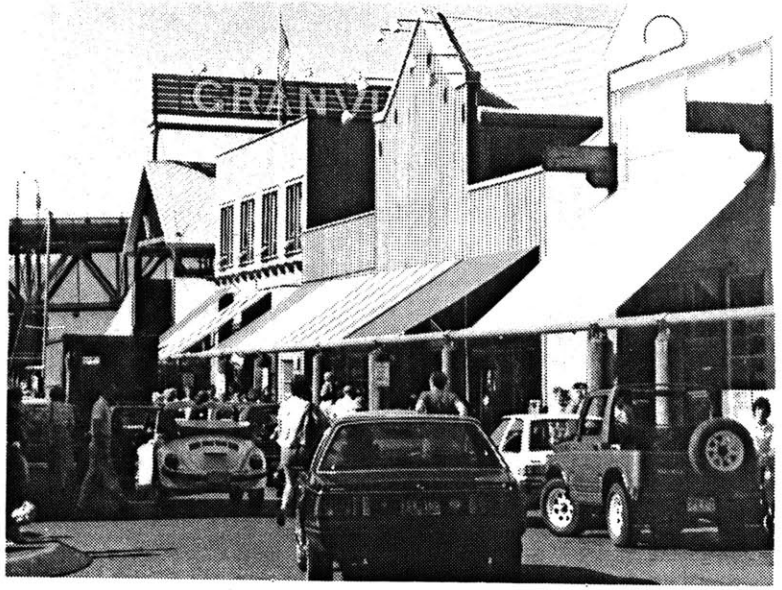


Fig. 85: Plan, Granville Island

Fig. 86: Elevation, Marketplace Granville Island, Norman Hotson, Arch.

Fig. 87: Marketplace, Granville Island

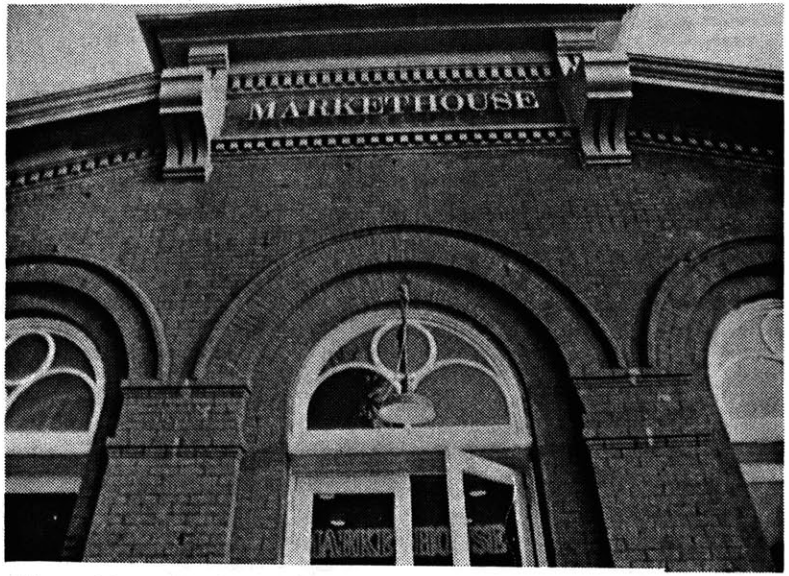


Fig. 88: Markethouse, Washington, D.C.,

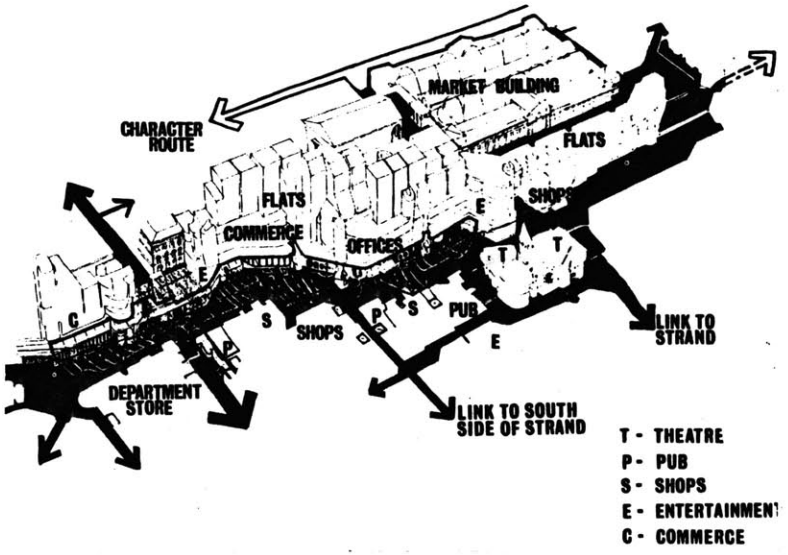


Fig. 89: Urban Development Scheme, Convent Garden

The contemporary adaptive market adjusts to its container in much the same way that early markets adapted to the street.

Containers range in type from factory structures, warehouses, power stations, train stations, and even obsolete market halls. These large masonry shelters, no longer active under their original program, are being recycled through commercial, and municiple interests, in a process of urban reactivation.

These containers, for the most part, serve as thematic elements for the structure of the development program. Their historic links, image and community significance are being incorporated into their structural resolution.

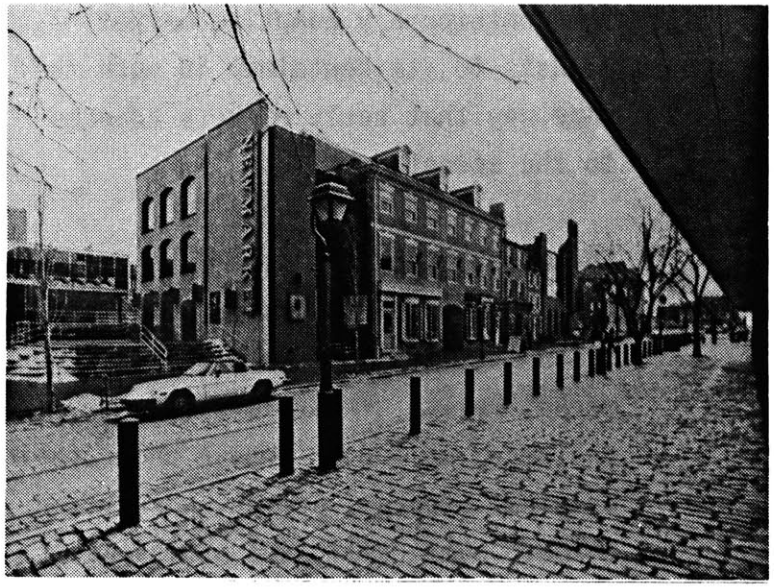


Fig. 90: New Market, Philadelphia, Louis Sauer, Arch.

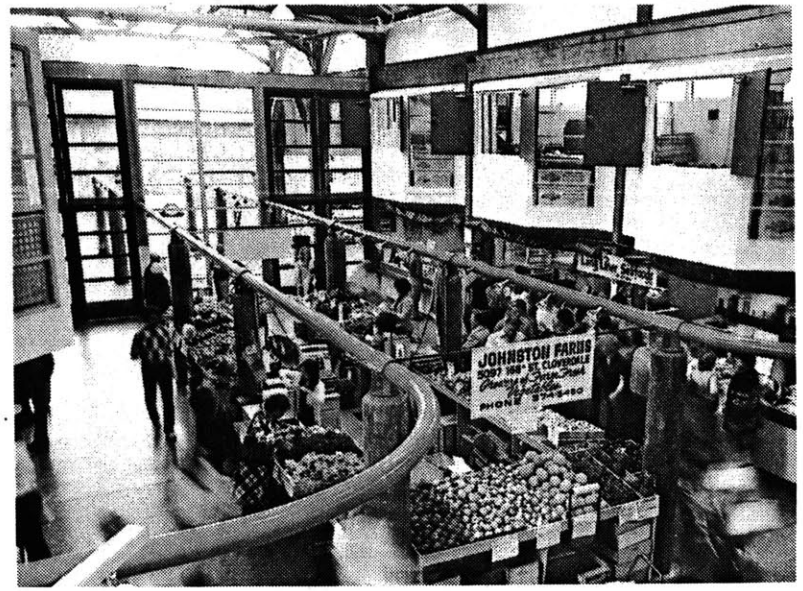


Fig. 91A: Interior, Granville Island

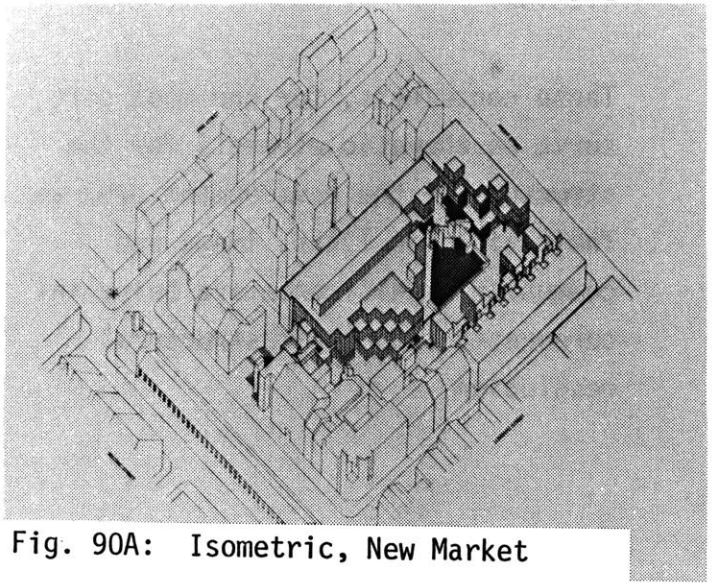
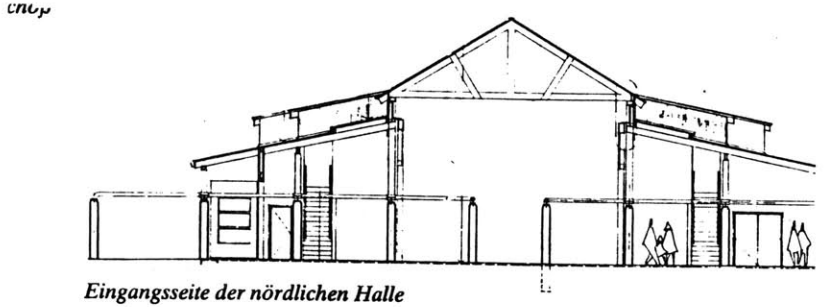


