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RICE UNIVERSITY

ABSTRACTION AND REINTERPRETATION IN ARCHITECTURE

BY

FENG XU

A THESIS SUBMITTED
IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE

MASTER OF ARCHITECTURE

APPROVED , THESIS COMMITTEE:

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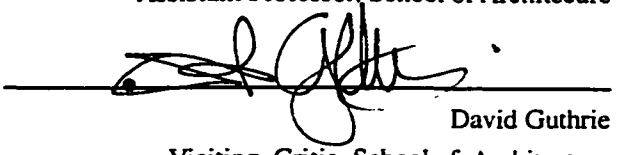
Assistant Professor, School of Architecure



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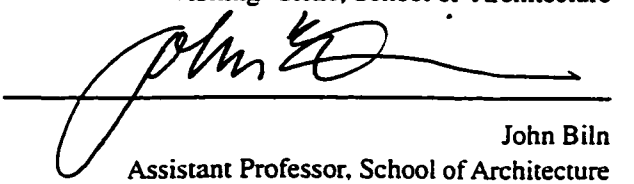

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HOUSTON, TEXAS

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ABSTRACT

ABSTRACTION AND REINTERPRETATION IN ARCHITECTURE

BY

FENG XU

Design is a process of abstraction and reinterpretation of the world. Not only the physical world, but also the mental world. They are being abstracted, processed, transformed and reinterpreted in the design. The purpose of design can be understood as figuring out a new way to integrate the characters of the world. Our new understanding of the transitory world constantly requires the new integrity of the artificial world.

ACKNOWLEDGMENTS

Thanks to the School of Architecture, Rice University, at which an ideal environment for free thinking is provided, exploration and experiment of the unknown world are encouraged.

Thanks to the members of the thesis committee, Fares el-Dahdah, David Guthrie and John Biln. But for their accurate discretion and enlightening critics, uh, the project would have fallen into fragments and lost its direction.

Thanks to all the friends, both in US and China, Lucia, David, Joe, Brett, Brain, Qiao, Fangtieyin, Big Chen, Yong-Ho, Li-Jia...more than I can count, their valuable suggestion and generous help make the project possible.

Finally,

Thanks to the backing of my wife.

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ABSTRACTION

It is a relative concept. The scope of abstraction varies with different minds. One subject could be too abstract to someone and too concrete to the others. The reason lies on the fact that abstraction is always close to unknown. Abstraction is the connection between unknown and known. It is also the antonym to concreteness and solidity. There is a remarkable difference between abstraction and ambiguousness or obscure. Ambiguousness is based on fancy, metaphor, imagination and irrationality. Abstraction is based on logic or the interrelation or sequence of facts or events. Logic and reason is the criteria to carry on abstraction. Abstraction lacks definite form, none or many concepts can be developed on the basis of abstraction.

ABSTRACTION IN DESIGN FORMS

The abstraction of design forms is in fact the abstraction of human himself, or to be specific, it is the abstraction of perception and consciousness. When what is abstracted is applied to the organization of forms, the final form will reflect the process of deliberation. As a result, the designed forms become legible to others. When the abstractor's mind has covered the most breadth of the current knowledge, the result of his thinking will extend and broaden the scope of forms, a brand new form could be created.

TWO KINDS OF EXPERIENCE.

Both the collective experience and personal experience are involved in the process of abstraction.

The collective experience is based on human's fundamental requirements, for example, the requirement for safety. It is also related to similarity and inevitability of urban life.

The collective experience is the barrier to creativity. Only the works that has exceeded

the collective experience can be entitled as creative work. Otherwise, that work can only be regarded as replication and imitation. Apparently, it is rare to find complete ascendence to collective experience. Once it did appear, we call it a genius work. Personal experience is valuable to creativity, it is crucial to the diversity of creative works. The peculiarity of the experience enable the peculiarity in the process of abstraction, so that the turn out is very distinguished.

THE TOOL TO ABSTRACTION

Logical simplification is a tool can be used . It has been conventionally used in science. A complicated object could be analyzed and divided into elements, the relationships between each elements, elements and entirety, entirety and environment. If the relationship can be viewed as element, another layer of relationship will be discovered.

THE PATH OF ABSTRACTION

The path of abstraction could be classified as two categories. On one hand, take modern physics as an example, when physics has developed from research on relationships of weight and velocity to Relativity, abstraction is no longer rest on layers of perception, it has deepened to where the rational speculation could reached. The means for people to recognize the world is no longer based on the guidance of perception to speculation. However, it became opposite. An assumption is created by abstract thinking, it is then examined by well-designed experiments. On the other hand, the abstraction in design is along a different path. It leads to the field of philosophy study. The abstraction in architecture would rather be rested on the regime of metaphor, sensitivity, imagination etc. Both scopes are always in the process of accumulation and expansion due to human's restless creativity.

PERFORM ABSTRACTION IN ARCHITECTURE

The process of abstraction could be carried on in the program of architecture. It includes the analysis of the usage of the whole building and the usage of each part. The purpose is to explore the various possibilities to reorganize an usual program. make it as dramatic as possible. Human's behavior is taken into consideration for reorganize the existing program. It is highly addictive to predict the human behavior.

The abstraction of architecture can also be carried out in forms. The meaning of forms is abstracted first. Meanings come from history. The replication, combination and variation of form has actually become the manipulation of various meanings. The logic between meanings is the basic logic for transformation of form. Meanings make forms to be a language, ambiguous but profound.

Other implication can also be abstracted from geometric characters of form and relations between forms. These are universal implication to human's perception, as introversion implied by enclosure.

INTERRELATED FORMS

There is no independent form . It is impossible to extract the meaning from one form without affecting the surrounding forms. The recognitions of form relationships is based on logic. The abstracted relationships can be re-abstracted to another layer. The fundamental relationships of form can be classified as contrast, harmony and obscurity. The abstraction of these relationship is completed by perception and experience. Relying on the sensitivity of mind, we can explore the form relationships that already latent behind the visual world. It is amazing that the application of the abstract relationships can make the designed form very impressive to the most numb perception. If we look at the generated form without careful speculation, it is just like a black hole, we know its existence without knowing why it exists.

EVANESCENCE OF BORDER.

The consequence of abstraction is the vanish of limitation, definition and borders. Borders has always been a hinder for thinking. (For someone , it's probably a safety harbor.) The deeper the abstraction is, the less borders could exist. The evanescence of borders will also deeper the abstraction. It creats a vast space for manipulating thoughts.

REINTERPRETATION

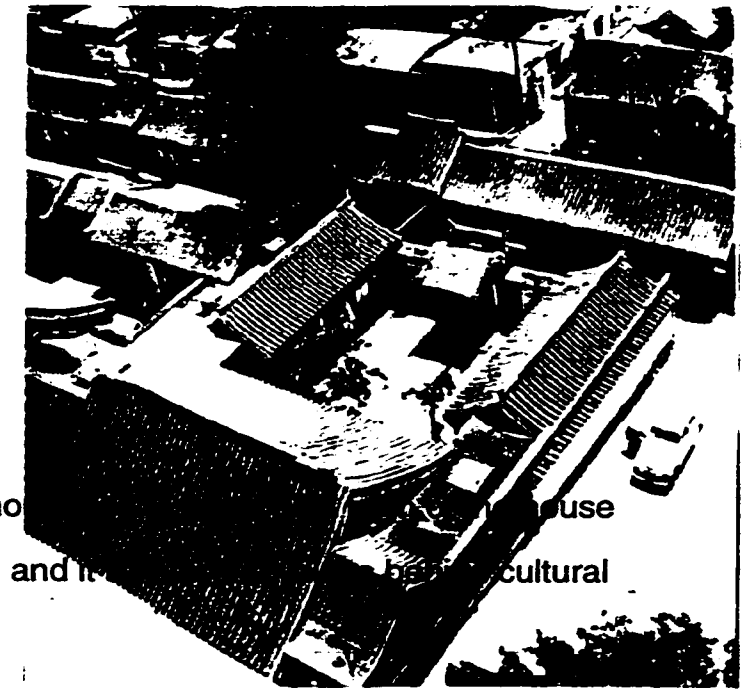
Creativity is regarded as reinterpretation because nothing is original. The vanished border provide a space for reinterpretation. The completeness of this process is marked by its coherency to the external medium and the clarity of its internal logic. These two aspects are obtained on the level of abstraction. The characteristics of the subject, no matter it is facial or essential, are discovered during the process of abstraction. It seems like unfolding a wrapped package, layer by layer, the internal structure is exposed, it's undoubtable that this process is infinite. When several kinds of subjects are being abstracted, the definition of each subject disappeared, the characters used to distinguish one object from the other vanished, it become possible to recombine different character, to find out new logical relationship for each element, the new definition comes into being. The new border appeared to distinguish the new beings. Whether the forms of these new items is reasonable or not, depending on the strength of the new logic, ironically, it is the nonobjective standard that could judge a logic is convincing or not, the standard is directly related to collective experience and personal experience. So the judgement becomes a psychological game, the key in the game is that the designer himself is highly attentive to engage in this game. There is a tension between him and the audience. The designer need to manipulate the tension to an appropriate extent, so that his creativity could be partially understood by others, meanwhile, partially misunder-

-stood by others.

When it comes to the recombination of abstract concepts, this new combination is always rely on some principles. For example, the tendency for similarity, or the tendency for contrast. The principles make these combination become dramatic and rational.

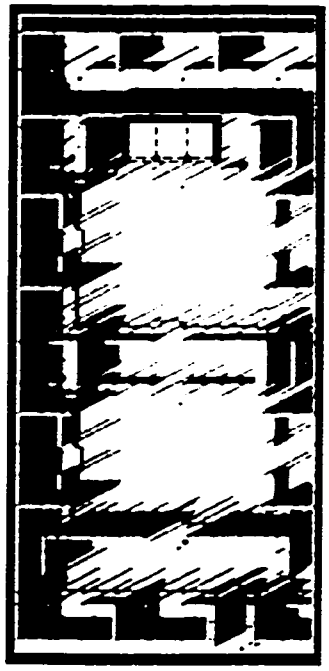
IN A WORD

The design process is a process to abstract and reinterpret the subject. The collective experience and personal experience are always involved and challenged. By the power of reasoning, the result of design is always a reflection of the external coherence and internal logical structure of the subjects.

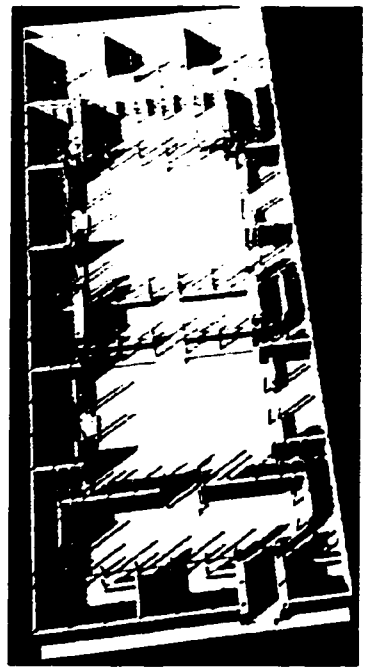


The prototype has a history of tho use
has been refined by generations and it cultural
and traditional phenomena.

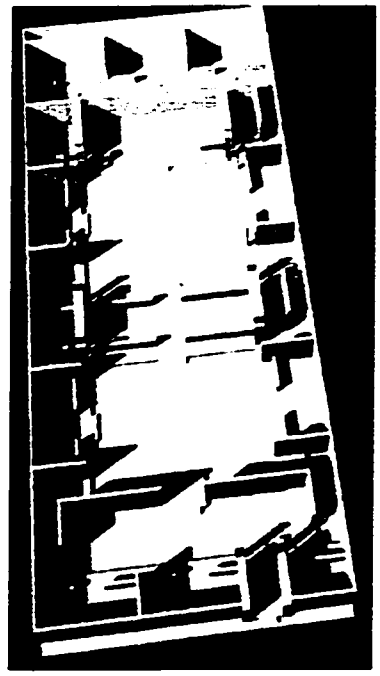
ANALYSIS OF THE PROTOTYPE OF COURTYARD HOUSE



PLAN--- traditional courtyard house

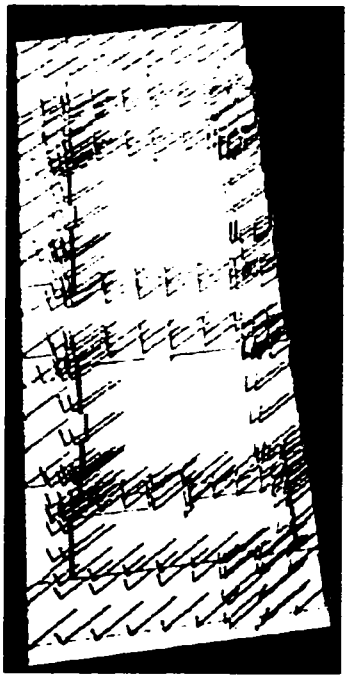


SYMMETRY---the stratified space with axis.

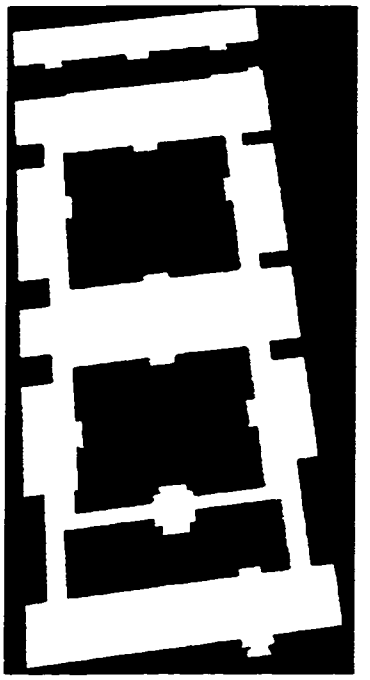


PARTITION-- brick wall and wood panel door/window

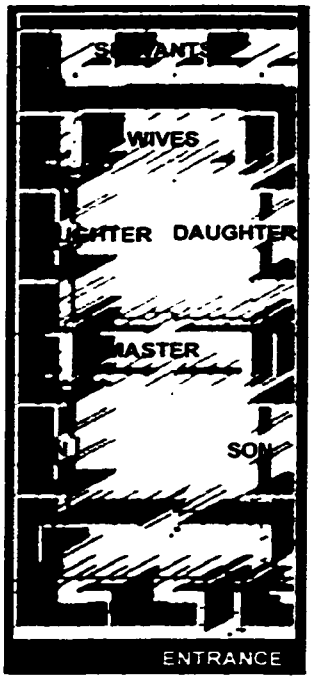
OUTSIDE---The courtyard house is enclosed by a continuous wall with few small windows. INSIDE--- the courtyard house becomes a fusion of different spaces, activities and programs.



STRUCTURE--- wood column and beams

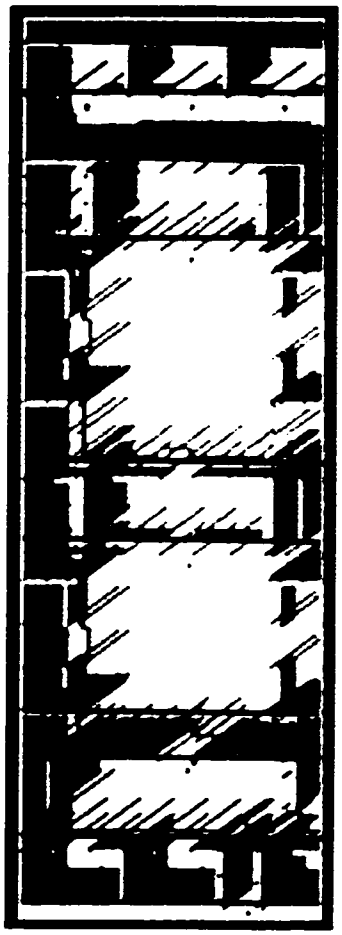


TERRACE--- the subtle division of inside and outside, individual and public, life and nature.

