



*This thesis is submitted to the Faculty of the
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MASTER OF ARCHITECTURE

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**B l a c k s b u r g , V A
J a n u a r y 2 0 0 3**

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space

removable wall

movable wall

Building Development

apartment configuration

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light

common spaces

overall design

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Conclusion

Curriculum Vita



Abstract

Order in design, whether in music or a building comes from bringing together parts to make a whole. These parts can have an autonomous existence separately and combine to formulate a different event collectively.

This thesis is a study of how a building accommodates to the changing needs of a diverse community. It does this by investigating to what end two neighboring apartments, one small and one medium-sized could combine to develop into one large apartment, and revert back again to two apartments when the needs of the inhabitants change. This concept could be paralleled to Jazz, where the musicians find means of altering the sound of the music through improvisation between the notes of the song. The structure of the building like the notes of the melody provides the stationary component and forms the rhythmic beat between the apartments. The pauses or gaps between the structure provide the opportunity for flexibility and improvisation. The melody of the construction comes from the integration of the repetitious permanent structural elements, semi-permanent conditions and spontaneously alterable parts. The orchestration of these components allows the building to transform and experience an altering production of its own.



think of the
 walls of
 the building
 as a series of
 planes
 → closing?

Chisel - carve out
 solar - carved out
 corner - group of planes

sculpture
 Chitlada

what if these become
 part of page?

Direction of
 wood grain

hierarchy

- ① square extrusions
- ② "L" shaped extrusions
- ③ primary joints
- ④ secondary joints

is it enough to put
 a peg through the joint
 so that it can't be
 pulled off @ the edge?

if the gaps in
 the open space
 becomes the joint
 what does that
 mean?

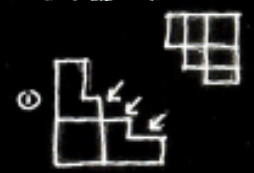
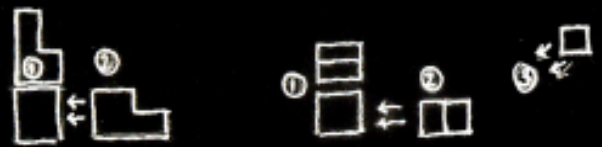
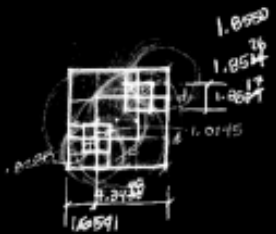
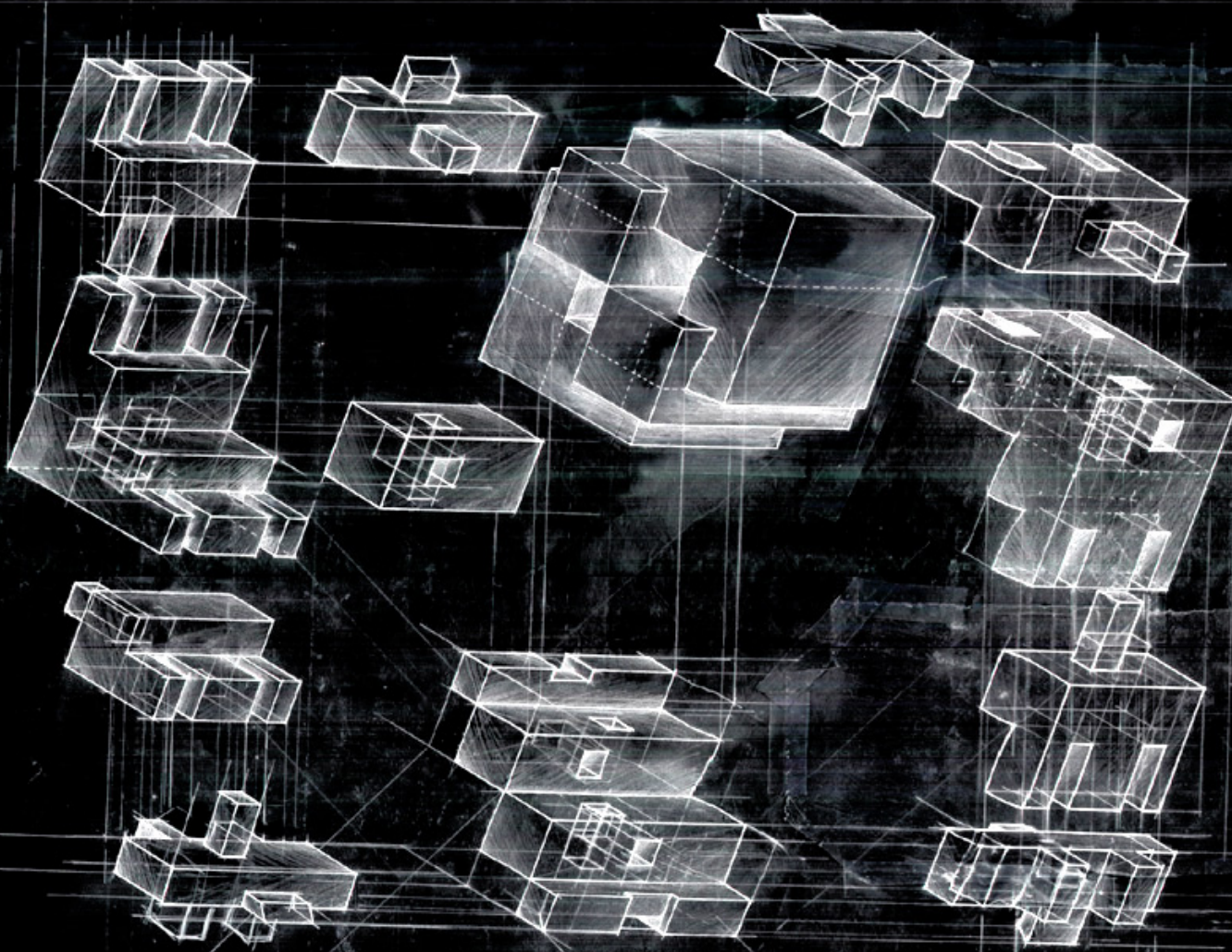
What makes
 the joint joints
 are adjacent