Fig. 90A: Isometric, New Market



Eingangsseite der nördlichen Halle

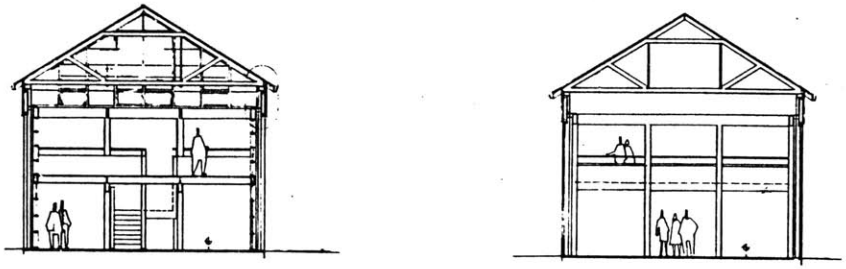


Fig. 91B: Sections, Granville Island

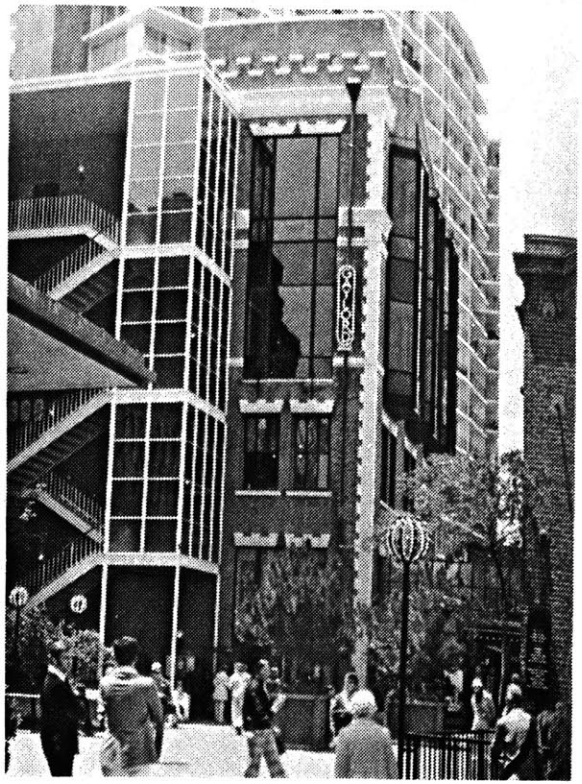


Fig. 92: Ghiradelli Square

Fig. 93: Interior, Faneuil Market

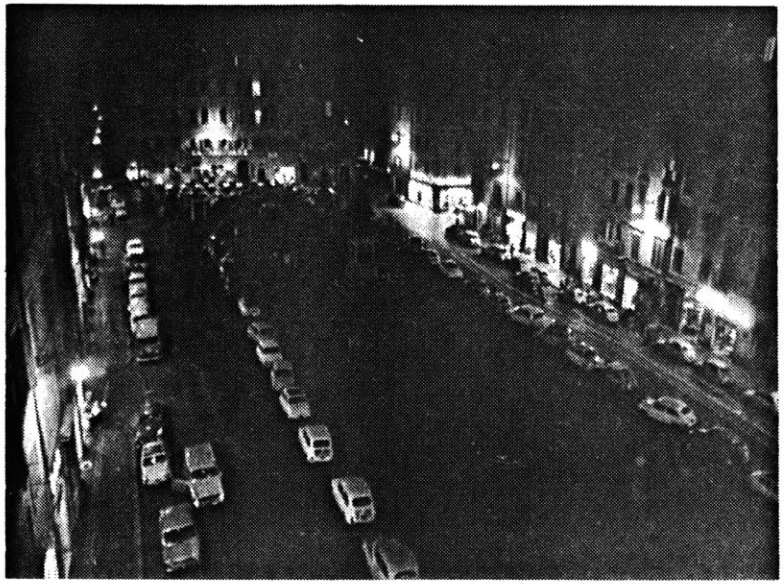
"The objective in renovating is not to restore exactly but to preserve their character while allowing them new functions which are consistent with the lifestyle of contemporary urban population."7

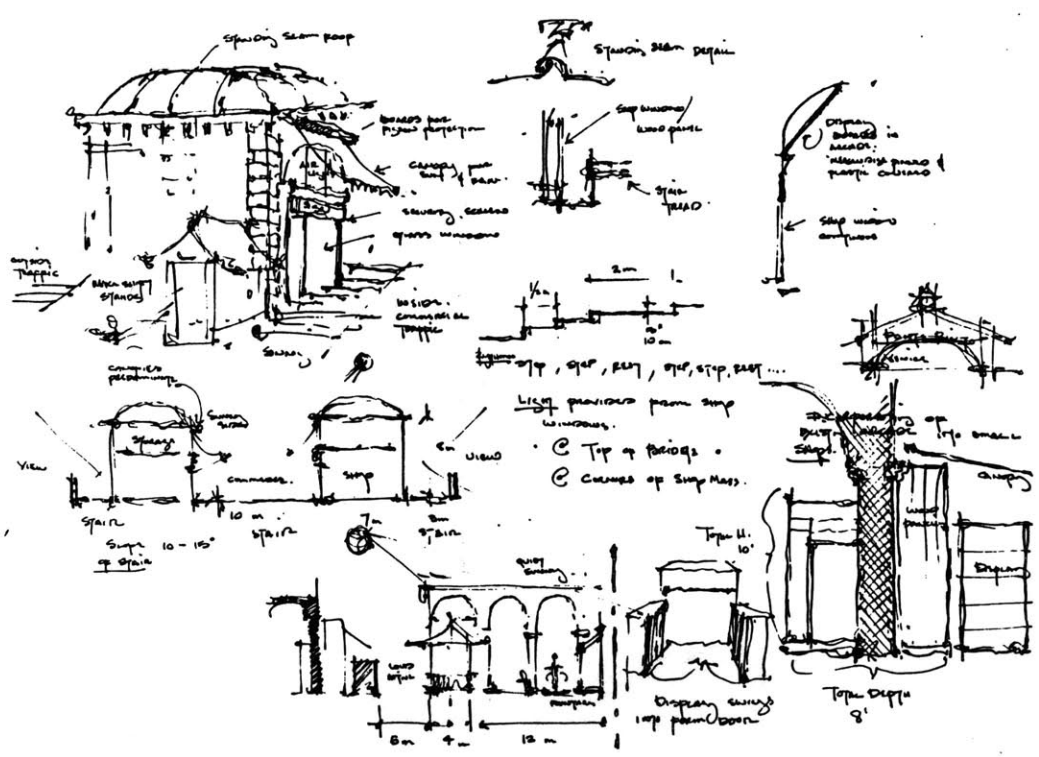
New formwork is structured so as to best illustrate the gestures of the existing elements, while allowing the efficiency and operation of new service systems.

Fig. 94-98: Sequence of Use and Assembly, Campo d'Fiori, Rome

4. THE PERFORMANCE OF FORM

"To think about life as an art form, and to think of it as embracing the flow of everyday life performances inseparably linked with their setting leads us to see that this art form may be as magnificent in its most humble examples as it is in its most rich and magestic displays, if perception and performance skills have reached high enough levels of quality."[8]





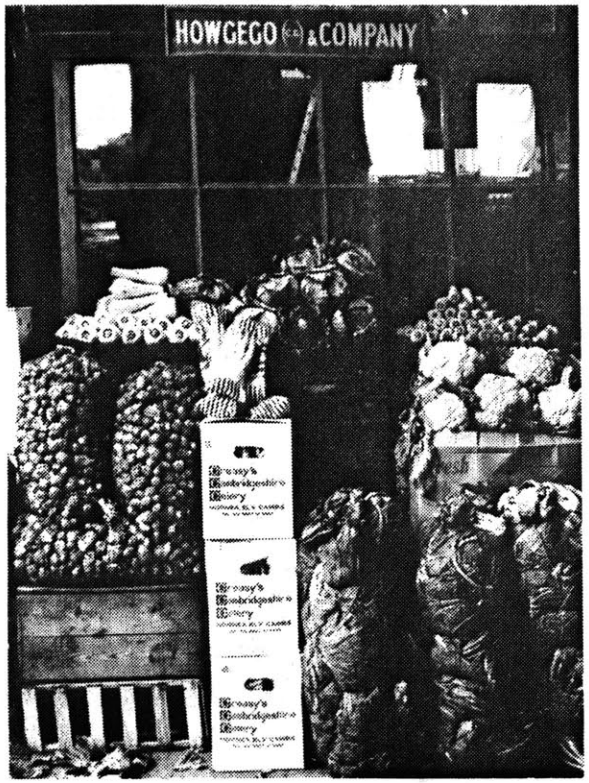
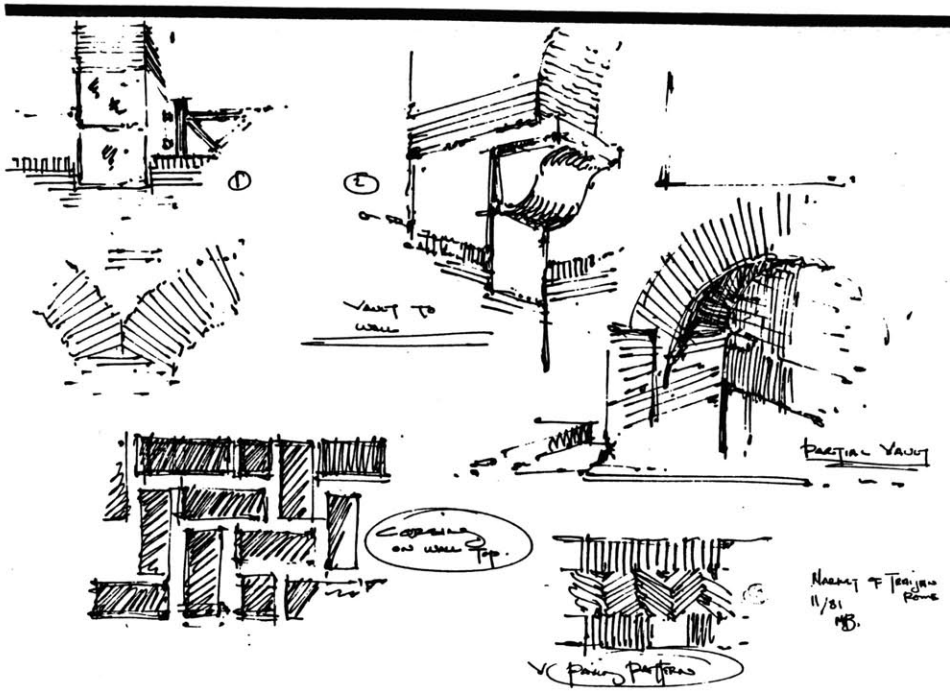


Fig. 99: Use/Performance Systems, Rialto Bridge, Venice

Fig. 100: Produce Display, Convent Garden Market



The principle of performance requires a closer look at the most intimate scales of form and event which may have been neglected in the traditional form/function relationship.

The linking of form with performance demands concentration on the design of the full sensory realm, i.e., sound, heat, taste, smell, and touch which when added to vision create a richer relationship of form and function.

Fig. 101: Structural Details, Trajian Market

Fig. 102: Storage/Transport Systems, Convent Garden Market

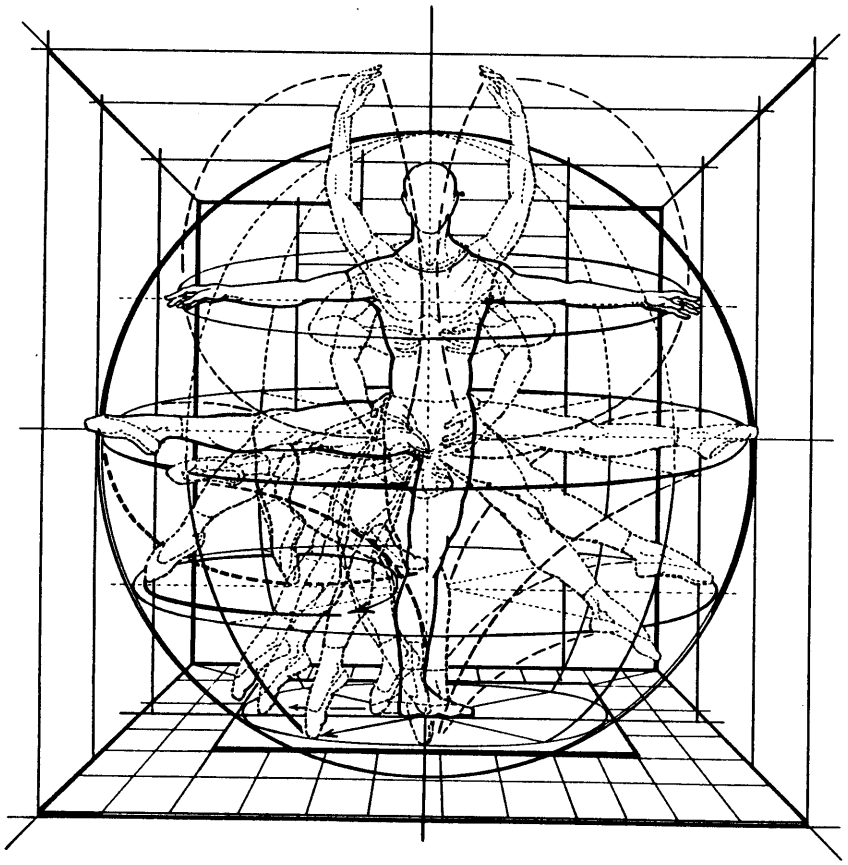
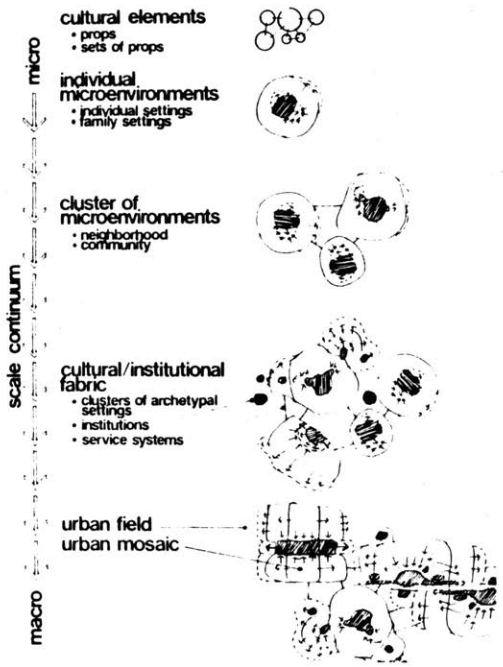


Fig. 103: Arms and Legs Space Module, Classic Ballet

A performance is a sequence of actions comprehensible in its unity and communicating its essential meaning to both performer and observer.