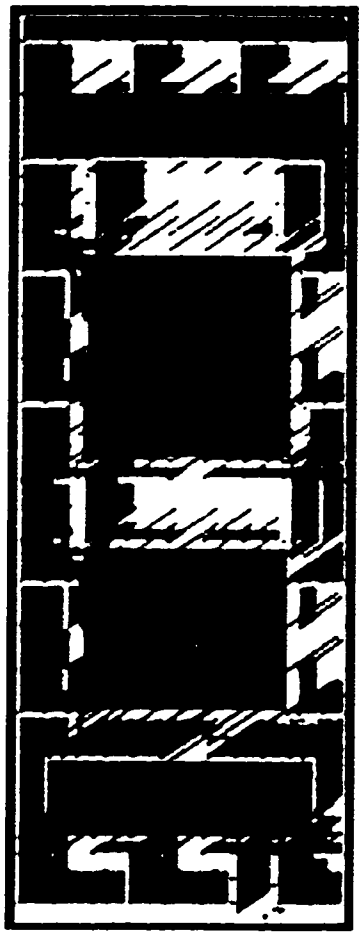


TERRITORY--- the hierarchical family

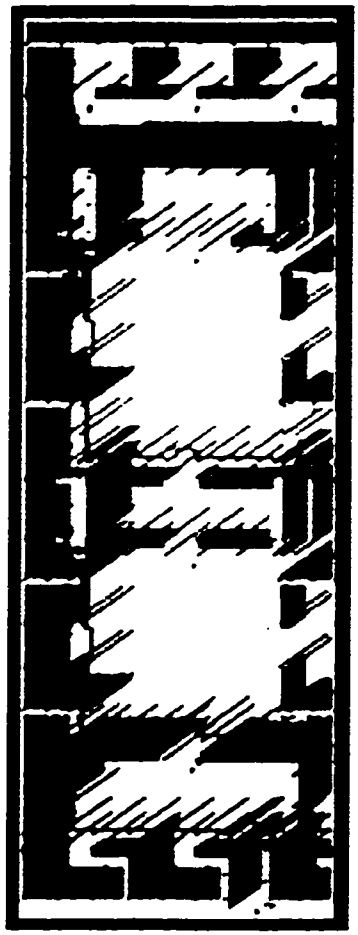
The fusion of spaces is realized by the movement of flexible partitions.



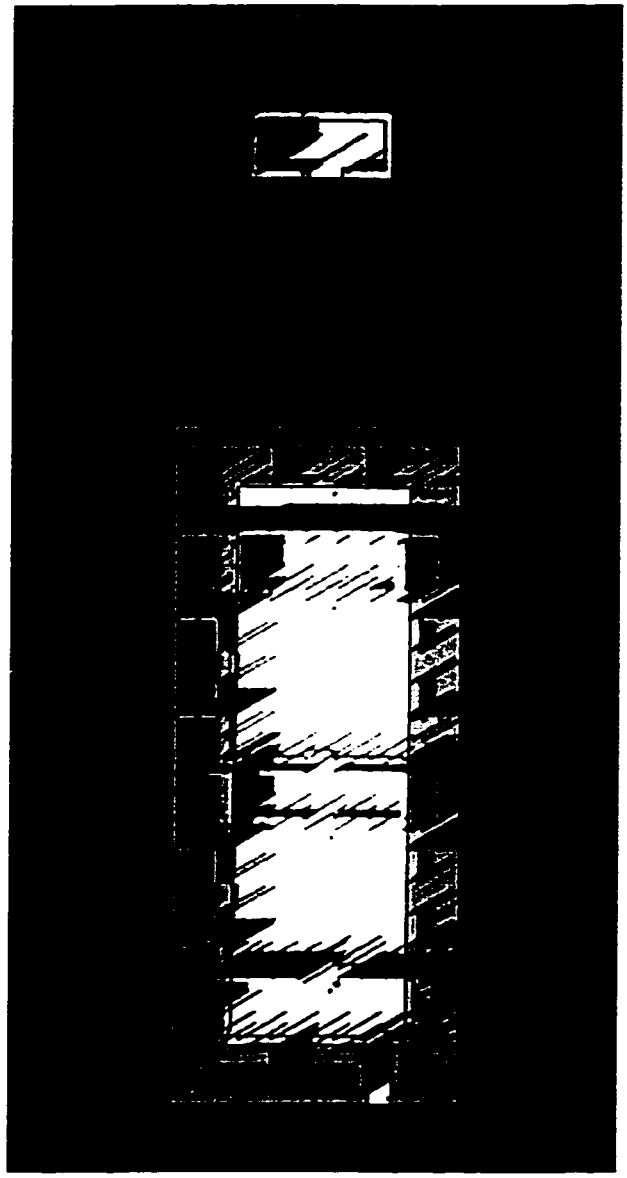
Layer--- stratified space by gradation from publicity to privacy



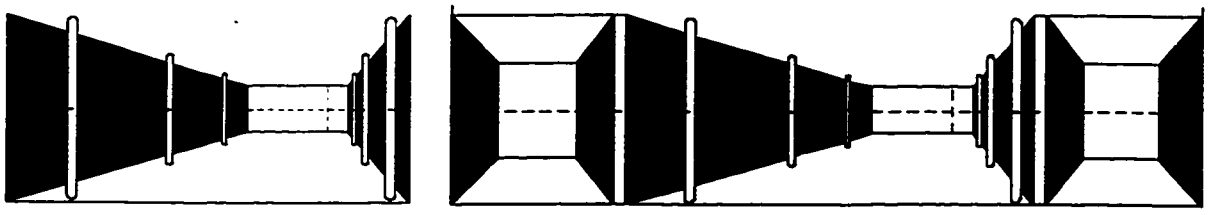
Courtyard--- the living room for whole family.

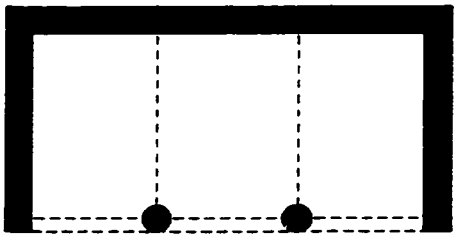


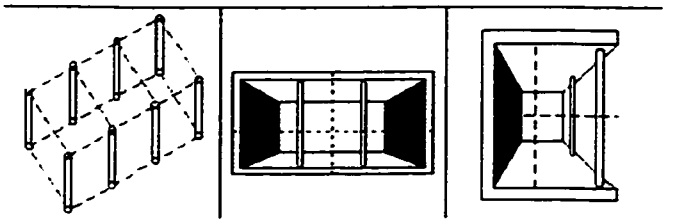
Dual Wall--- the living room for whole family.

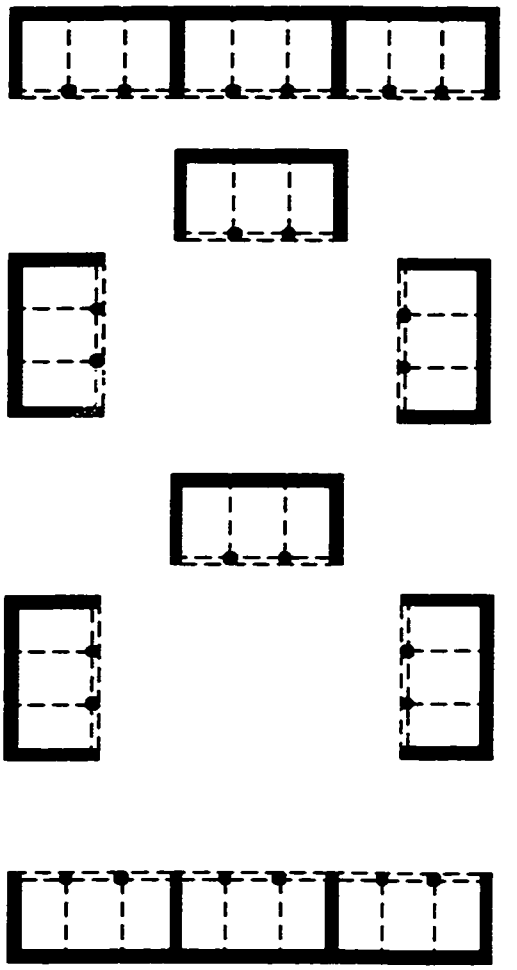


THICK WALL---the similarity
of a room and the whole
house is revealed by shading
the peripheral rooms.



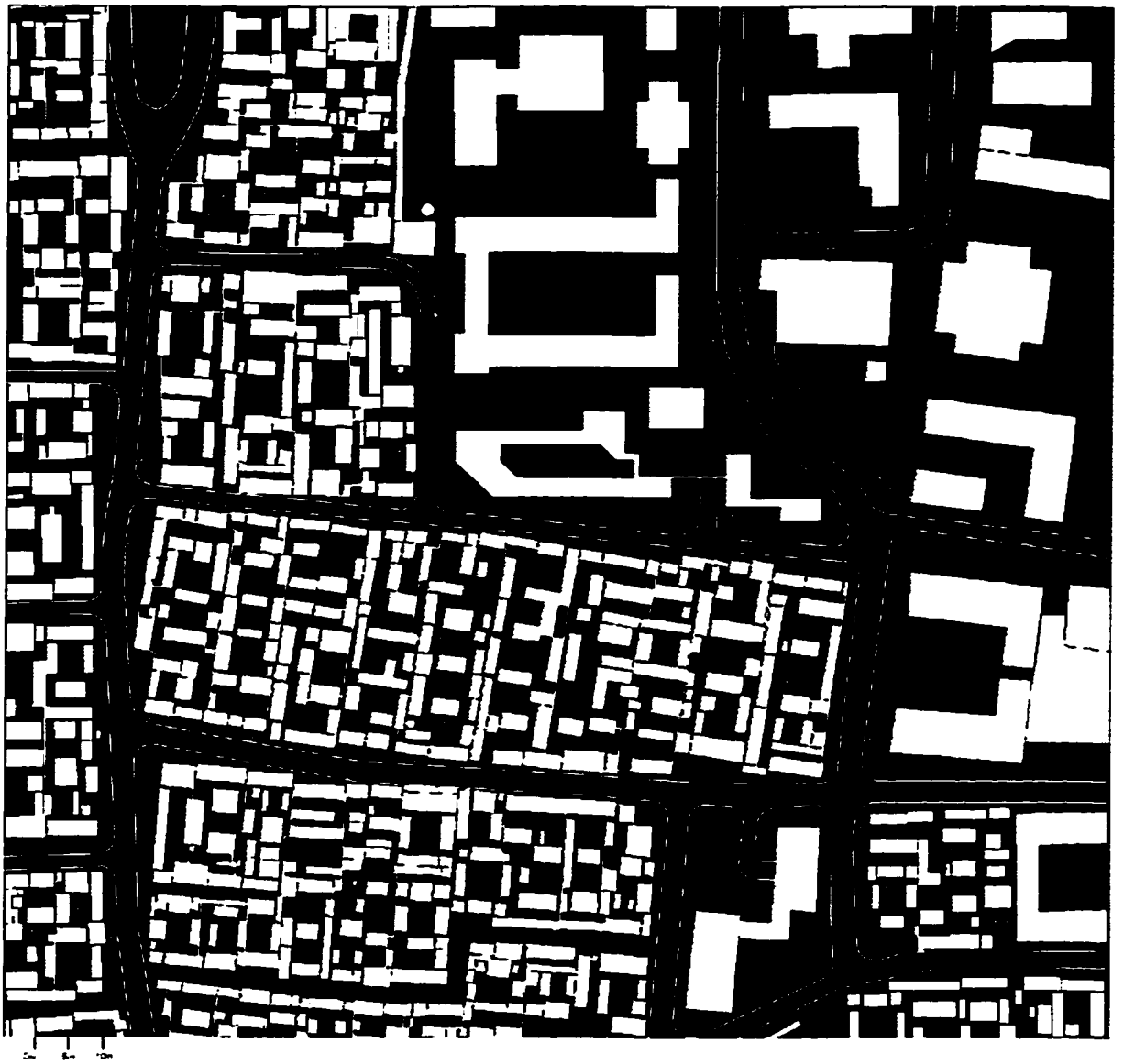






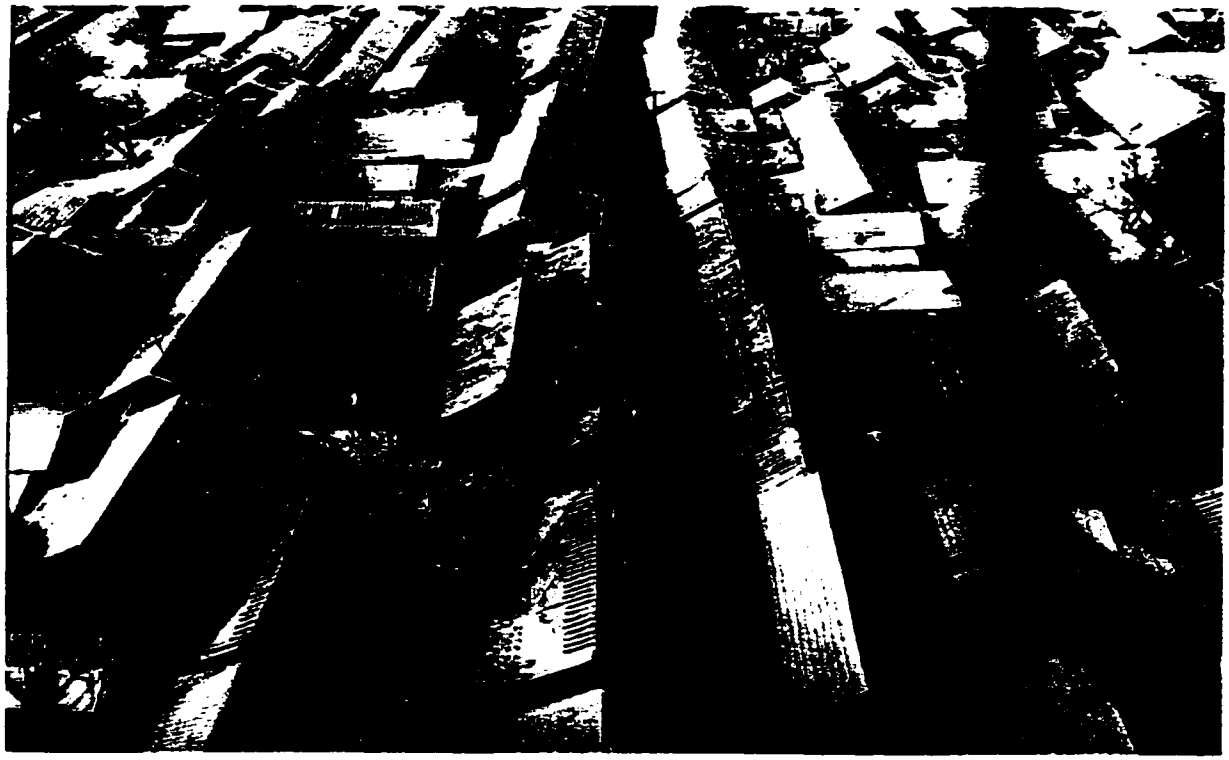
MODULAR EXPANSION--- .
From each room to the whole house ,
from each house to the whole area.

GRAY SPACE---a roofed
space without walls.
The space between
inside and outside.