The quality of an event is affected by the same principles that enter into the design of physical form and settings; an understanding of purpose, a desired goal, a knowledge of means, in material, technique, and language, and the capacity to call forth meaning through skillful action.

"We shall observe the appearance of the human figure as an event, and recognize that at the very moment it has become part of the stage, so to speak, with a certainty which is automatic each gesture and each movement is drawn into the sphere of significance."[9]



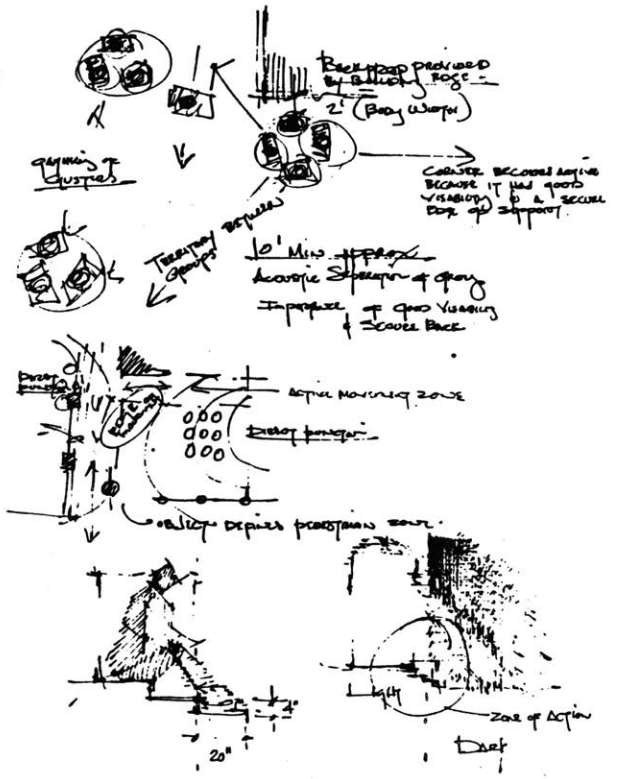


Fig. 104: Territorial/Scale Continuum, A.R. Williams

Fig. 105: Social Behavioral Diagram, Italian Public Plaza

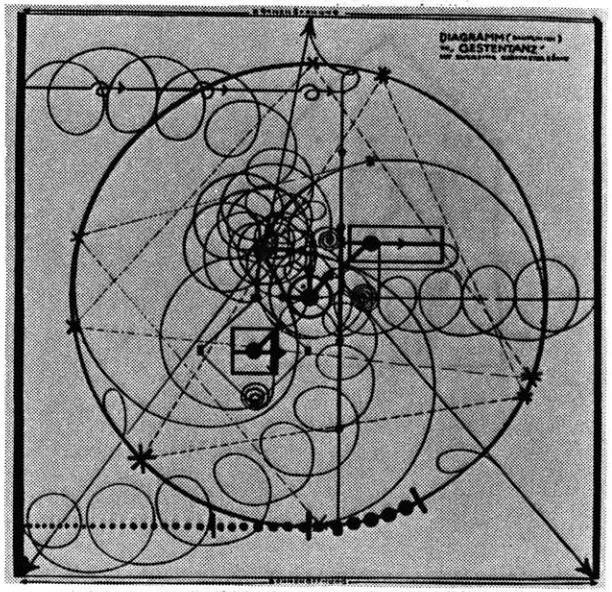


Fig. 106: "Dance of Gestures" O. Schlemmer

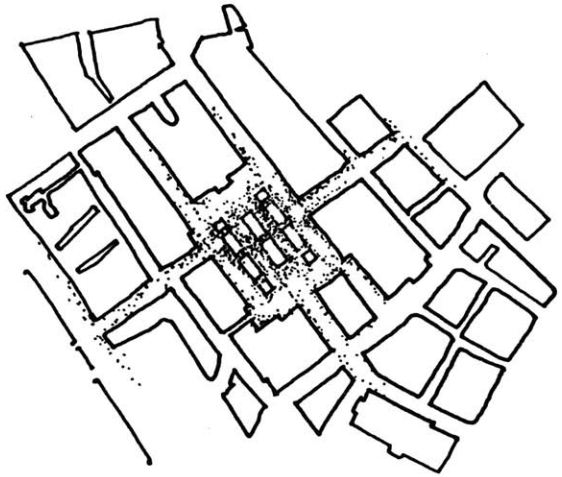
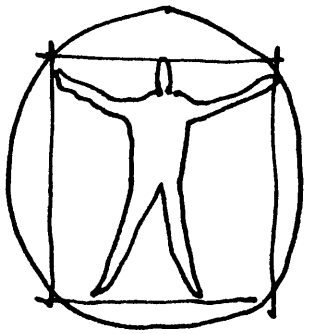


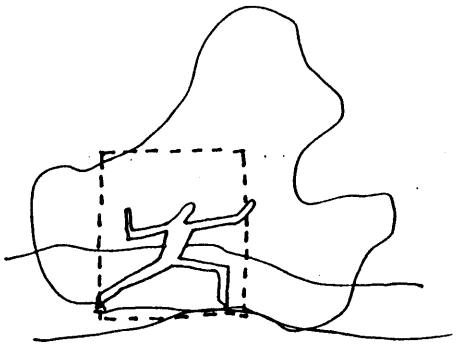
Fig. 107: Traffic Diagram, Convent Garden Market

The elements of physical form in which a performance takes place are understood in terms of the orchestration with which it is assembled. As the art of dance expresses emotion through spontaneous movement, so architecture is defined through the life of its parts.

"The art of dance stands at the source of all arts that express themselves first in the human body. The art of building or architecture is the beginning of all the arts which lie outside the person and in the end they unite."[10]

The essence of the market's performance lies in the person-to-person exchange of goods and services. It is an exchange between individuals, not corporations and consumers. And while their form language may differ from time, place and season their purpose is still the same; to provide an environment for the collision of human beings.





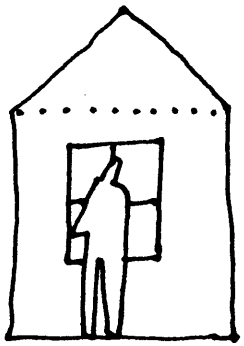
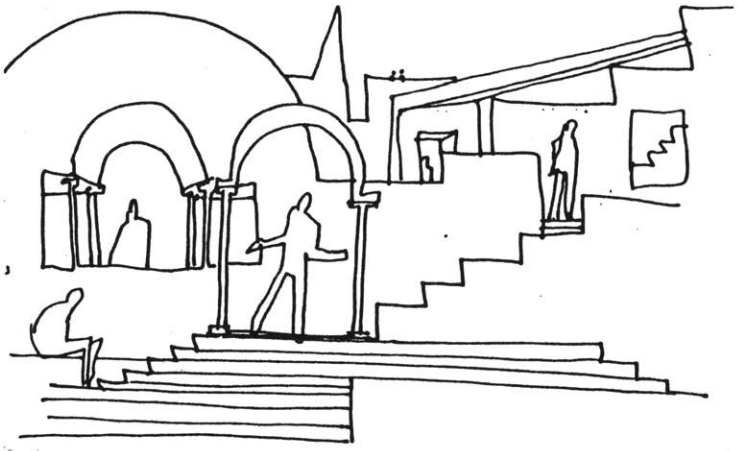


Fig. 108: Man as Center of Proportional System

Fig. 109: Child's Personal Space

Fig. 110: Cell with Gable



"Architecture remains an art - the creation of objects and spaces that enter into the lives of people and evoke a world of beliefs. Architecture directs our attention. Buildings separate activities and modify our relationship to the surroundings.... Architecture when it is effective brings things to mind. Architecture then, should be filled not with acquiescence but with affirmation. It should reflect our will to make a world in which each person matters."[11]

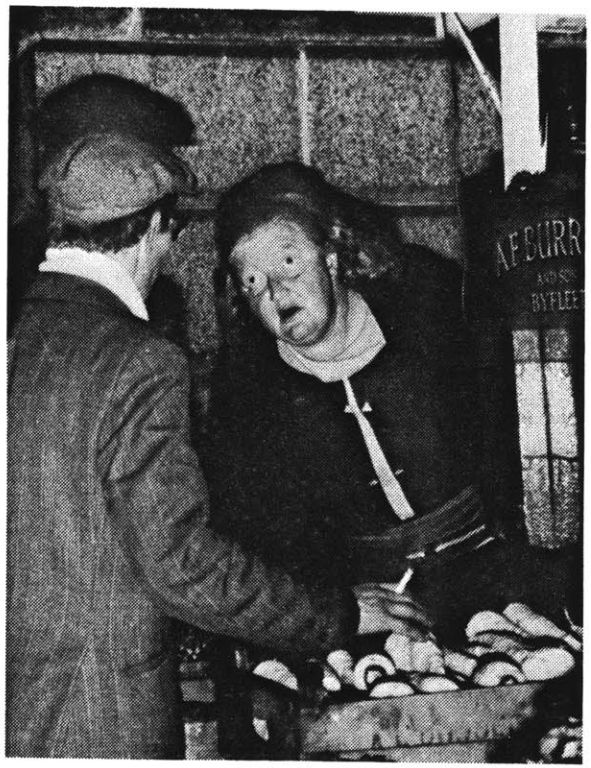
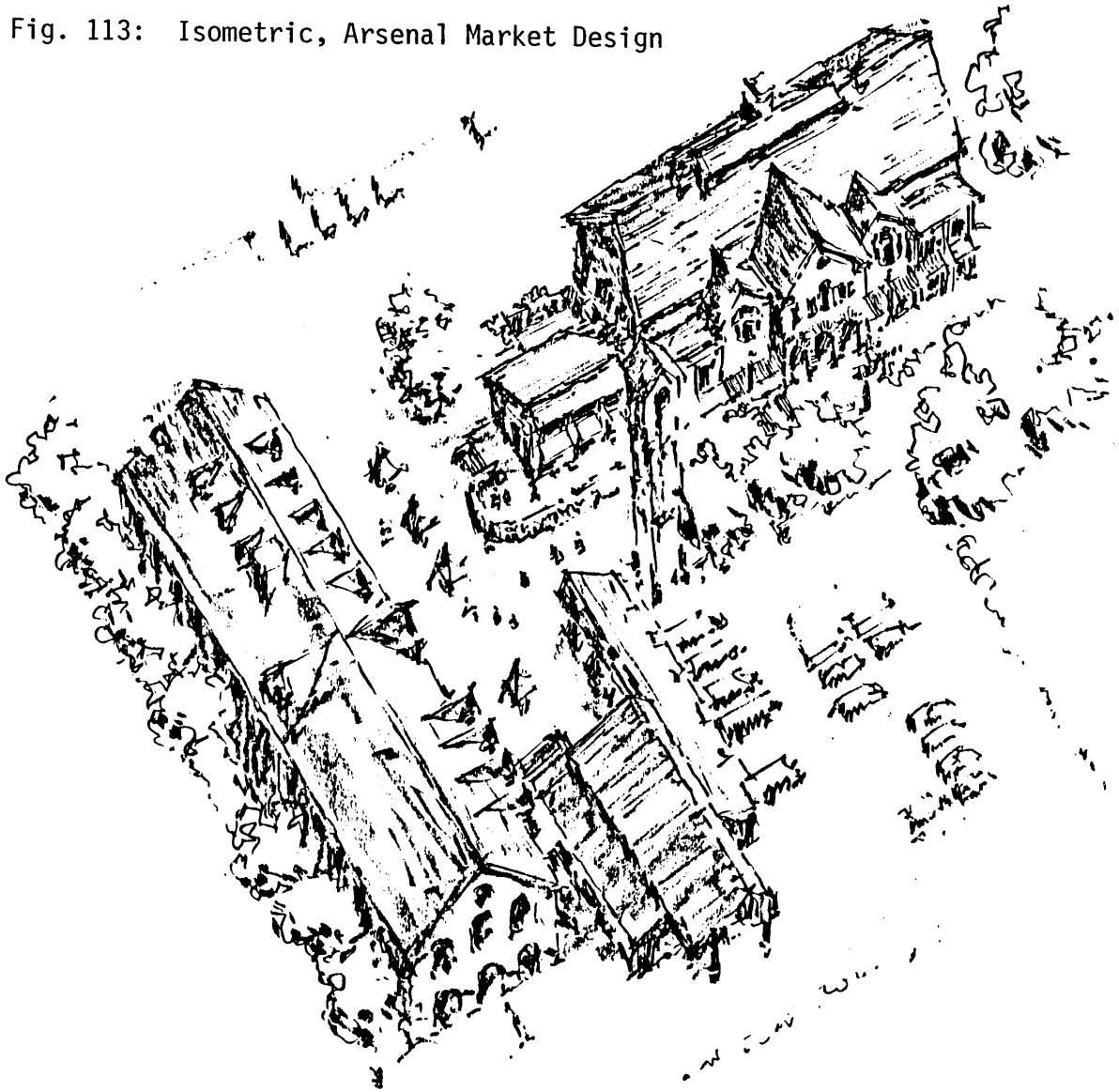


Fig. 111: A Place of Exploration, Donlyn Lyndon

Fig. 112: Merchant Exchange, Convent Garden Market

Fig. 113: Isometric, Arsenal Market Design



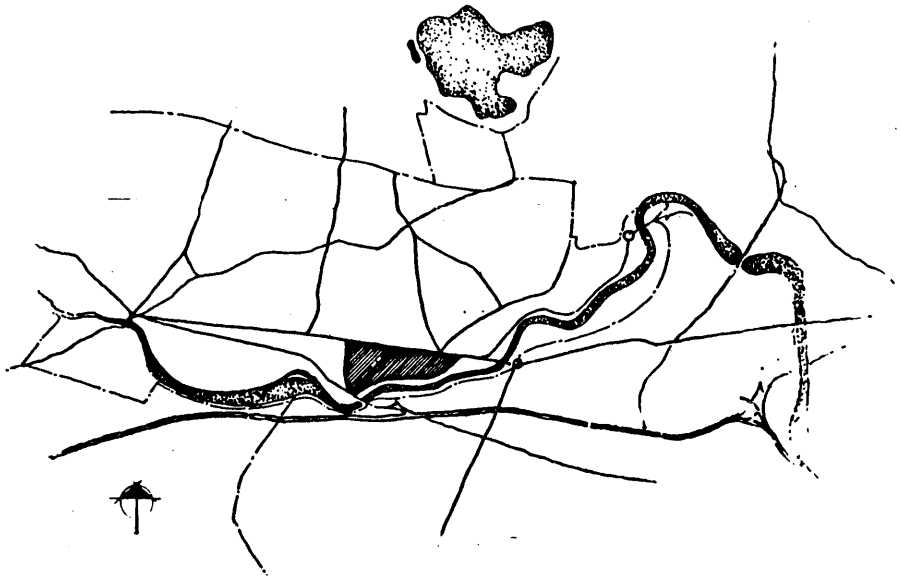


Fig. 114: Site, Watertown Arsenal

The final stage of the thesis addresses the application of the previous themes in the context of adaptive reuse. The purpose of the investigation is to discover how the themes of passage, pattern, and the 'event' perform as generators of the design.

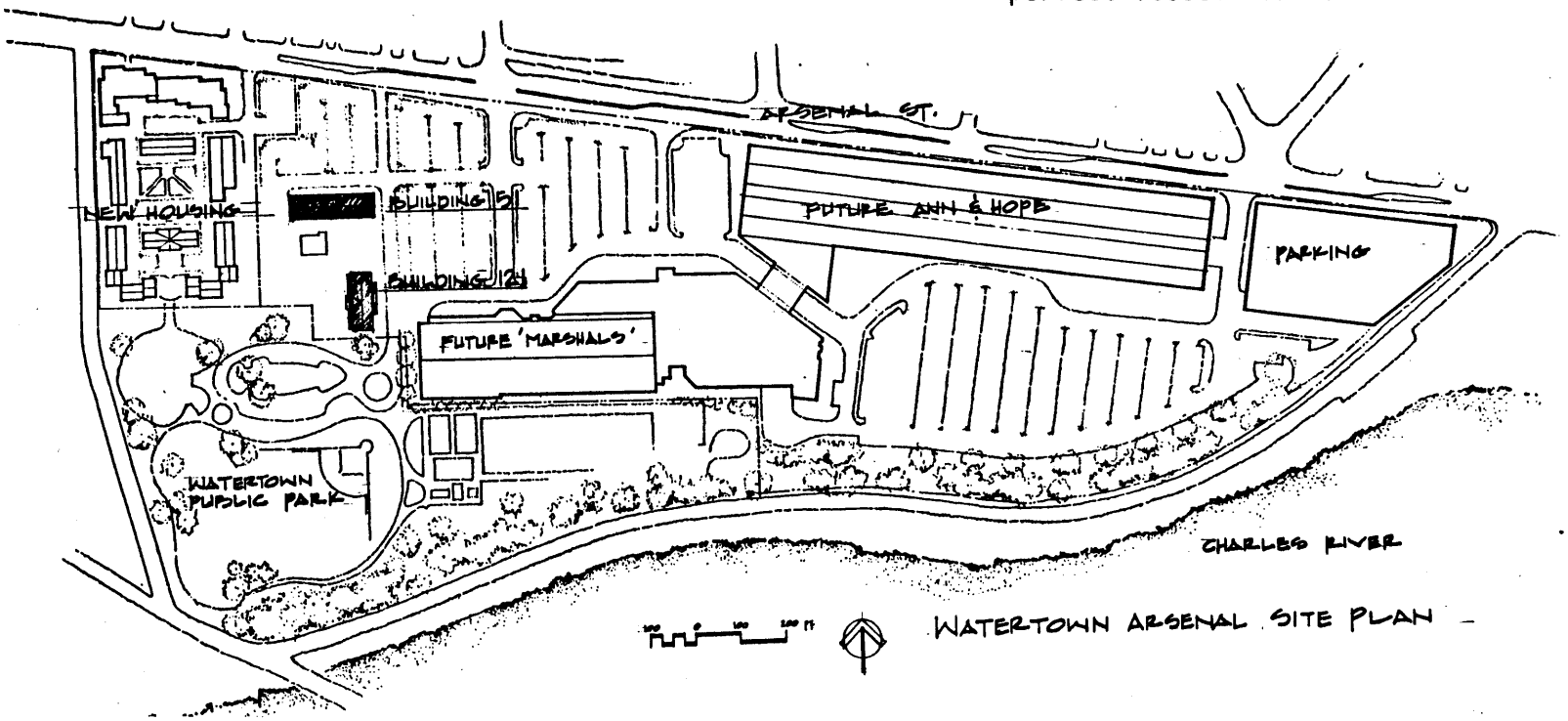
In order to accomplish this task the Watertown Arsenal Redevelopment Project was chosen as the testing site. Definition and design have been worked in parallel with each other, and like any project the product of time, purpose and persistence.

At the outset of my design exploration, I began with the following conditions:

a. an overall program for adaptive reuse in the Watertown military arsenal;
b. the selection of two buildings in the southwest corner of the site, and the context of the program for intervention;
c. a series of programmatic intentions to be investigated and developed in the process of the design.

The Watertown Arsenal is a 38 acre tract located five miles west of Boston's Central Business District. Its program includes four major retailing markets totaling over 100 shops and stores. The entire complex is tied together by a series of landscaped pedestrian streets.

The retired military installation, once the oldest munitions depot in the country, lies along the Charles River. It is occupied by a variety of warehouse structures dating back to the Civil War. Due to their design as heavy storage containers, these buildings, for the most part, remain intact and quite strong. Small exterior surface and relatively large interior volume also make them the perfect vessel for market use.

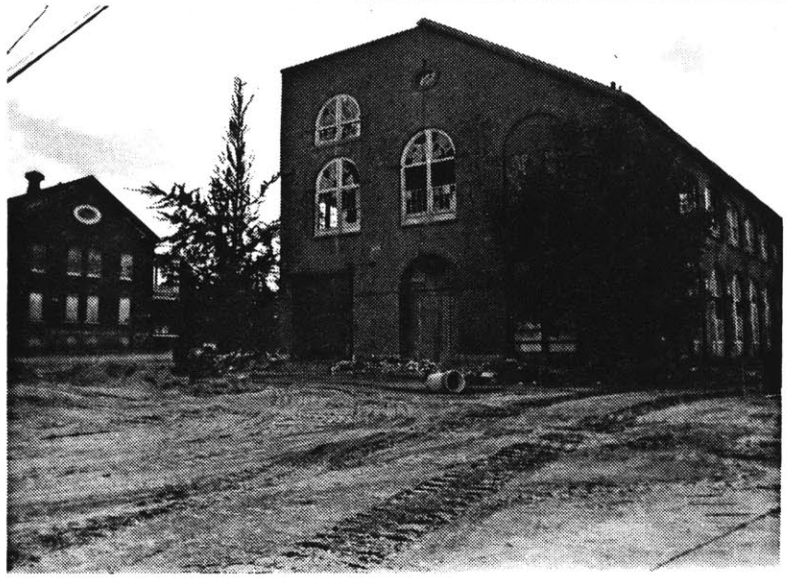


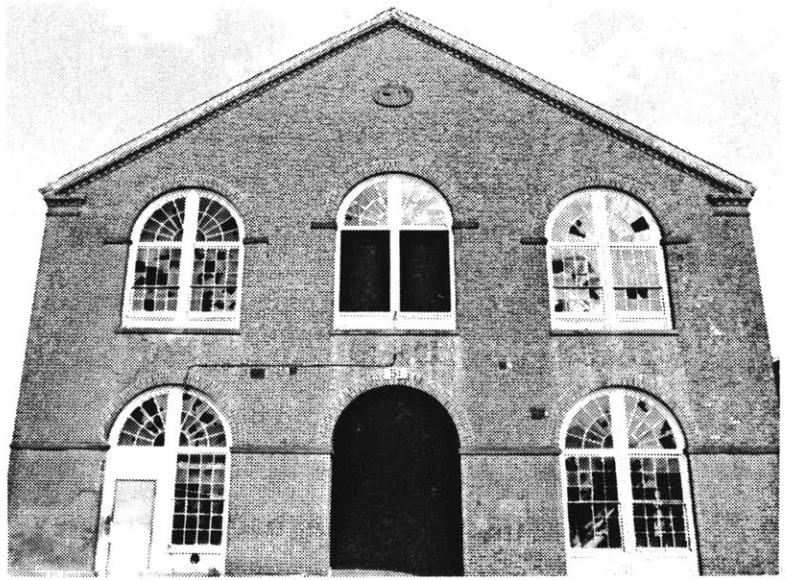
WATERTOWN ARSENAL SITE PLAN

There are several other factors which compliment the site as a prime market location. The property is situated in a strong Greek and Armenian neighborhood, where they are in favor of the market's facilities, according to redevelopment surveys. The completion of 156 units of subsidized housing adjacent to the site provides a direct connection to residential traffic. The Watertown public park, and Metropolitan District Commission Charles River Parkway also parallel the Arsenal property. And finally its ease of access and location along major traffic lines provides a more regional connection to its surroundings.

Fig. 115: Facade Building 121

Fig. 116: Portico Edge Building 121





The buildings 51 and 121 in the southwest corner of the Arsenal were chosen as the point for intervention in this work due to their size, architectural quality, and particular site associations. Both buildings are Greek Revivalists statements of the Civil War era. Their masonry, steel, and wooden structural systems provide a pleasant frame for adaptive reuse. While their presence is magnified by their distinctive location at the interface of housing, recreational and commercial use.