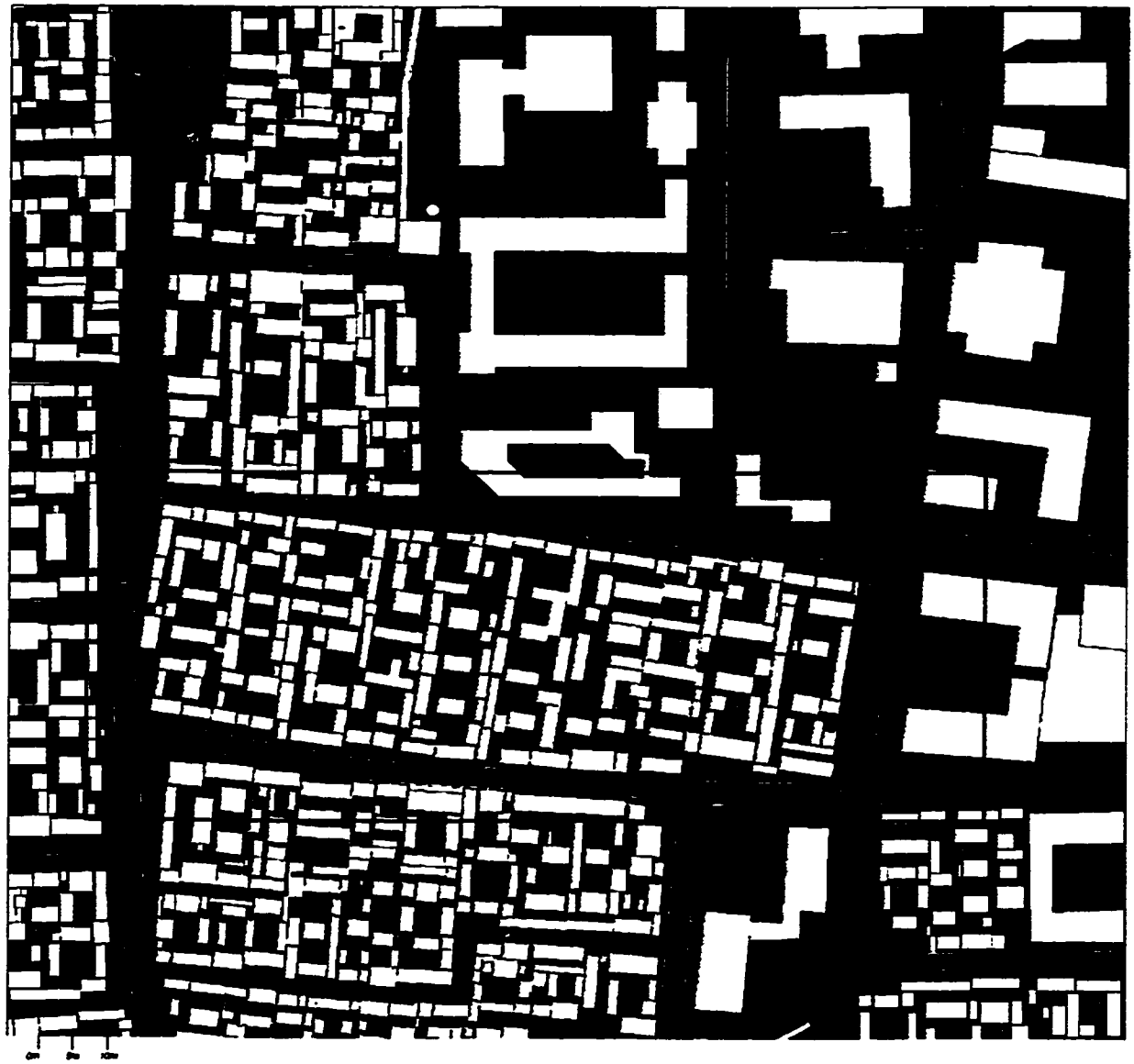
URBAN FABRIC OF TRADITIONAL COURTYARD HOUSE AREA.

ANALYSIS OF THE SITE OF OLD COURTYARD HOUSES



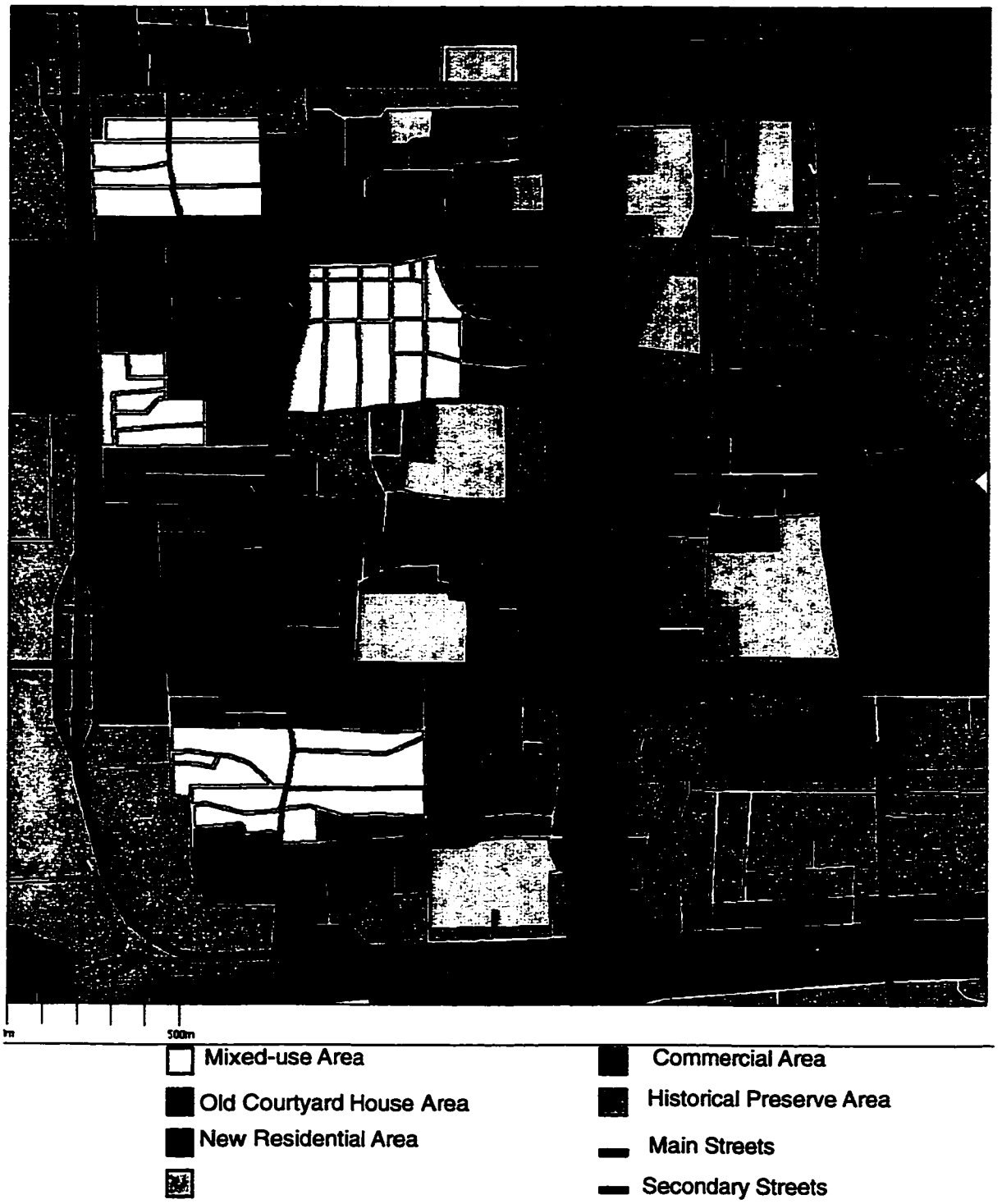
The site is located in the old inner city of Beijing. The inner city is demarcated by old city wall, the latter was demolished for the sake of development of city transportation. The grid-like streets in the inner city played an main role in city transportation. Hutong (small lane) , with the width of 4-6 meters, is the intermediate part between courtyard houses and city streets. When approaching a courtyard house, one's speed has to gradually slow down from the street to hutong because of the gradation of street width.

FIGURE AND GROUND.

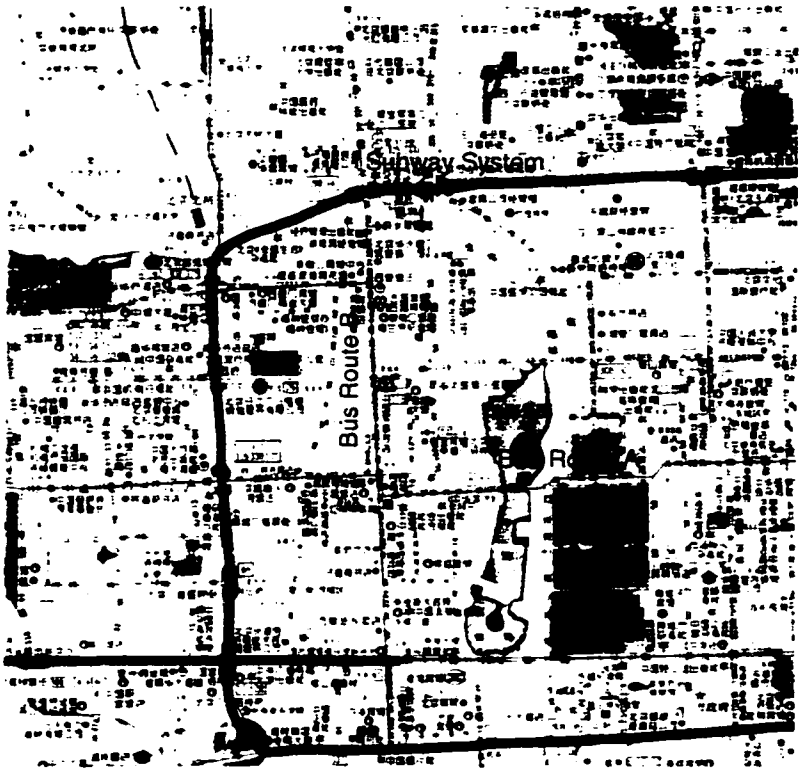


The site is located in the old inner city of beijing. It is on the edge of courtyard house area and adjacent to the new building blocks.

ZONING MAP OF OLD INNER CITY

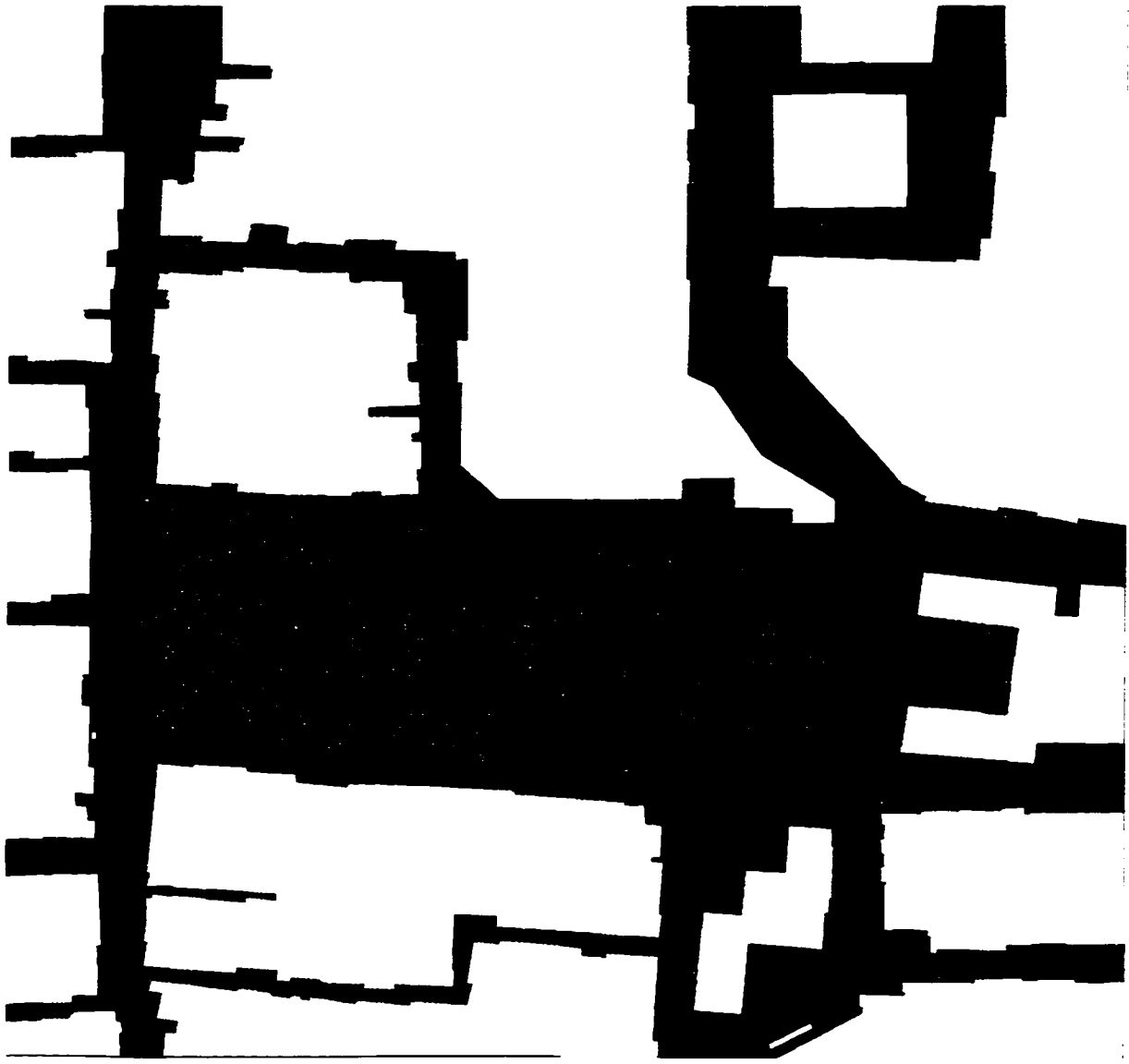


TRANSPORTATION



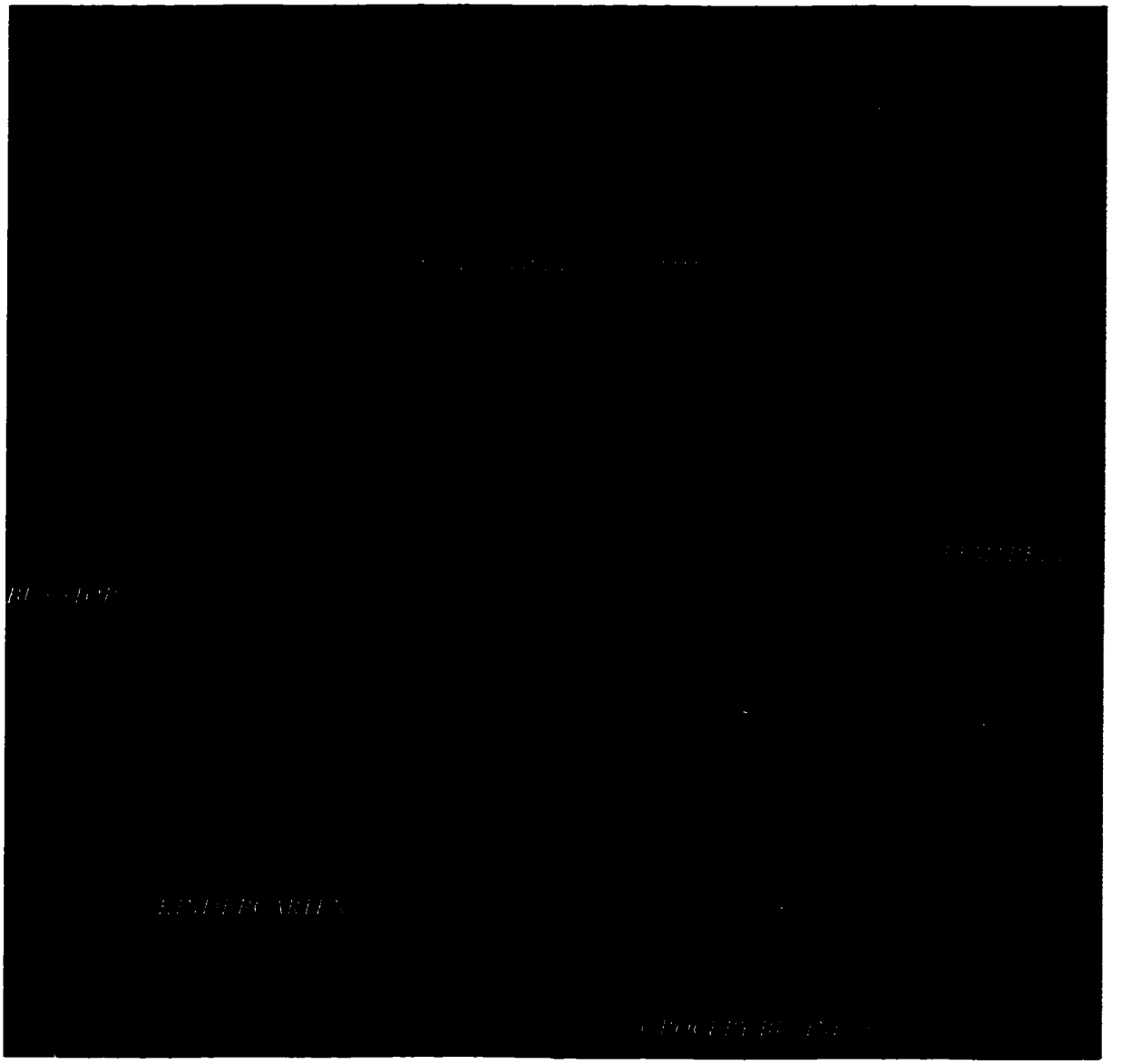
The residents on the site rely on public transportation to participate in the city life. There are two bus routes pass the site. They are connected to subway station. The residents also use bicycles as means of transportation.