Fig. 117: Corner Building 51

Fig. 118: Facade Building 51

The program for intervention and adaptation includes the following elements:

Marketplace-
- a series of flexible indoor and outdoor stalls

Shops and Retail Space

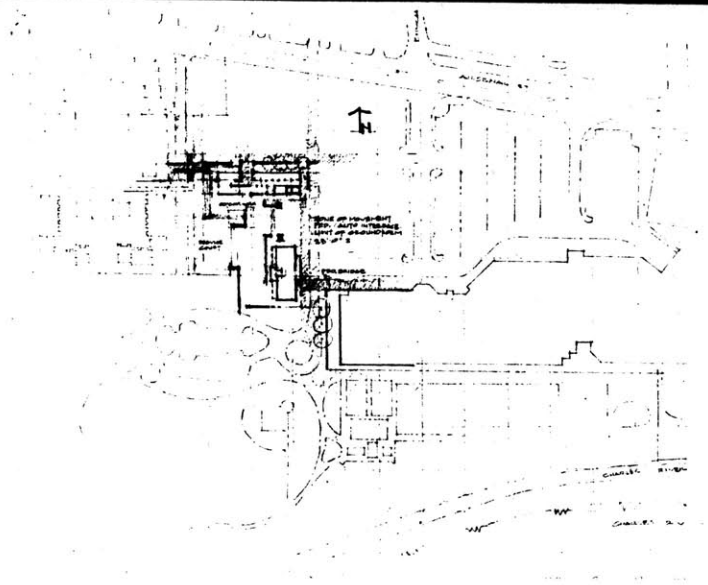
Restaurants-
- Dining
- Cafe/Bar
- Kitchen, Service/Storage

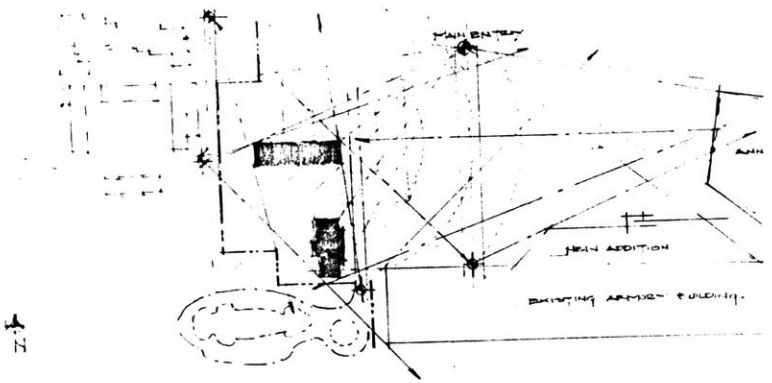
Cooperative Office Space

Watertown Community Center-
- Public Gallery
- Multipurpose Assembly Rooms
- Performing Space (Theatrical)
- Office Space

Service Cores-
- Stairs/Elevators
- Public Facilities
- Mechanical/Storage
- Refuse/Disposal Areas

Landscaped Public Plaza





Notes on the Arsenal Site

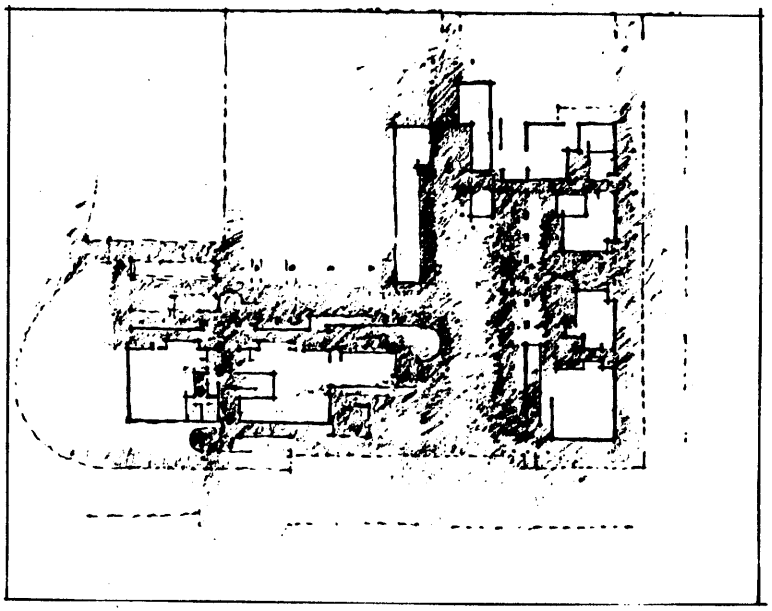
The buildings in the Arsenal site possess an enormous amount of architectural character, but due to their original intention as military warehouses, they are much too severe in their closed and present form.

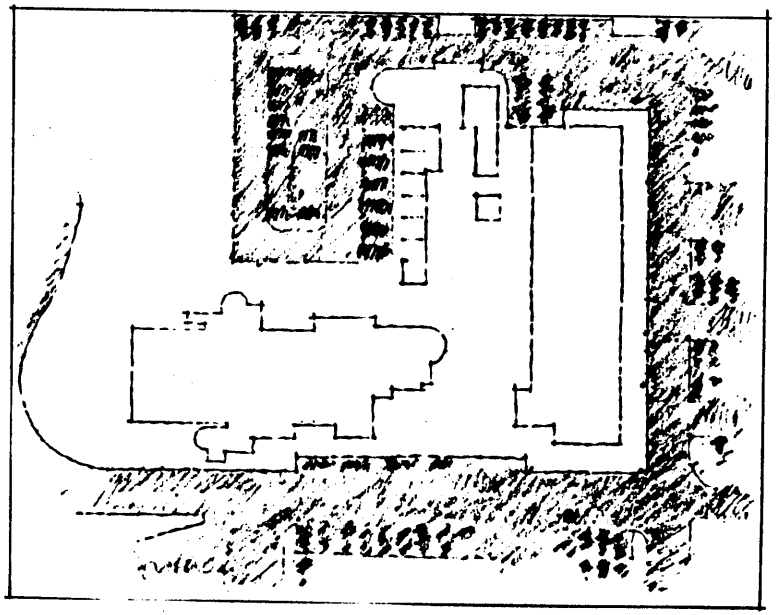
The warehouse structures stand as objects in a sea of automobile parking.

The majority of buildings are pulled back from Arsenal Street, the major thoroughfare, creating a large gap in the street wall and severing any chances for pedestrian passage at the street edge.

Fig. 119: Pedestrian Path Diagram

Fig. 120: Point of View and Extension Diagram





Conversely, the loss of physical form at the street produces a new line of pedestrian traffic along the building's edge. Passage results along the supportive surface of the building which in the present state is quite hard and incapable of inhabitation.

If market facilities are to be provided on the site they must use the existing structures as protective filters between the world of the automobile and the pedestrian. The softening of surface conditions, especially at the ground level might transform these structures into gateways as opposed to closed storage containers.

Fig. 121: Pedestrian Flow Diagram

Fig. 122: Vehicular Flow Diagram

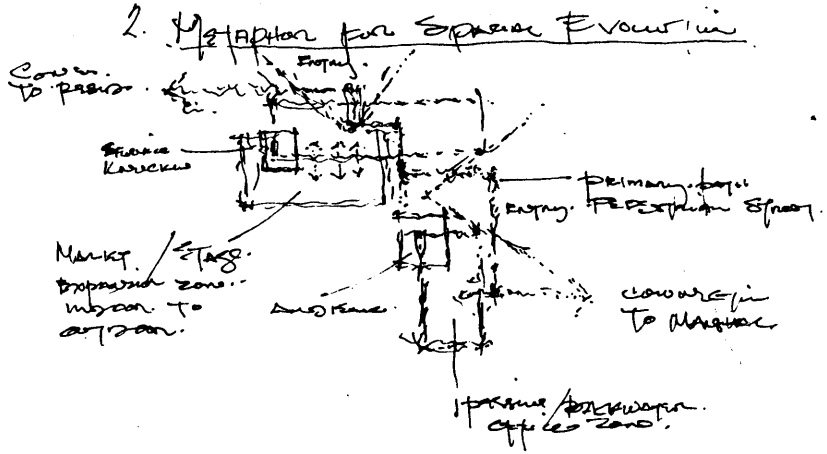


Fig. 123: Metaphoric Evolution Diagram

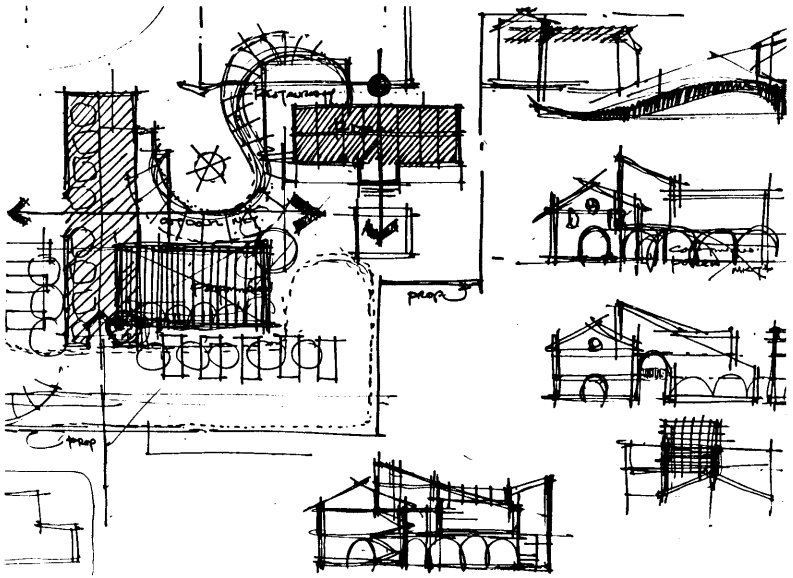


Fig. 124: Early Form Study

The new system of movements could provide the following relationships:

The placement and orientation of the two project structures defining an interior courtyard, protected from the collision of automotive traffic, though its capacity as a container of events is limited through lack of territorial definition. A new connection between the two buildings could provide the physical definition and use-framework for the market.

The interior courtyard could be considered the main zone of overlap between the contexts of both buildings and a new market form.

Separation between the two buildings creates a gateway to the court and to the project.

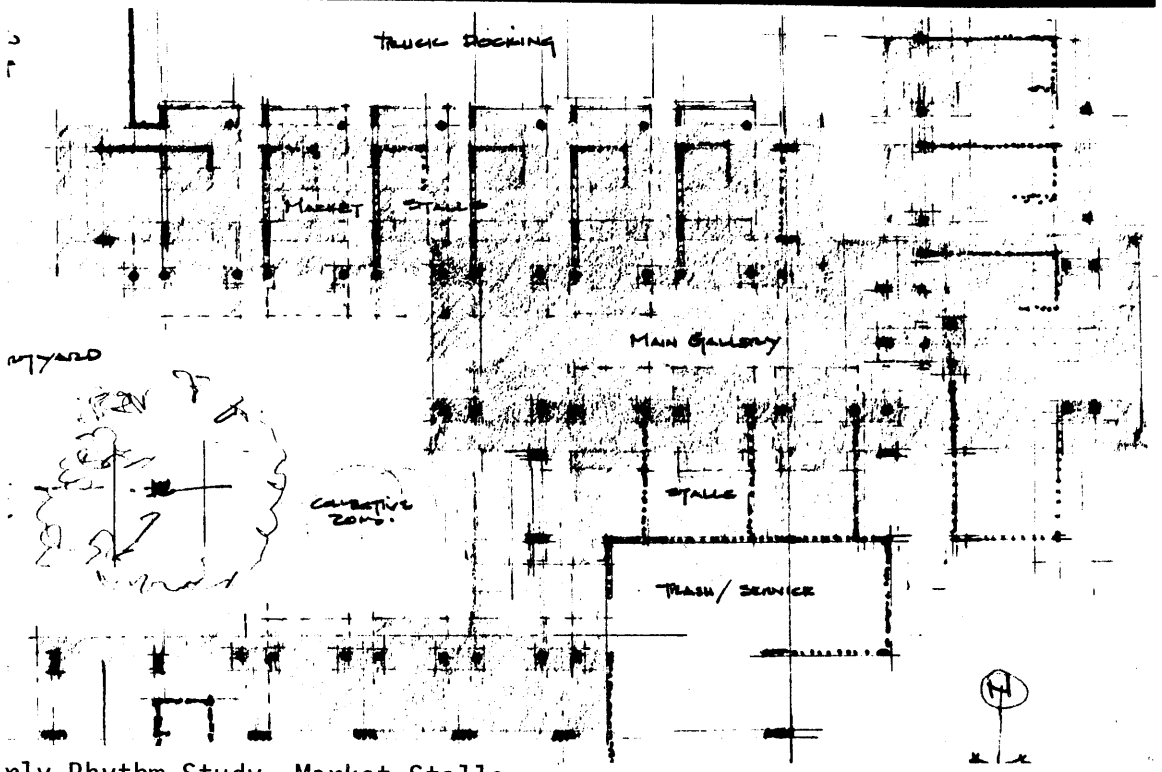


Fig. 125: Plan, Early Rhythm Study, Market Stalls

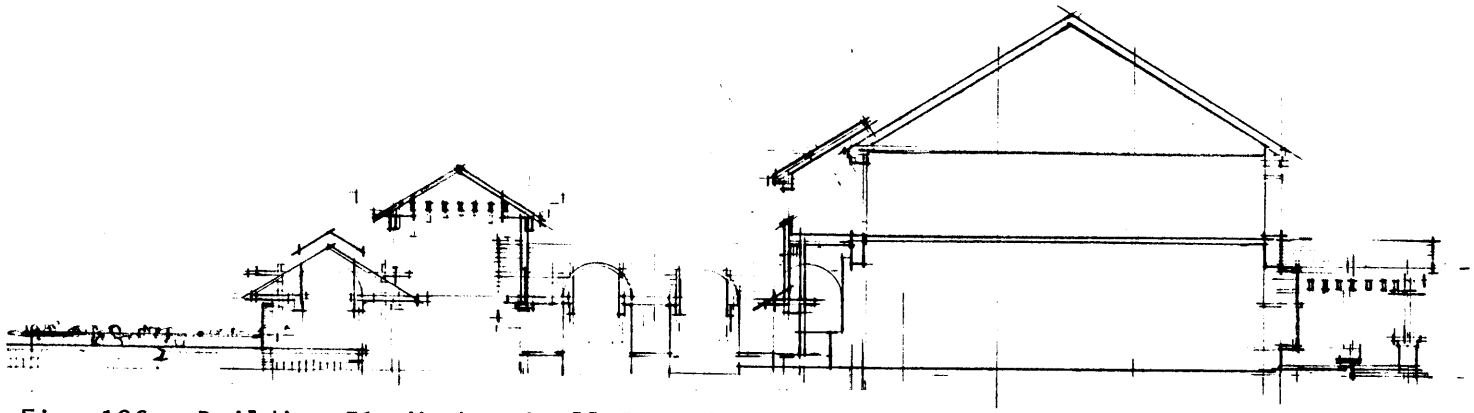


Fig. 126: Building 51, Market Stall Interface Study

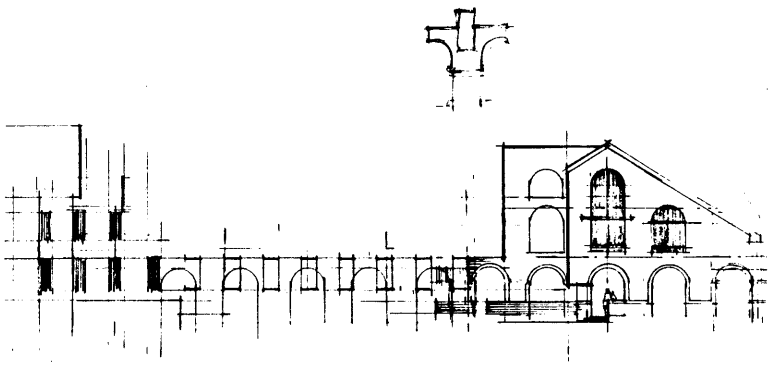


Fig. 127: Extension Through Rhythm

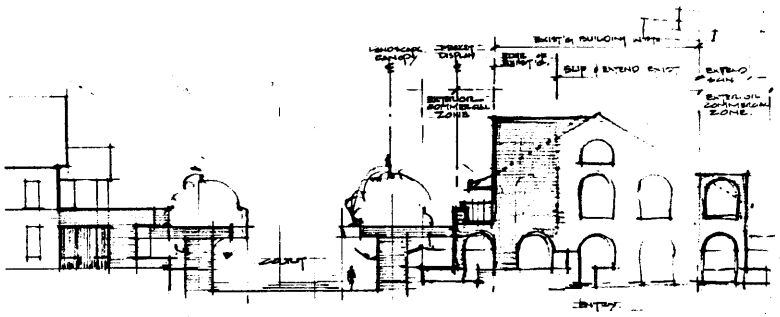


Fig. 128: Edge Conditions

Use and extension from the two buildings could be accomplished once the interior (courtyard) edges were opened.

Linkage between the surrounding generators, i.e., landscaped park, housing, and the balance of the Arsenal site might be done through a network of ground forms which provide the comfort and direction of physical form while defining a sequence of movements, pauses and collections along the path.

Connection between the internal volumes of the existing structures and the new added forms might be done through the building of light: patterns of illumination related to the direction, use and quality of space.

The structuring of an intervention was accomplished through the identification of implicit and explicit generatrices.

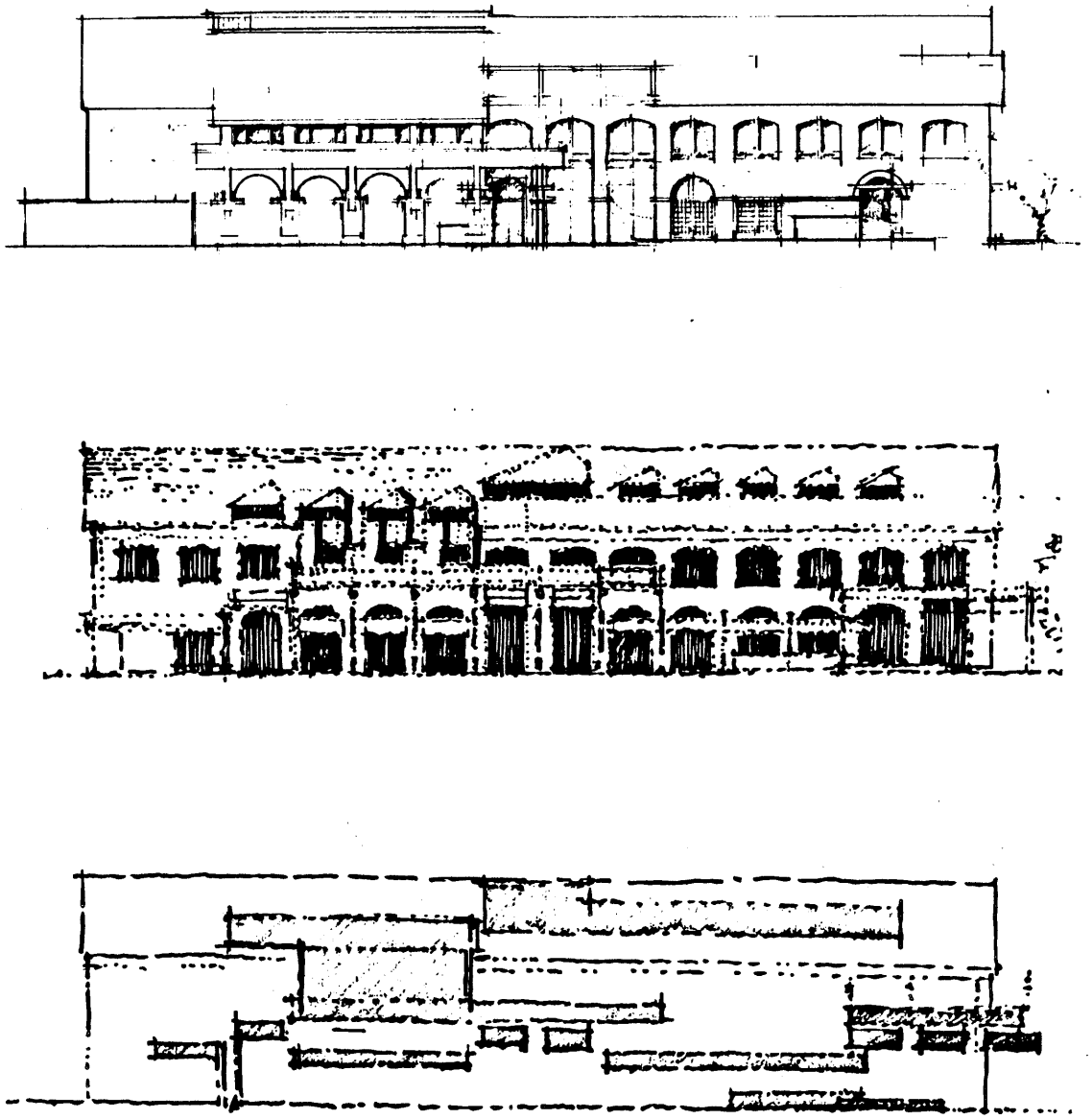


Fig. 129-131: Elevation Rhythm Studies

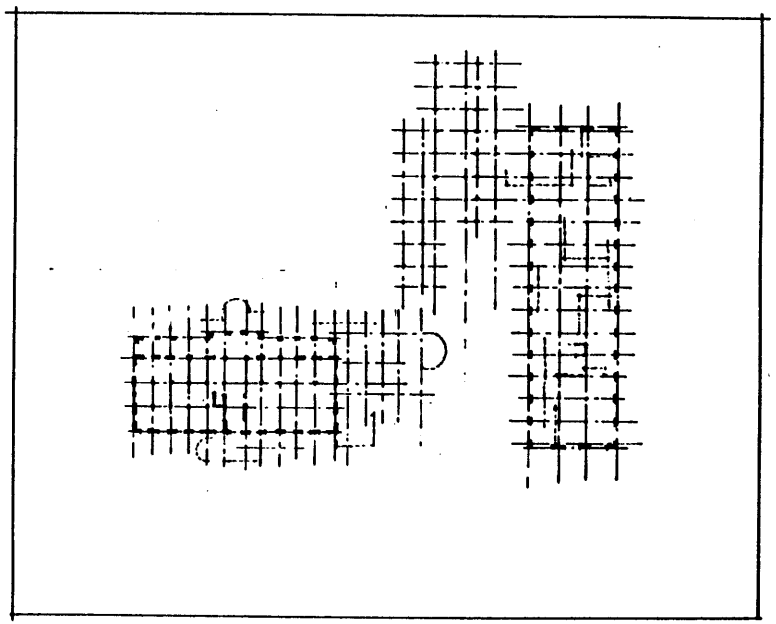
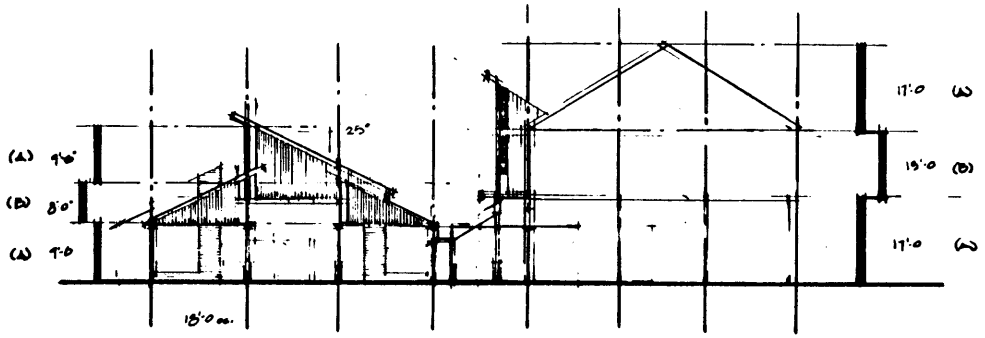


Fig. 132: Structural Matrix Diagram

Fig. 133: Elevation/Section Proportional Diagram



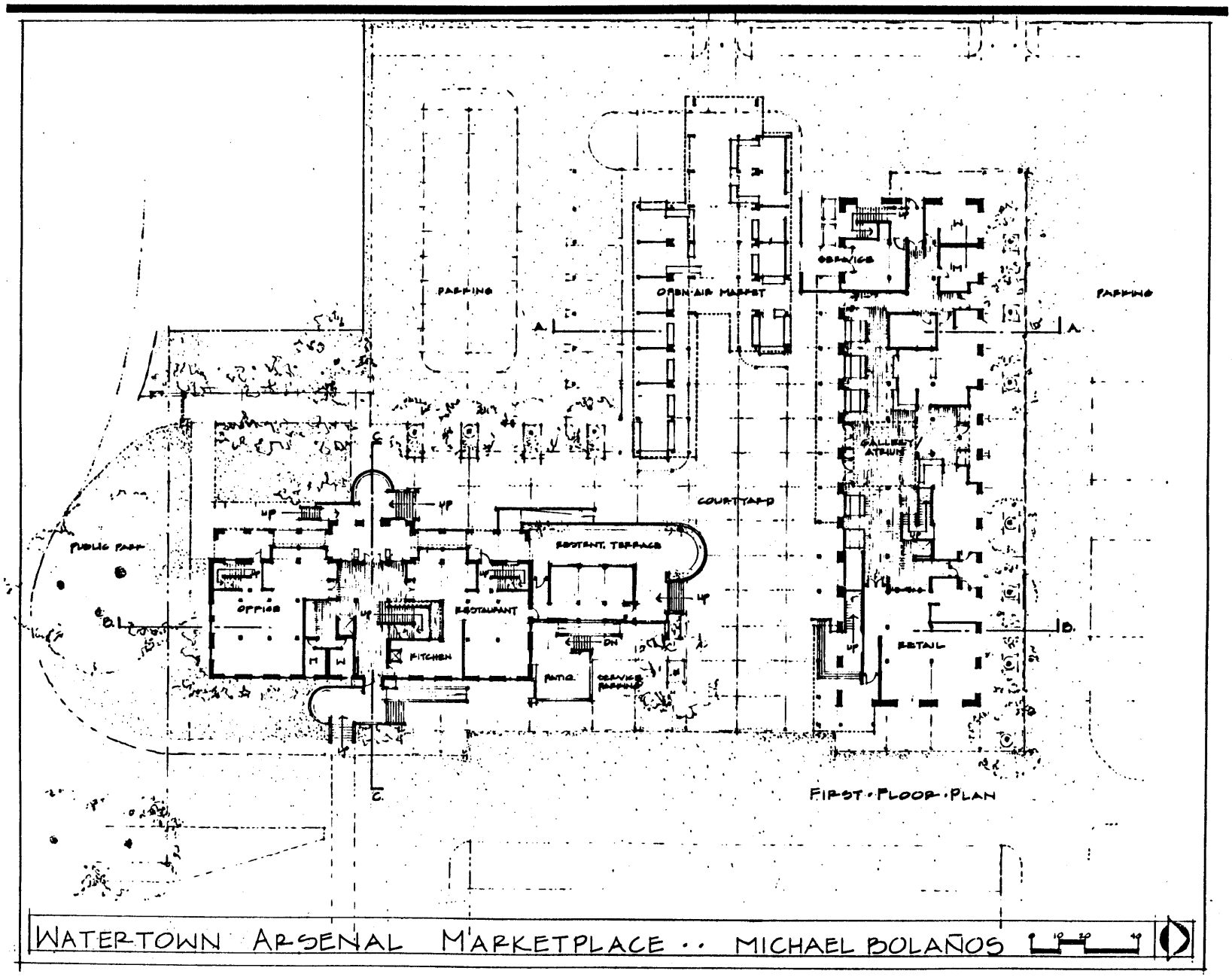
Rhythm and pattern inherent in the site were discovered through the geometry of the place.