STREET SPACE



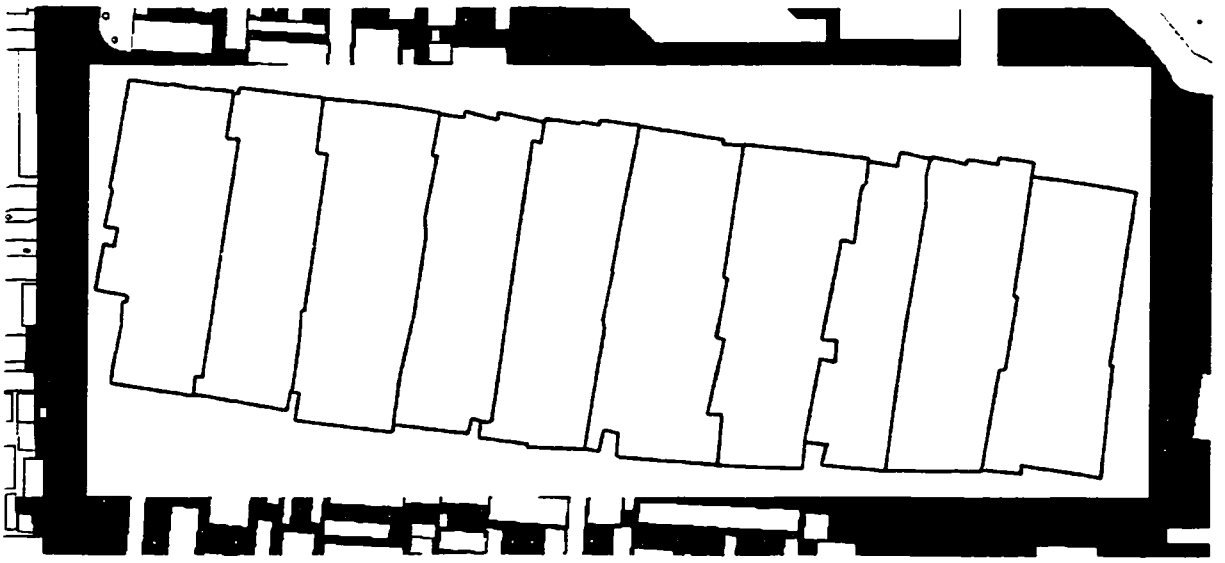
Jagged, irregular, zigzag spaces provide a stage for miscellaneous events. They are spaces could not be erased. They are where the traditions are being observed by generations. With the obscure borders, these spaces extend to two opposite scale spaces --- city and family.

SPATIAL LOCATION



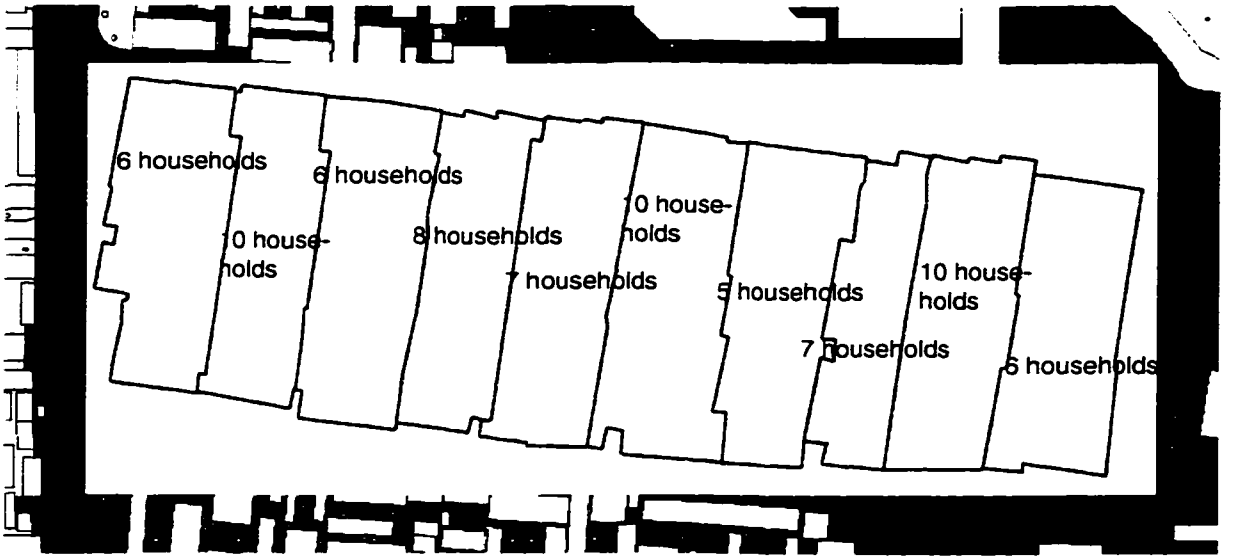
How do we know where we are? There is always a latent spatial locating mechanism in our mind. Some spaces, due to their relations to household life, have become locating points. These points comfort even the most empty people by making unavoidable reminiscence.

GRADATION OF PUBLIC SPACE.

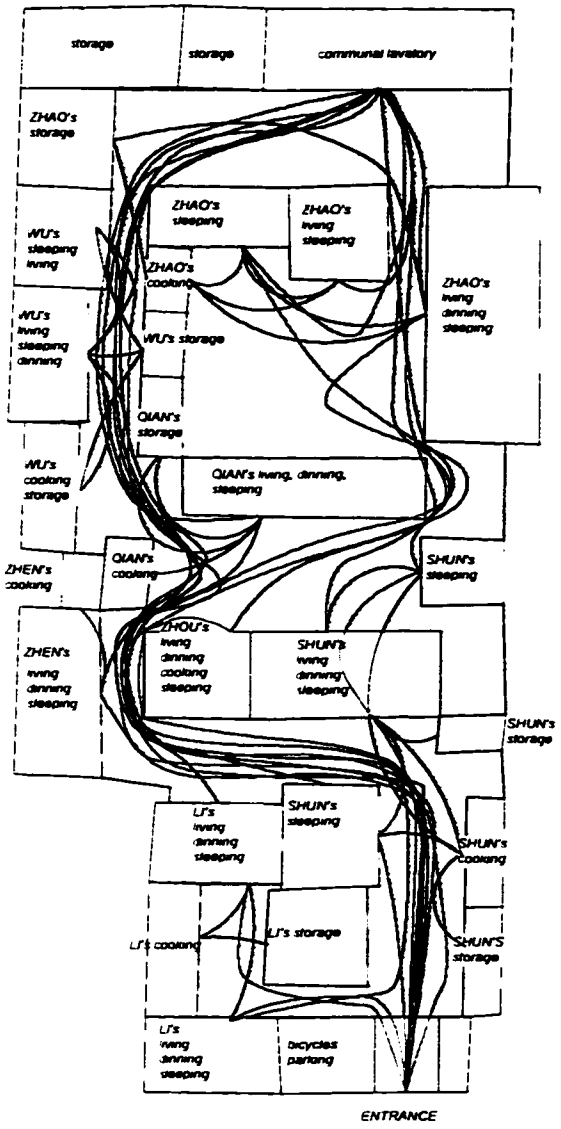


There is a gradation of space existing in the present courtyard house area. From street to lane, from lane to each courtyard house, from each courtyard house to each yard, the community unity become stronger by each level.

CHALLENGE FROM SITE

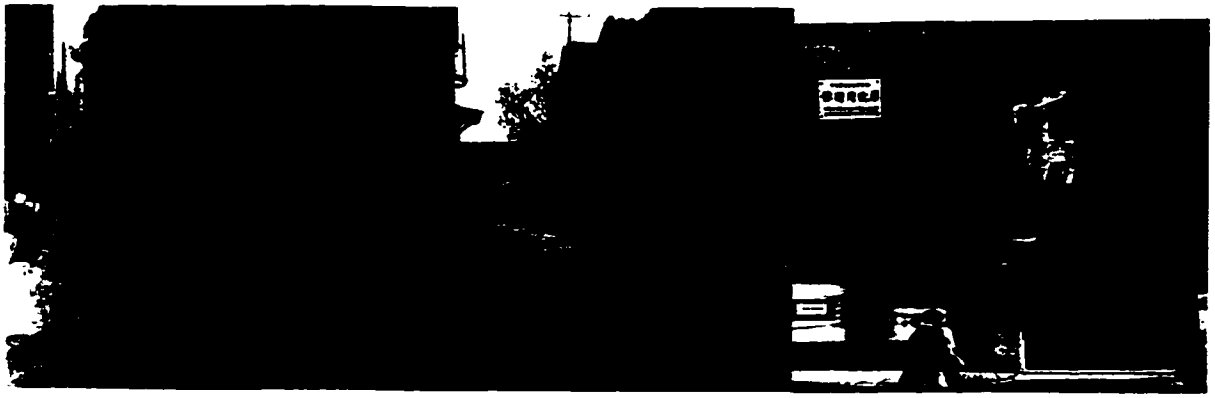


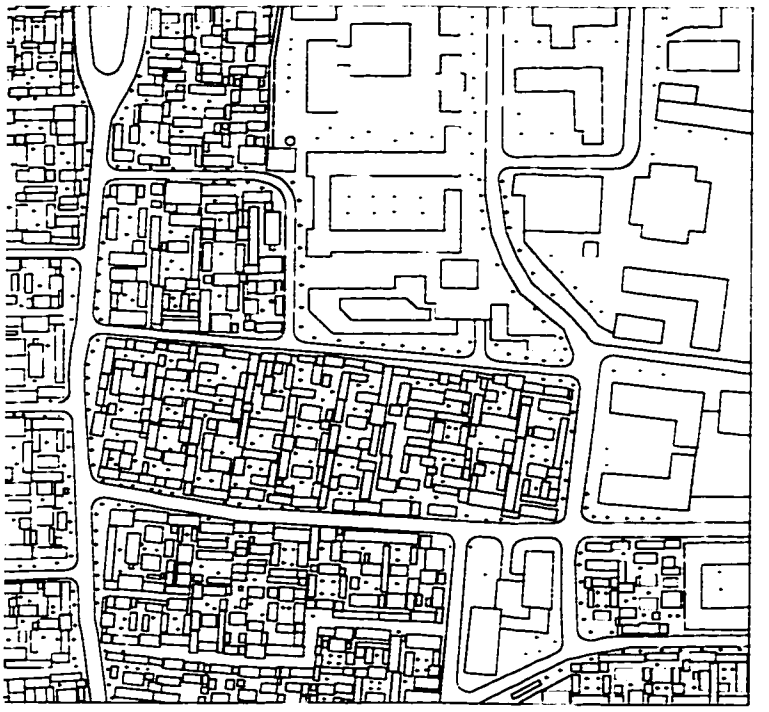
The growth of population has increased in recent decades. The quick fix to absorb the increase of residents was to pack up the existing courtyard houses. Fast shelters have been attached to the original houses to provide more living spaces. The traditional courtyard house once shared by a number of unrelated families and over populated, many problems are generated and the dwelling condition is getting worse with age.



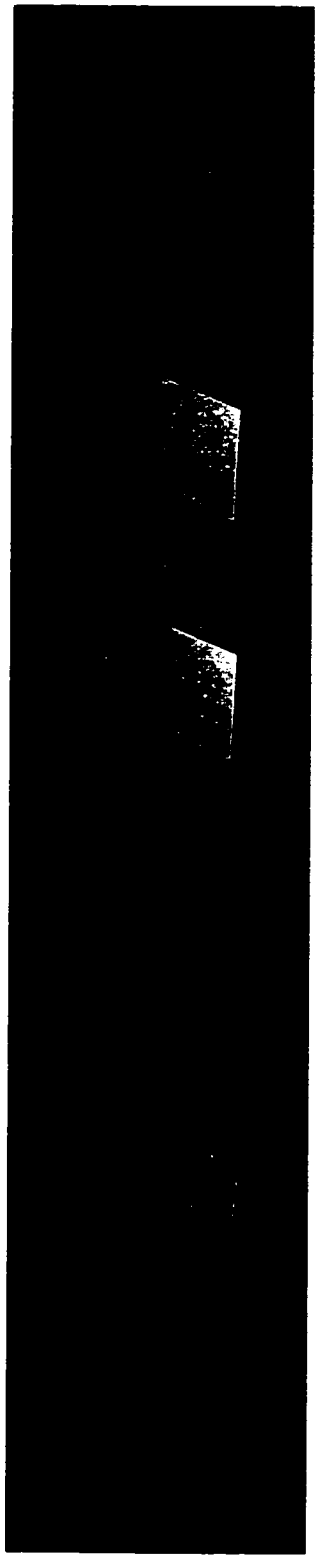
The colored lines in plan represent the movements of the residents within this courtyard house. The convergence, intersection of lines indicate the spaces where the residents can strike a conversation. They also imply the spaces where the private family lives associate with others.

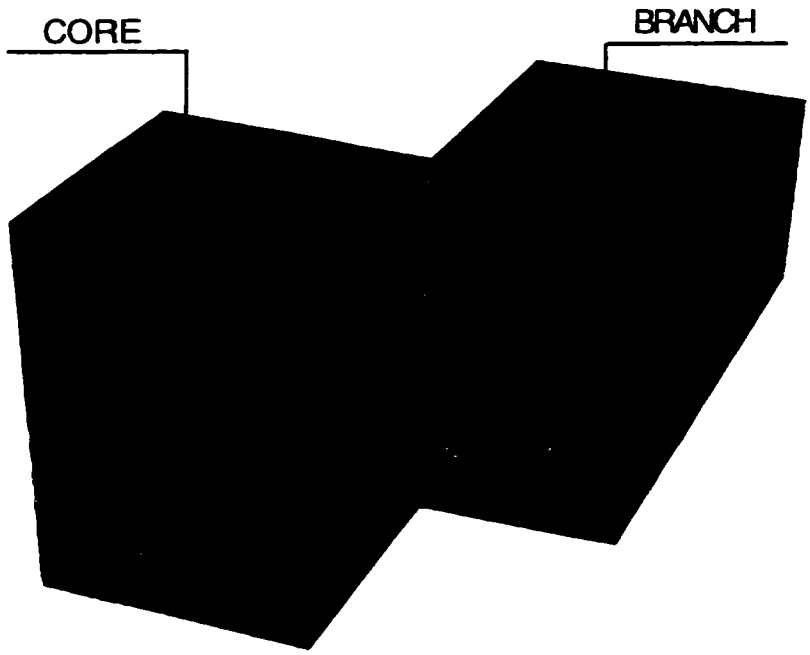
The former courtyard house become a mixture of lives of different families. Private life retreat back to each individual rooms. On the other hand, a public community life has been formed which is beneficial to the security of the neighborhood.