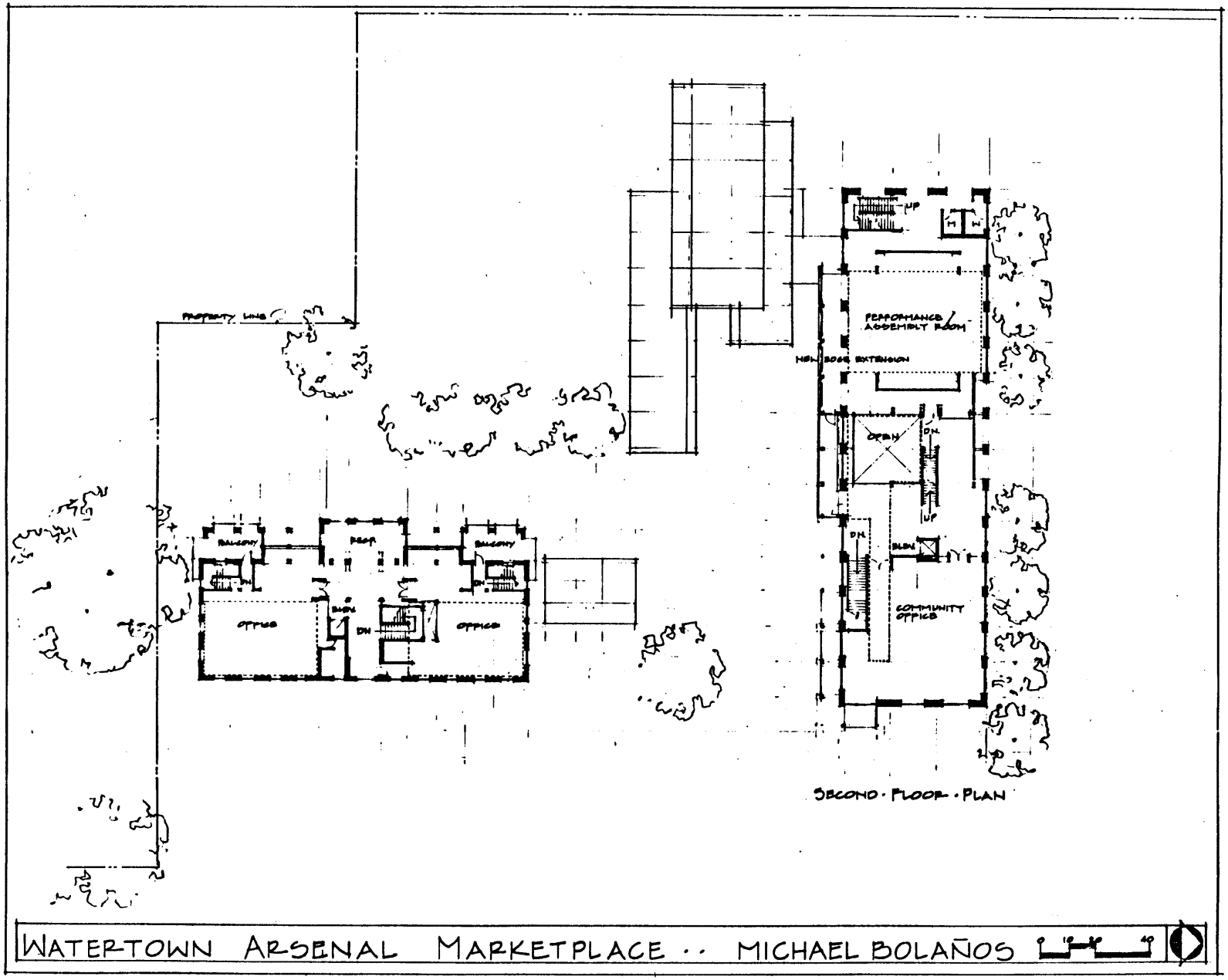
The weaving of structural rhythms, alignments and points of view were studied on the site, in the building, and in its elements.

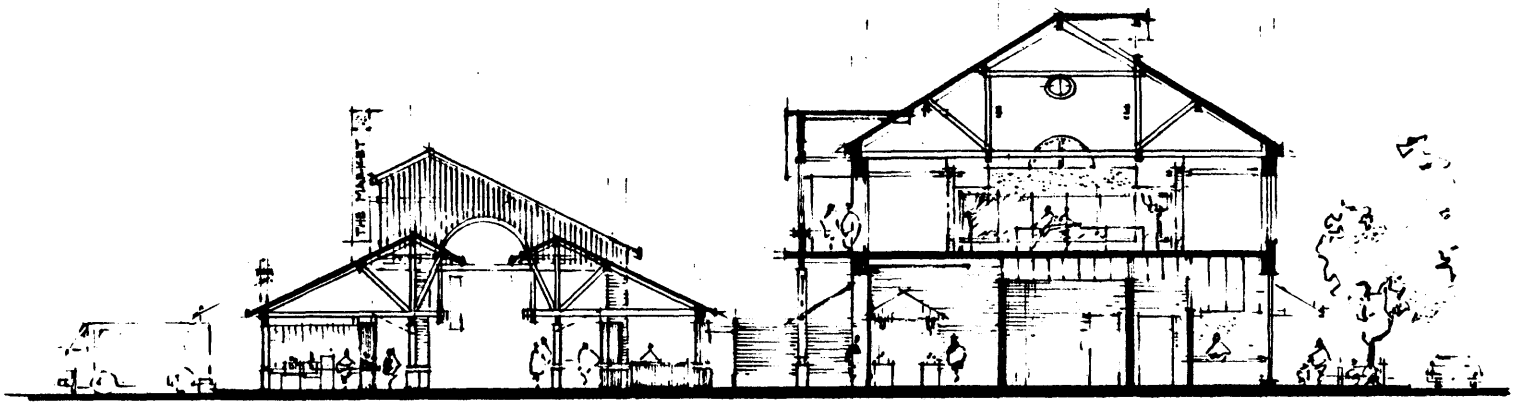
Proportion, balance and the hierarchy of importance were evaluated equally and at a range of scales.

The use of materials was in consideration of the Arsenal and its theme. Connection systems result from the reality of the material, coupled with the proportional harmonies of the place.

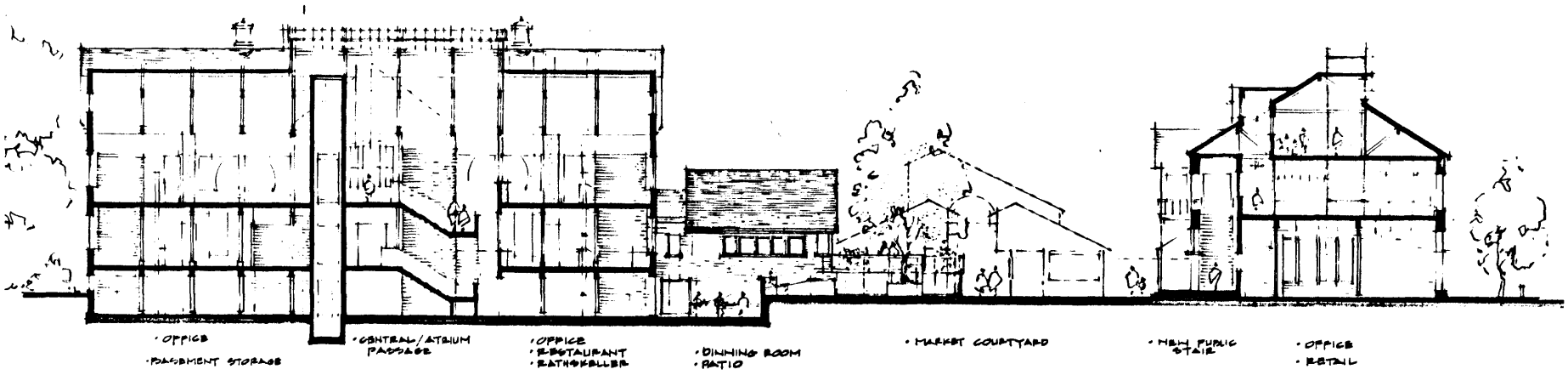
Systems of operation relate to their use while their formal characteristics are inclusive to the rhythmic scheme.


PARKING
OPEN-AIR MARKET
OFFICES
PARKING
GALLERY/ ATRIUM
COURTYARD
PUBLIC PARK
RESTAURANT TERRACE
OFFICES
RESTAURANT
KITCHEN
PATIO
SERVICE
RETAIL
FIRST FLOOR PLAN
WATERTOWN ARSENAL MARKETPLACE .. MICHAEL BOLAÑOS


PROPERTY LINE
BALCONY
ROOF
BALCONY
OFFICE
BASE
DN
OFFICE
UP
PERFORMANCE / ASSEMBLY ROOM
HIGH BOOG EXTENSION
OPEN
DN.
UP
DN.
BLDG
COMMUNITY OFFICE
SECOND · FLOOR · PLAN
WATERTOWN ARSENAL MARKETPLACE .. MICHAEL BOLAÑOS



: BUILDING SECTION A-A :



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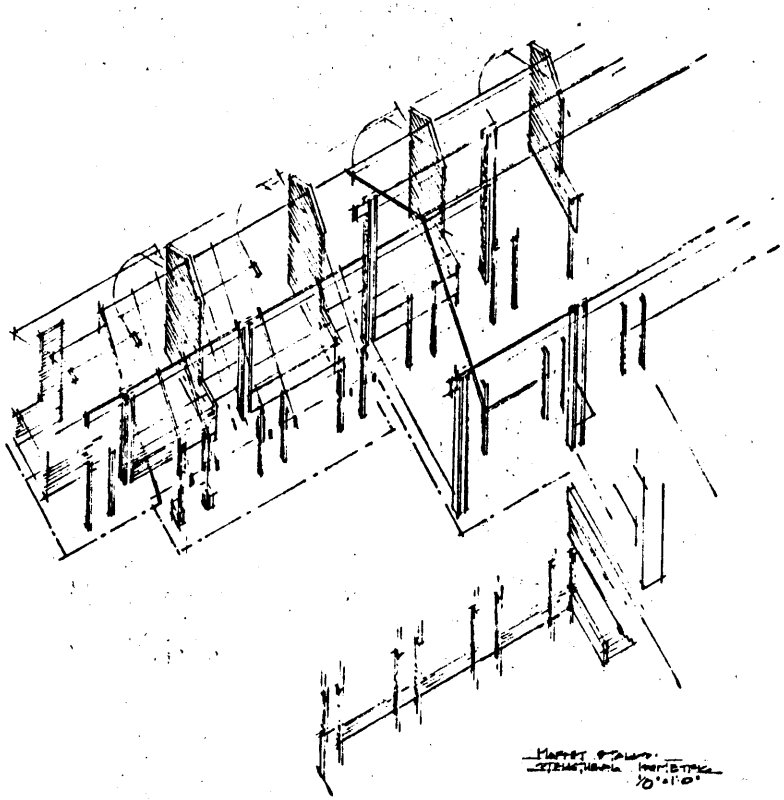