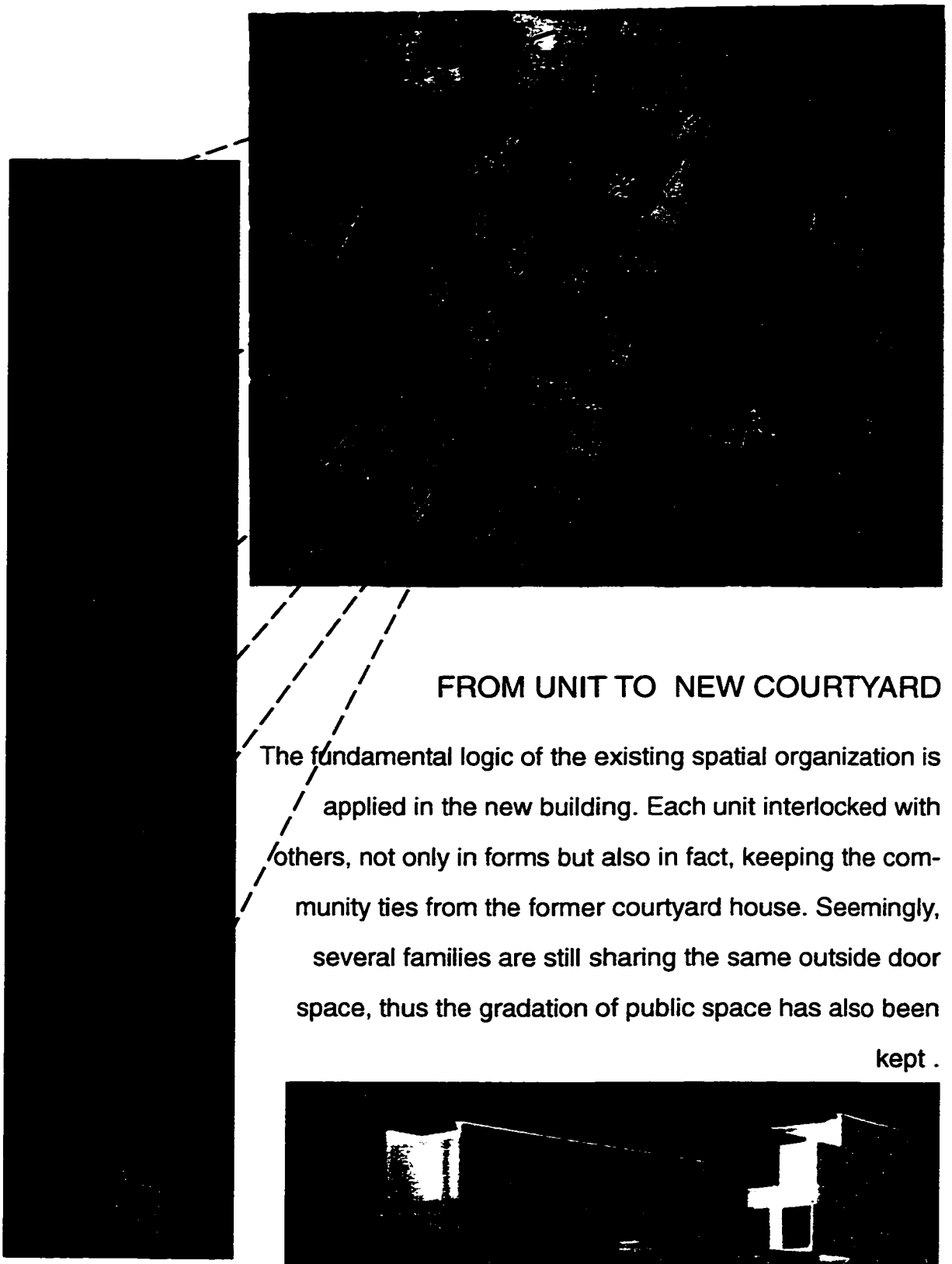
DESIGN APPROACH TO THE NEW COURTYARD HOUSES





UNIT DESIGN

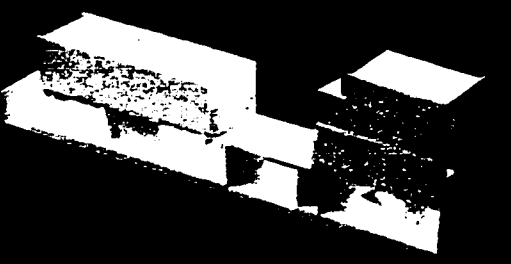
Each unit consists a core -a two story high light box and several branches - could be a room or hallway. The core resemble the outside door space of old courtyard house, the same character has been kept , family central space; The branches, surrounding the core , accommodate various family lives which are more individual or private. The branches are the transformation to the inside spaces of traditional courtyard house. With the flexible partition, the space become flexible so that the program to each space varies accordingly.



FROM UNIT TO NEW COURTYARD

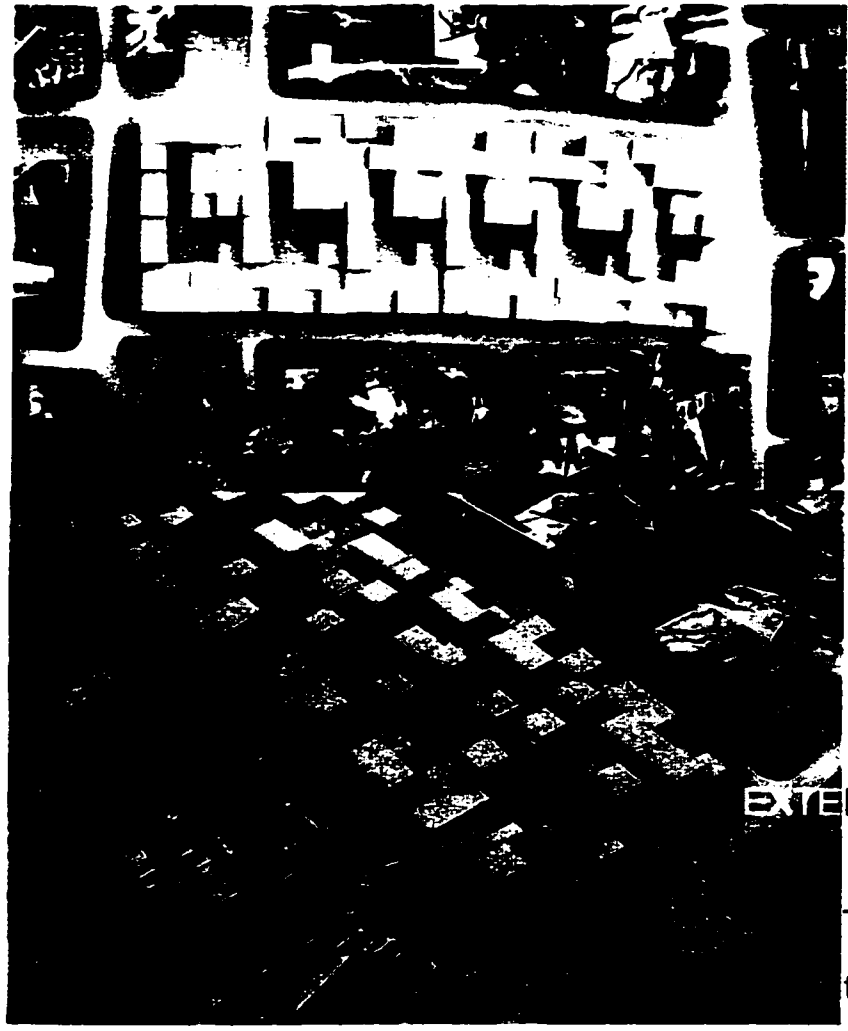
The fundamental logic of the existing spatial organization is applied in the new building. Each unit interlocked with others, not only in forms but also in fact, keeping the community ties from the former courtyard house. Seemingly, several families are still sharing the same outside door space, thus the gradation of public space has also been kept .

Section Model



SECTION MODEL

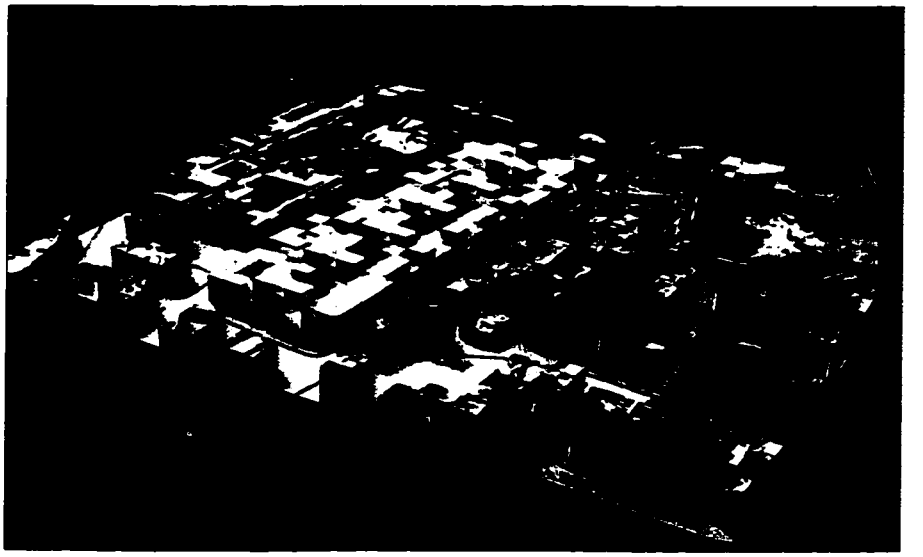
This section shows the scale of old neighborhood. with limited capacity. the density of the block has been decreased. The whole city could expanding without seriously endanger the traditional courtyard house area.

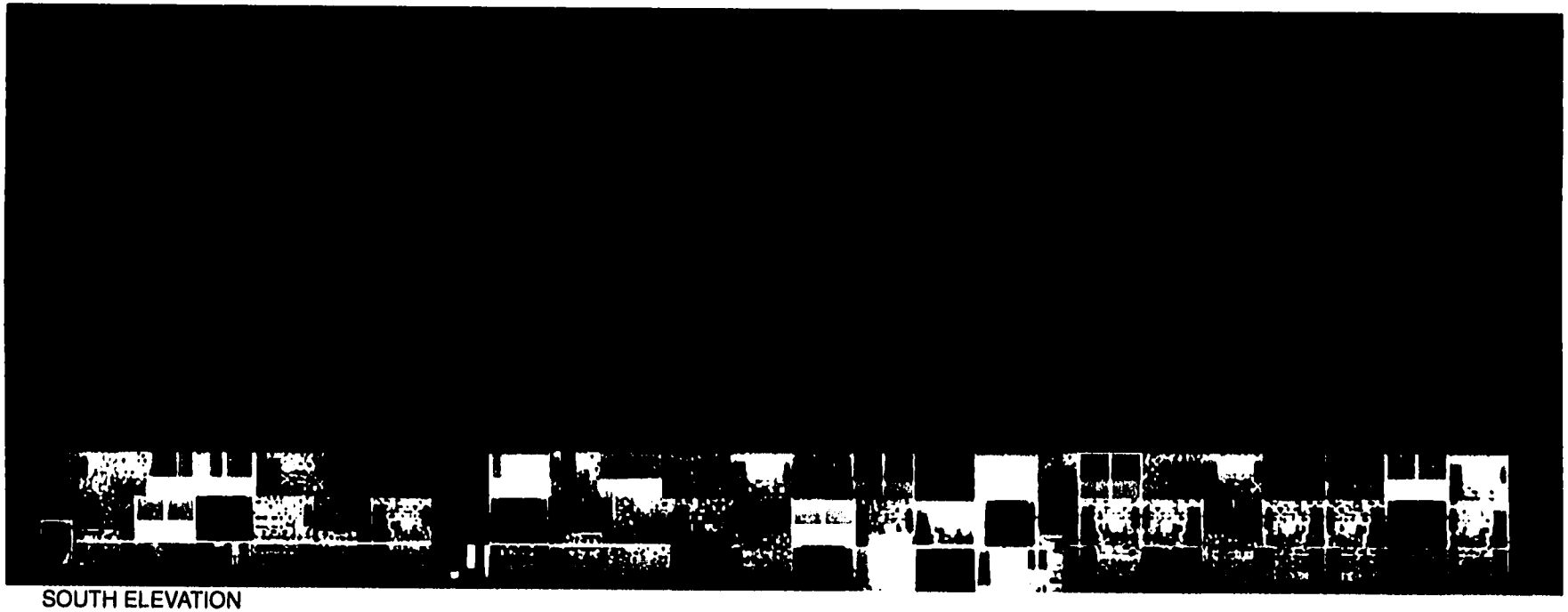


EXTERNAL COHERENCE

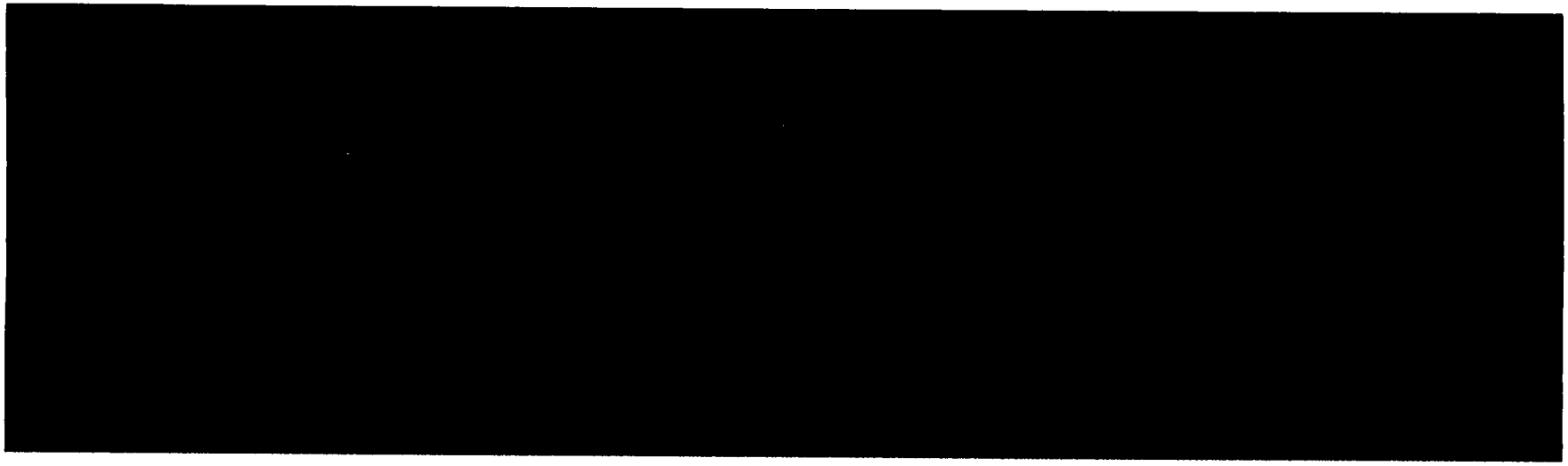
The new block can fit into the old neighborhoods by its scale and texture. The more abstract form of the building implies the current aesthetic .

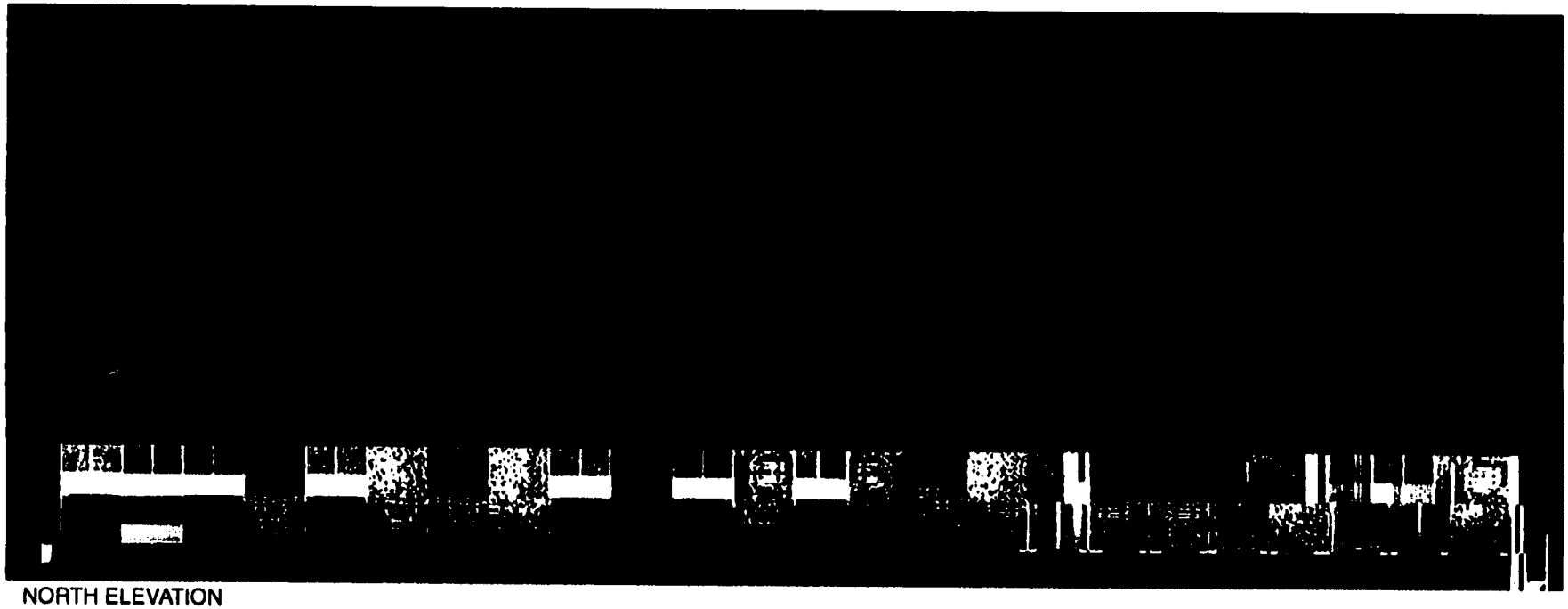
SITE MODELS



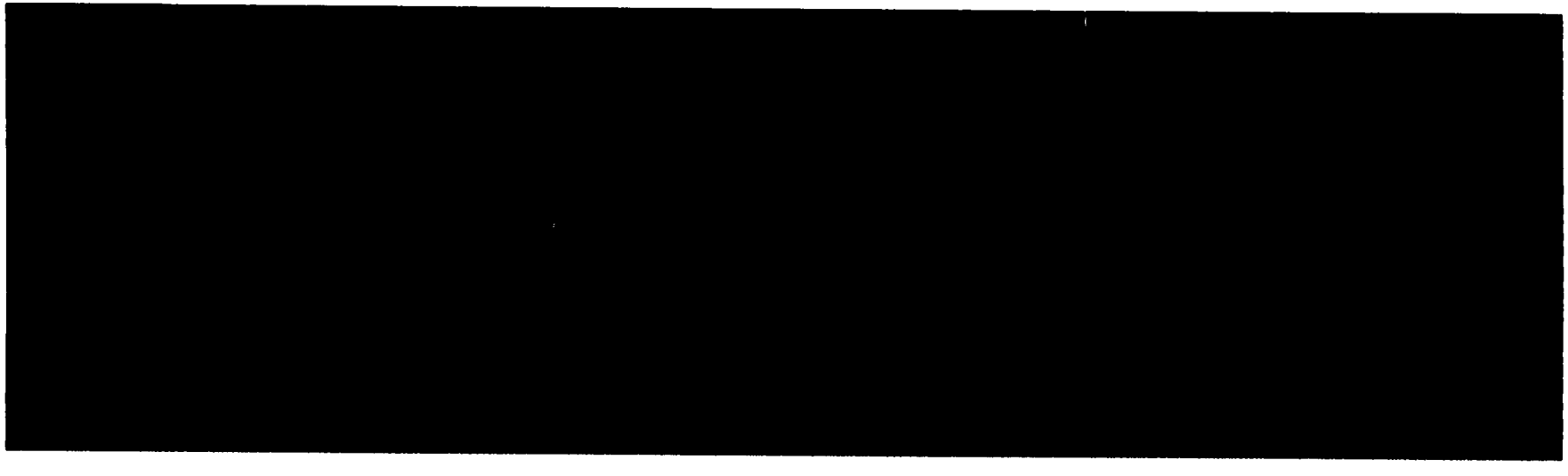


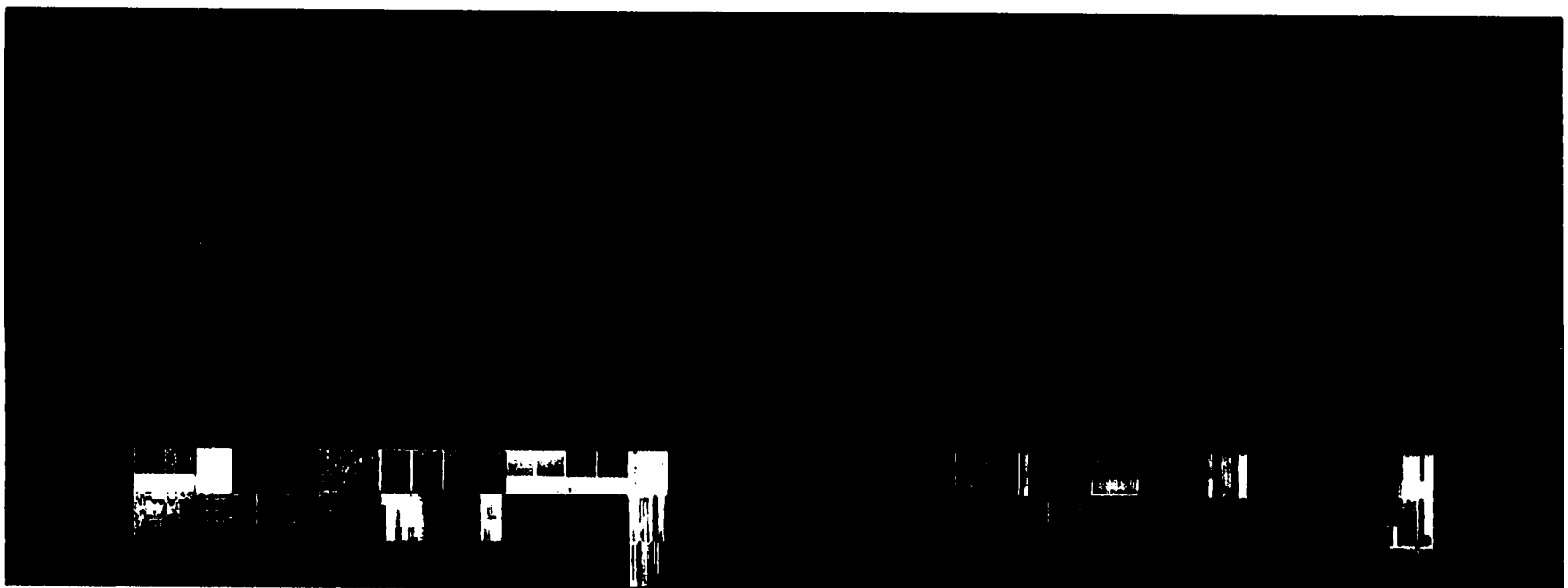
SOUTH ELEVATION





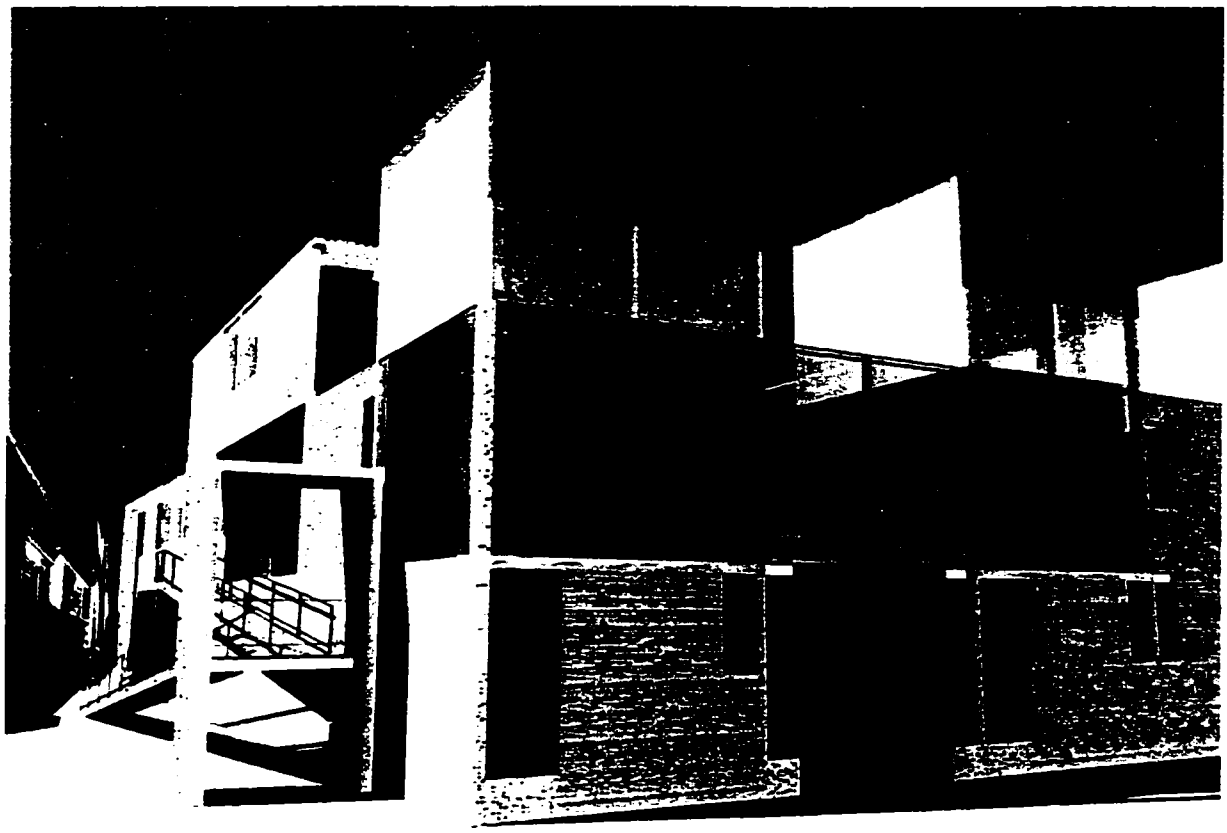
NORTH ELEVATION

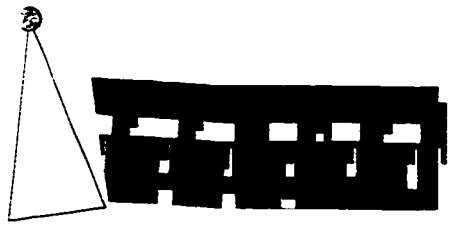


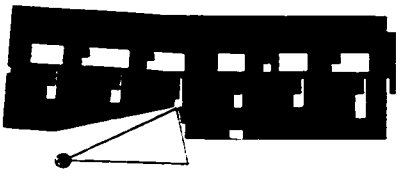


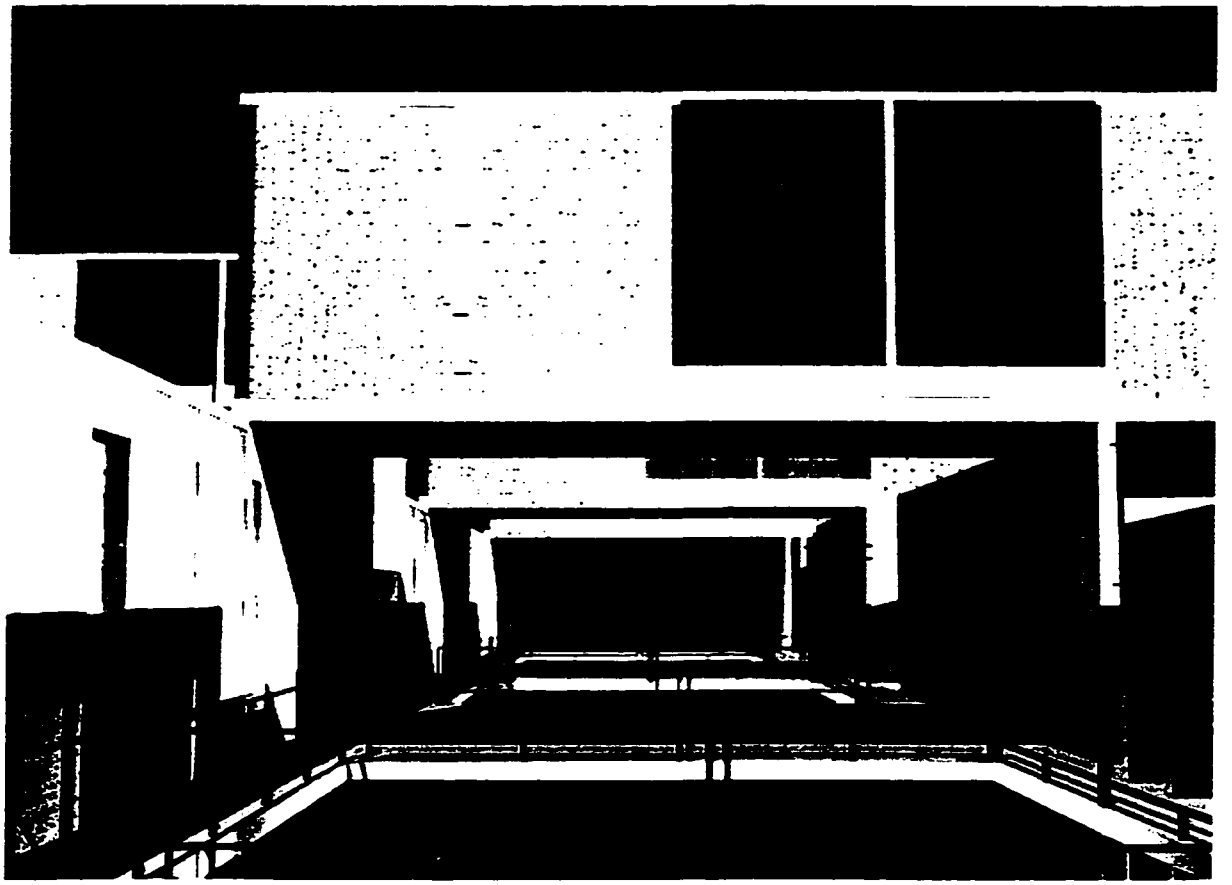
EAST ELEVATION

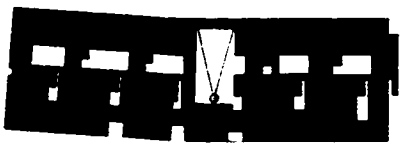
WEST ELEVATION

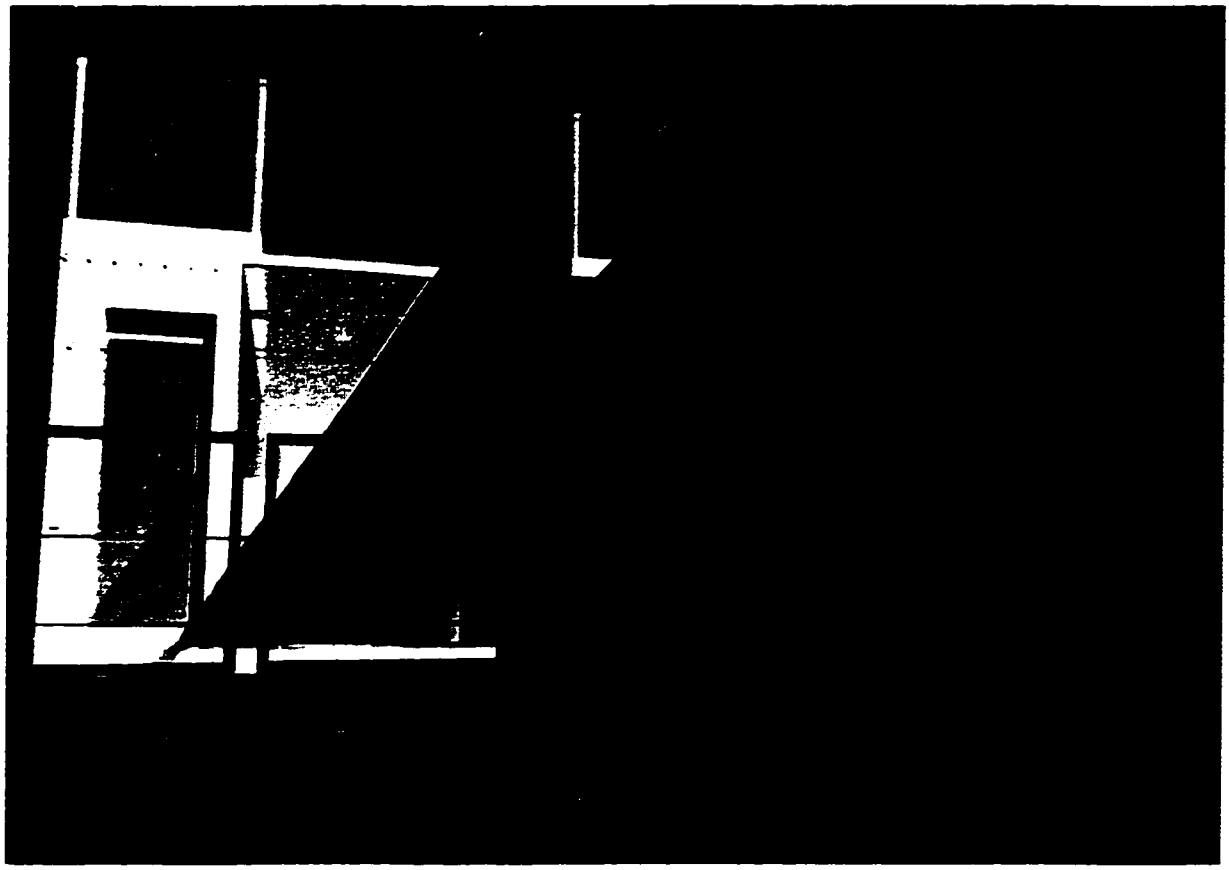


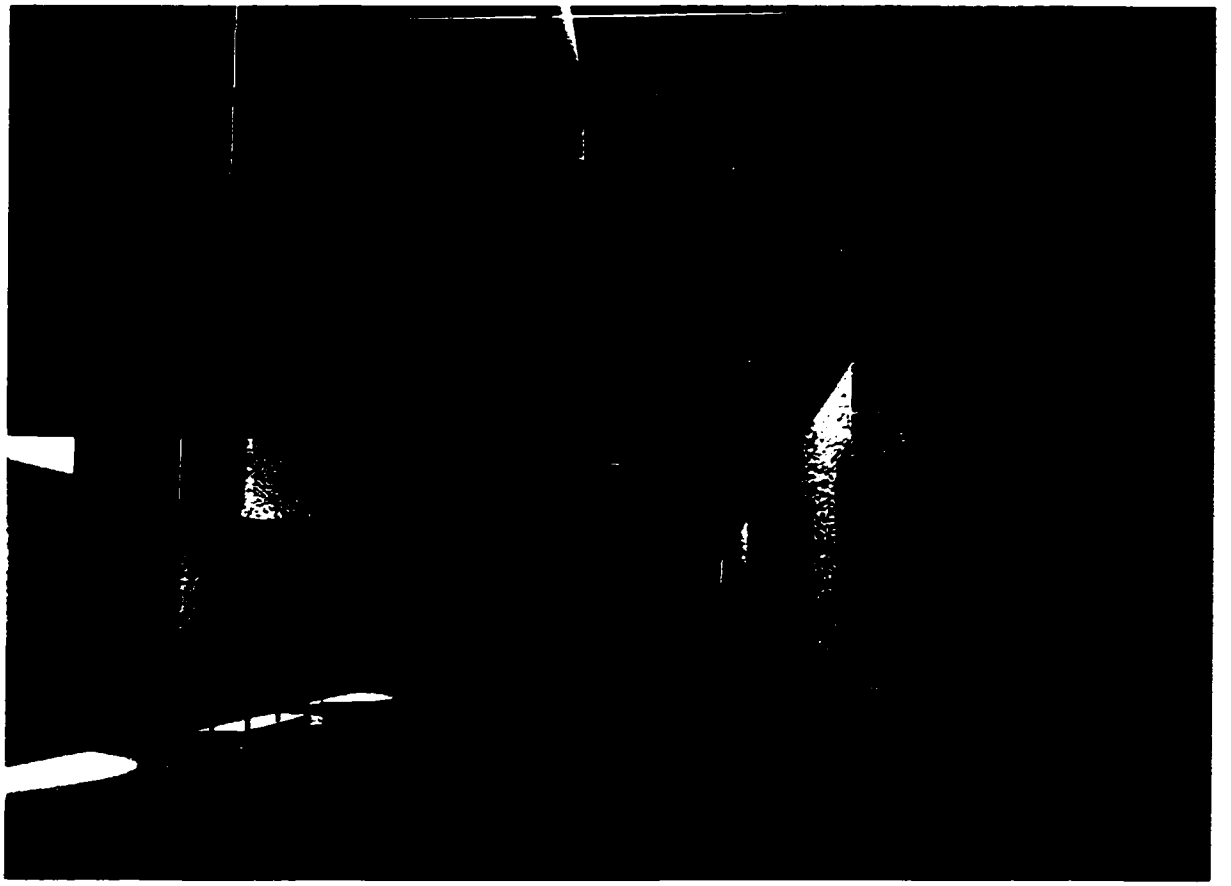


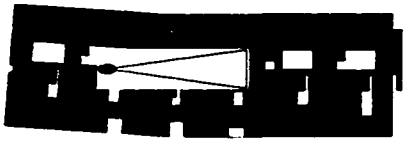


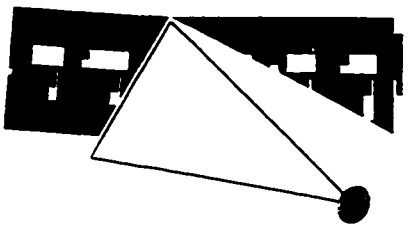


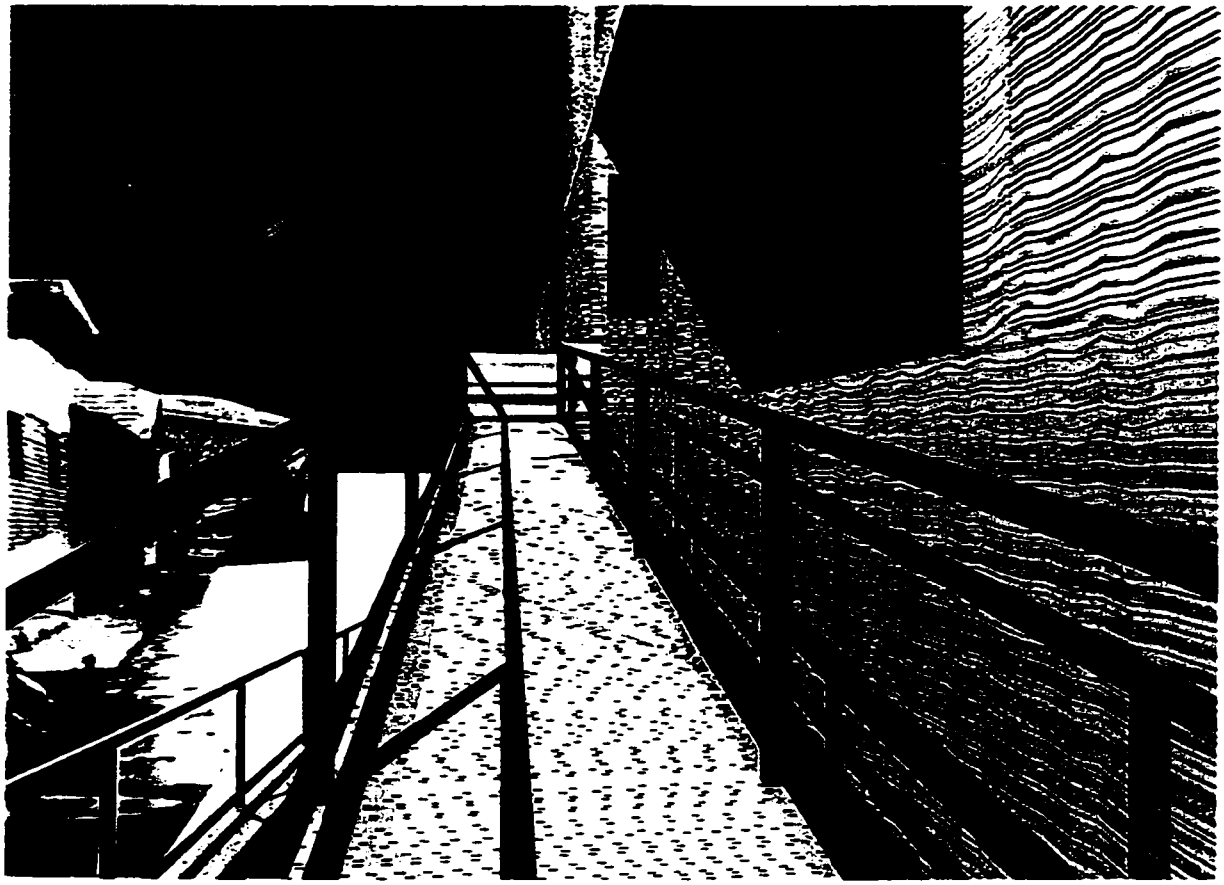


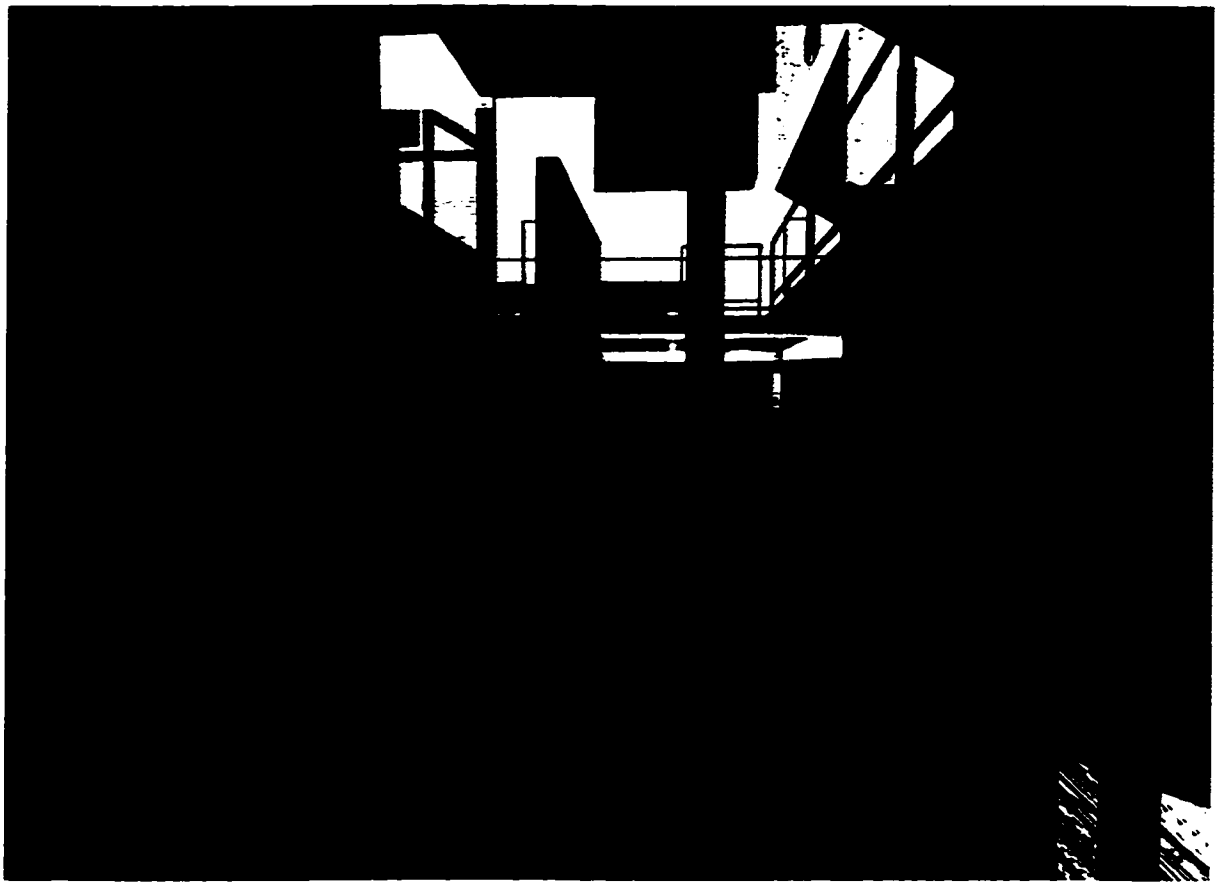


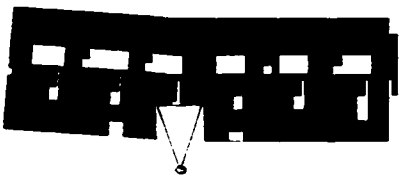


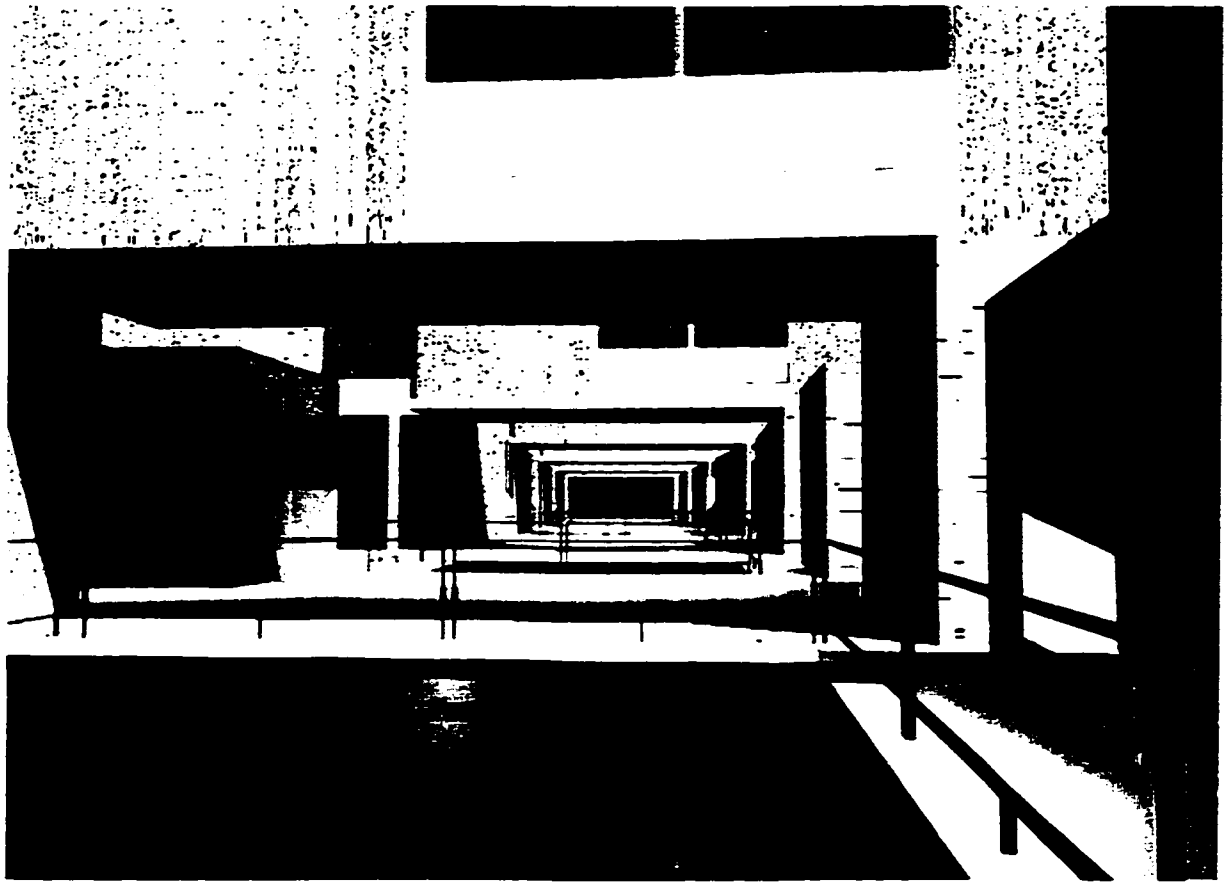


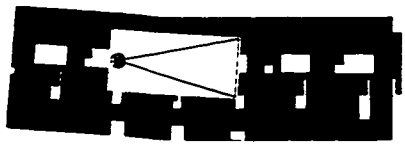


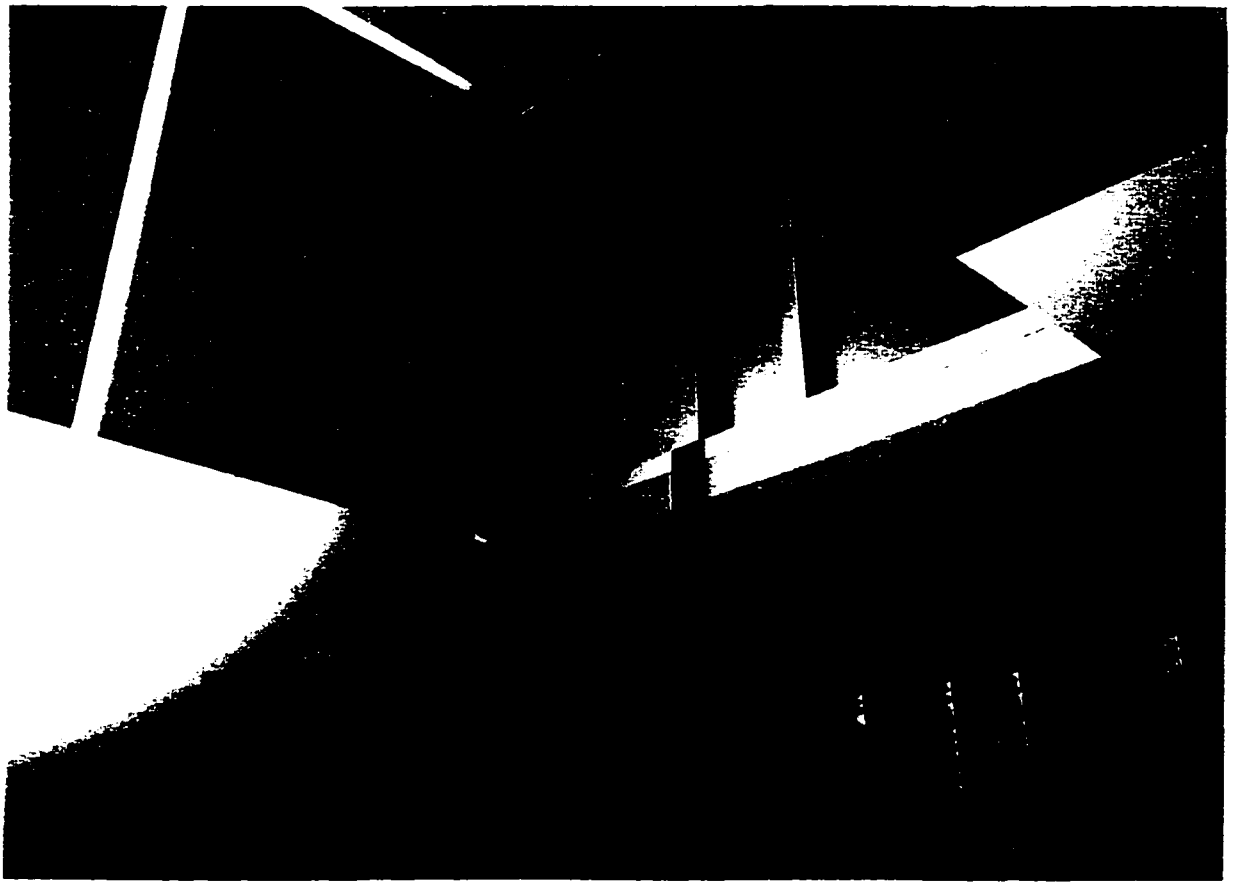