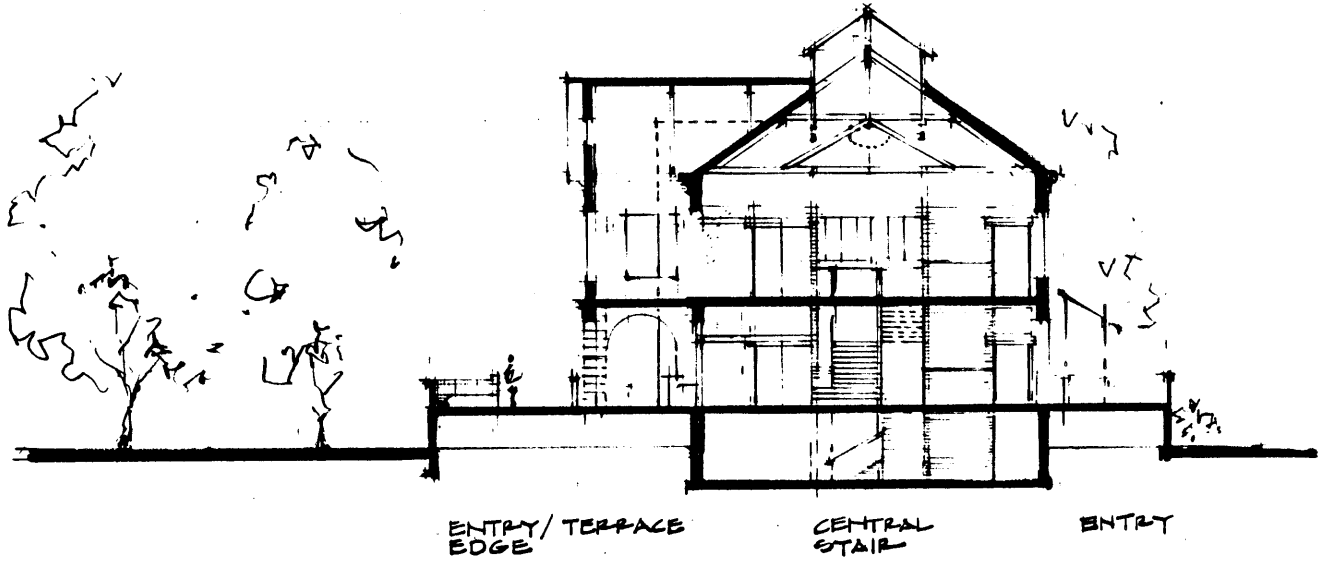
Fig. 134: Isometric, Market Stalls

The performance of the design is related to the following:

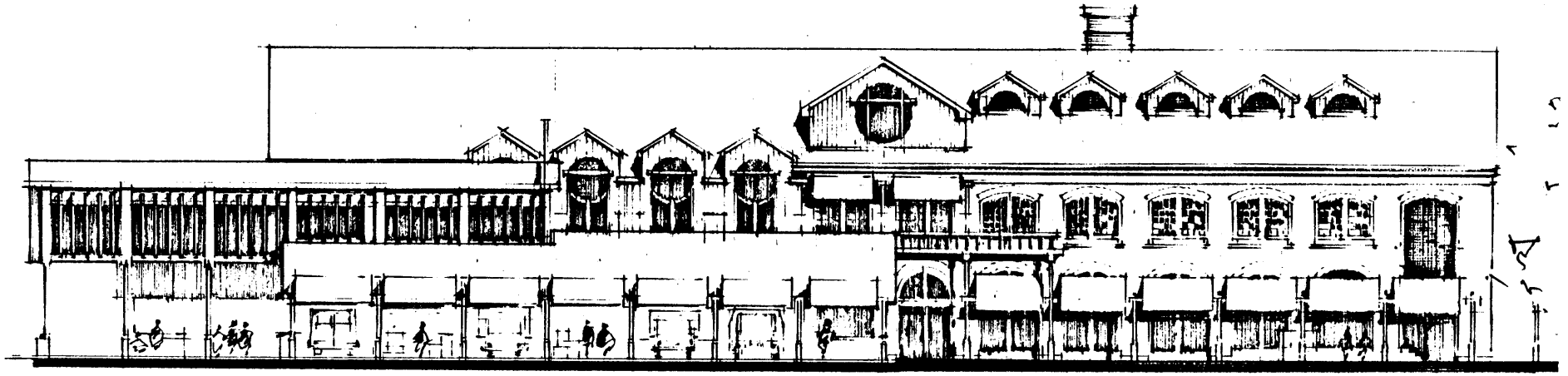
The open-air market and the courtyard serve as the most flexible containers. They are the main stage.

Extension and the addition of elements related to the community or market is possible across the courtyard and in the gallery of Building 51.

Building 51 is conceived of in the traditional sense of the market hall. Community and public interest facilities are provided upstairs, while commercial activity and exhibition space is located at the ground level. The entire south wall of the building is operational, allowing extension and interpenetration of market activities.



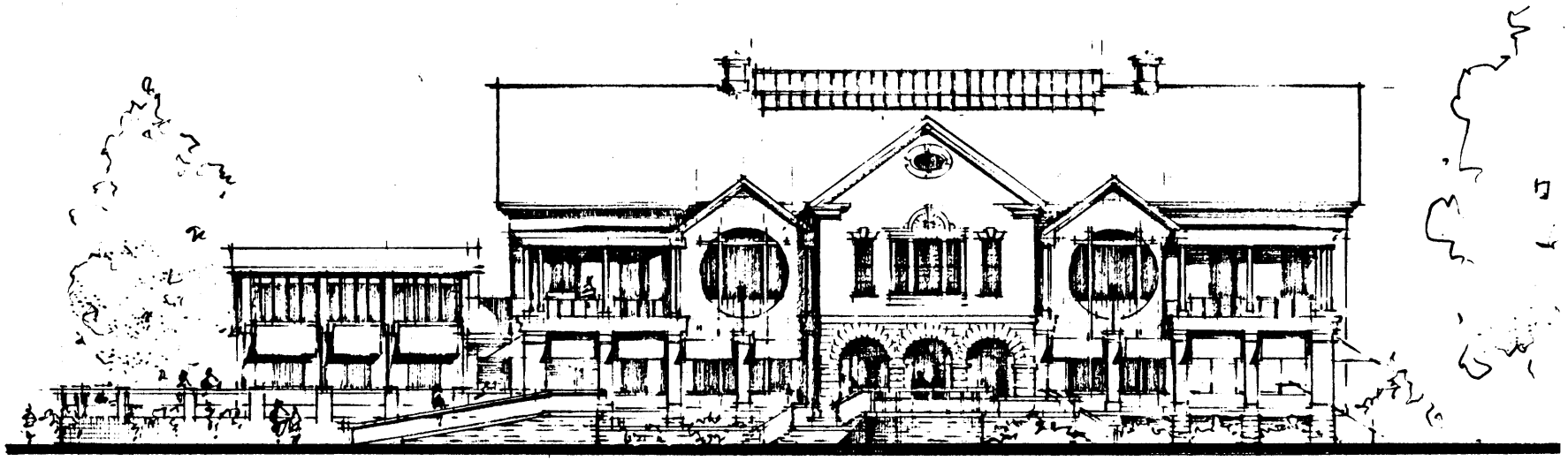
:BUILDING SECTION C-C :



:SOUTH ELEVATION BUILDING 51 :

Building 121 is considered more as a bevedere or a public point with a view. Extension and focus is directed towards the stage of the market courtyard.

Activities on the upper floors are for office use, most likely cooperative office types, requiring high public visability and minimal maintenance.



WEST ELEVATION BUILDING 121

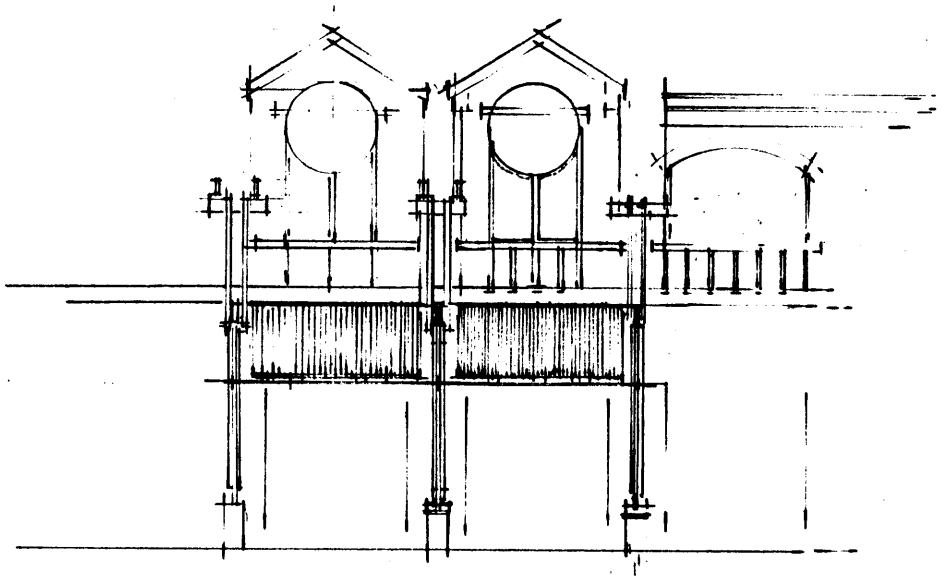


Fig. 135: Elevation Study

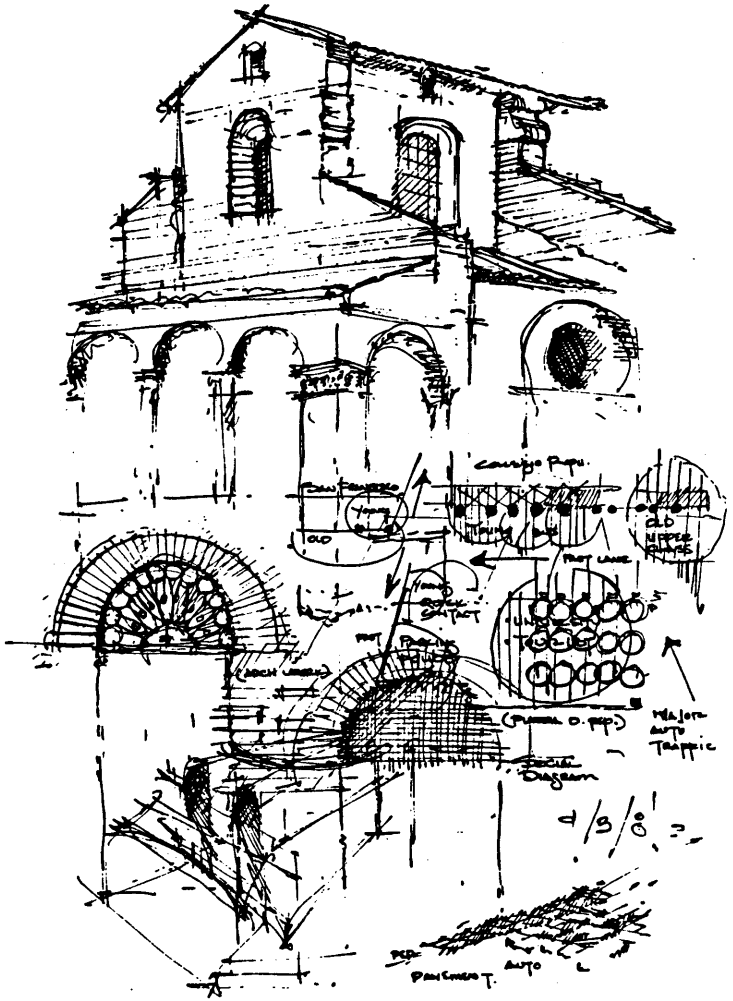


Fig. 136: San Francesco, Piazza della Republica, Urbino

The end is just the beginning.

The work presented here demonstrates the end of a phase but not of a project. During the course of this thesis I have set about building a notebook of principles and design generators. Time and study await their clarification and implementation. And it is my hope that through application the 'choreography of architecture' may one day become a working methodology in the building of the architectural 'event.'

7. FOOTNOTES

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