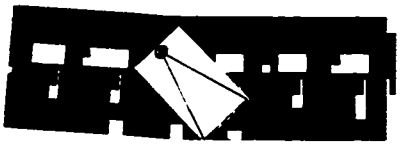


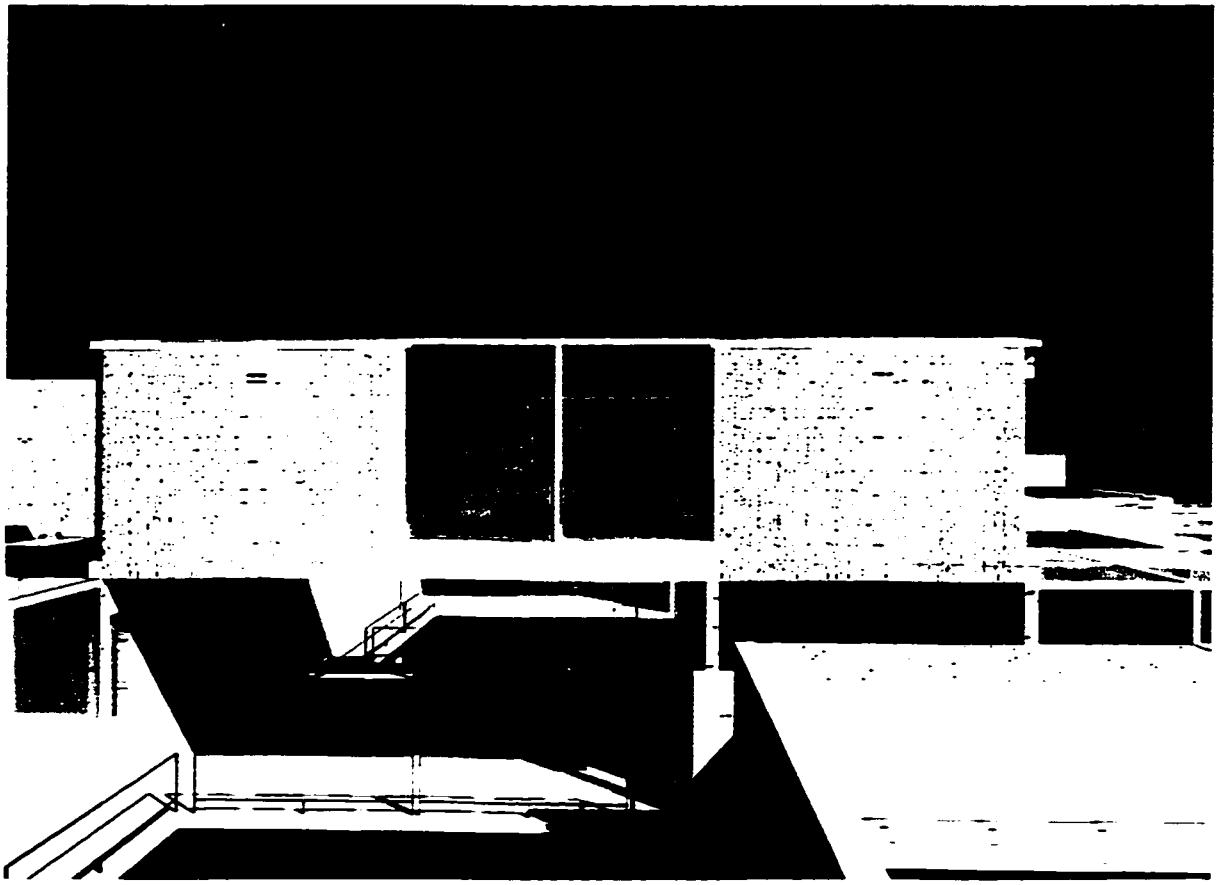


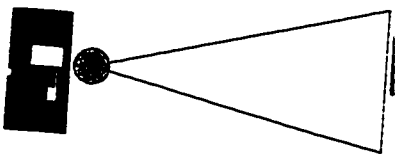












BIBLIOGRAPHY

Chinese traditional architecture / Nancy Shatzman Steinhardt ; Fu Xinian ... [et al.]. Steinhardt, Nancy Shatzman. / New York City : China Institute in America, China House Gallery, c1984.

Common walls/private homes : multiresidential design / John Nolon, Duo Dickinson. Nolon, John R. /New York : McGraw-Hill, c1990.

Courtyard house in China : tradition and present = Hofhaus in China : Tradition und Gegenwart / Werner Blaser.Blaser, Werner, 1924- / Basel ; Boston : Birkhäuser, c1995.

Atrium : Lichthöfe seit fünf Jahrtausenden = five thousand years of open courtyards / Werner Blaser ; mit einer Einführung von Johannes Spalt ; [englische Übersetzung, D.Q. Stephenson]. Blaser, Werner, 1924- / Basel ; New York : Wepf & Co., c1985.

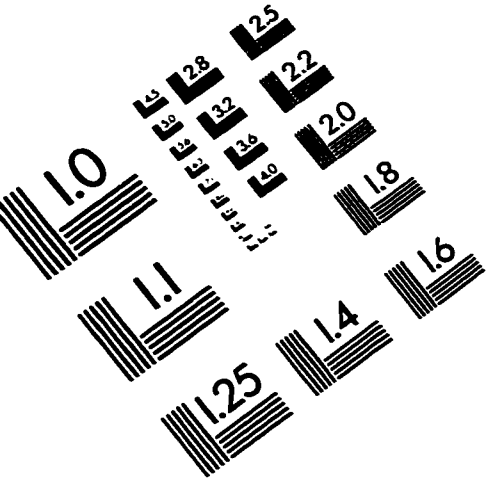
OMA-Rem Koolhaas : architecture, 1970-1990 / [edited by] Jacques Lucan ; [English translations by David Block ... et al.]. / New York, NY : Princeton Architectural Press, c1991.

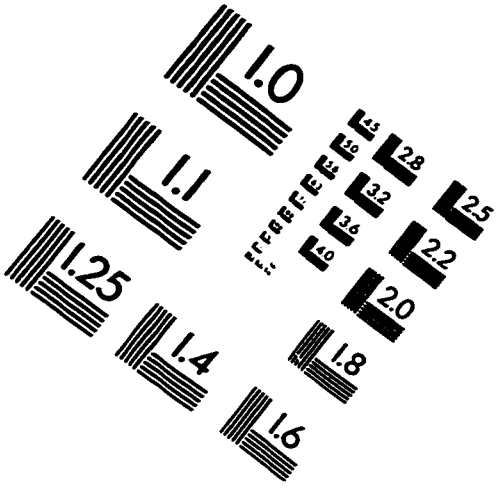
Edge of a city / Steven Holl./ New York : Princeton Architectural Press, c1991

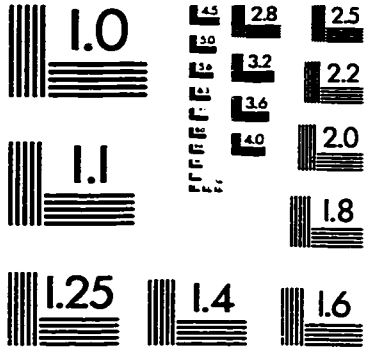
Planned assaults : the nofamily house, love/house, Texas zero / Lars Lerup ; postscript by Peter Eisenman.

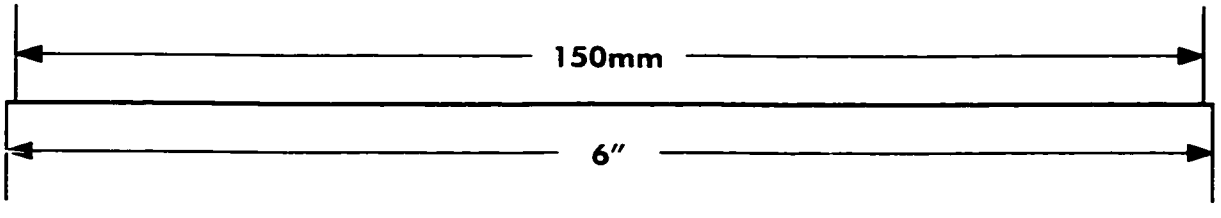
Montréal : Centre Canadian d'Architecture/Canadian Centre for Architecture ;
Cambridge, Mass. : Distributed by the MIT Press, c1987.

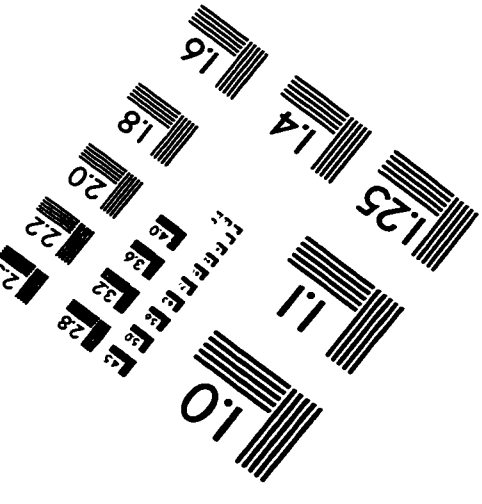
IMAGE EVALUATION
TEST TARGET (QA-3)

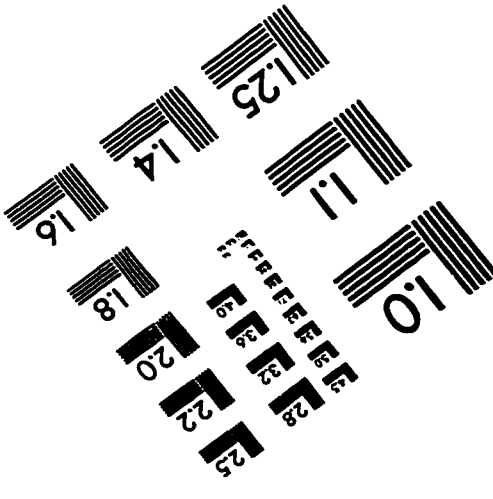












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