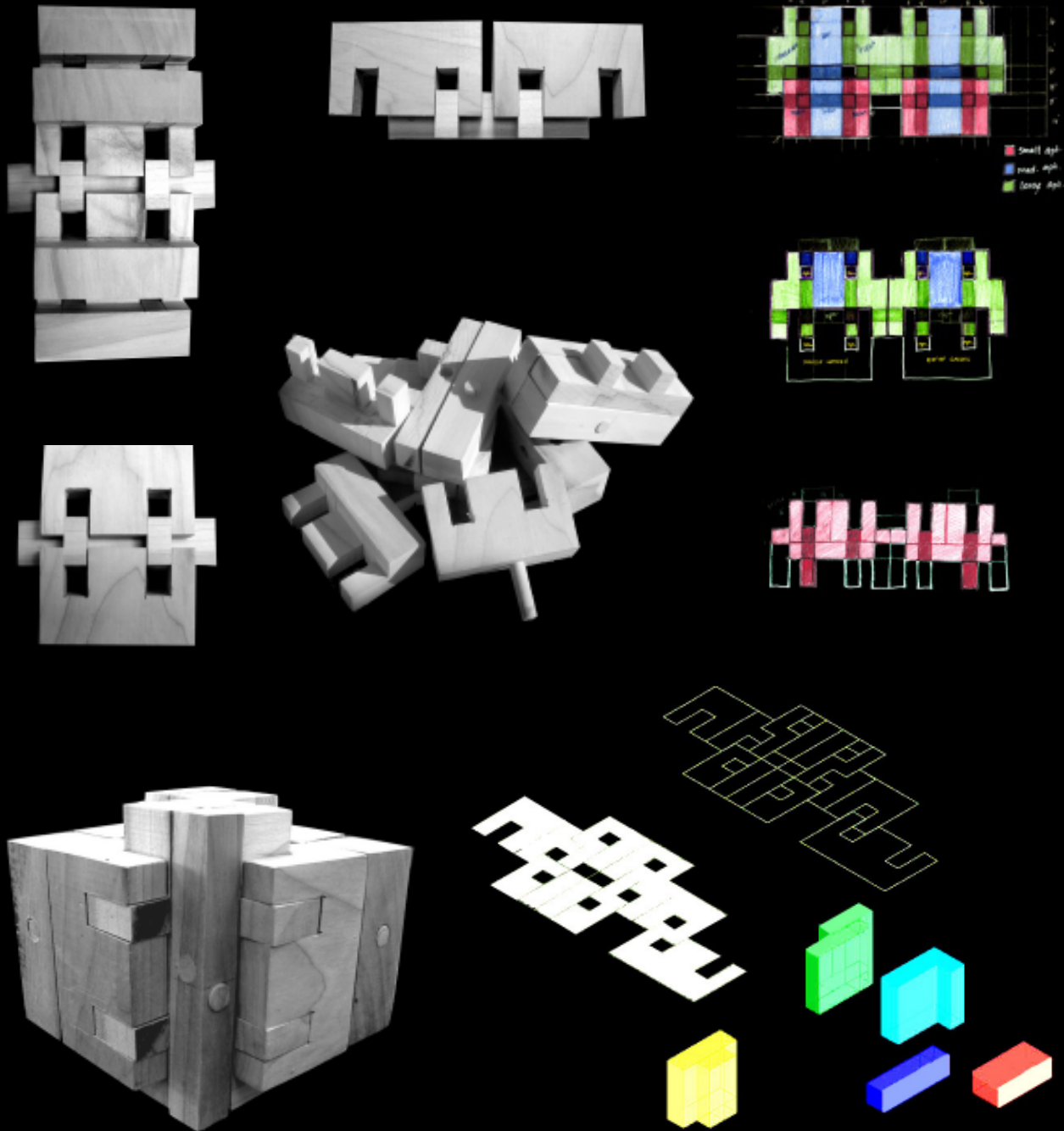
to type face
 size
 "Solid"
 type as opening
 becomes the joint

is there a boundary of solid that you can see
 and not see other, what does it mean to see?
 ① pull back the joint point to recede from the joint
 ② establish the joint in such a way that it can
 be seen in another point of the object

material pulled out
 → shadow
 this joint is
 appropriate to
 concrete

joint shows on the side
 → this joint is better for wood





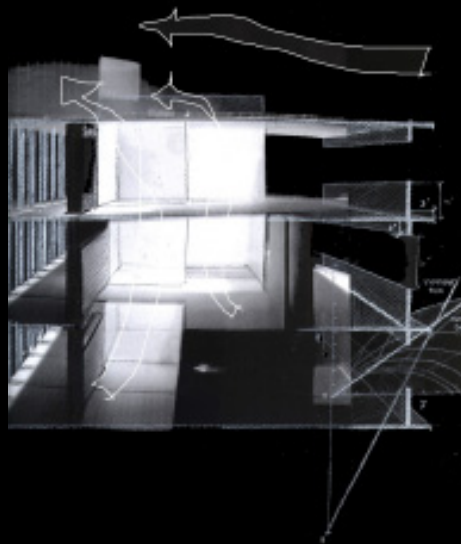
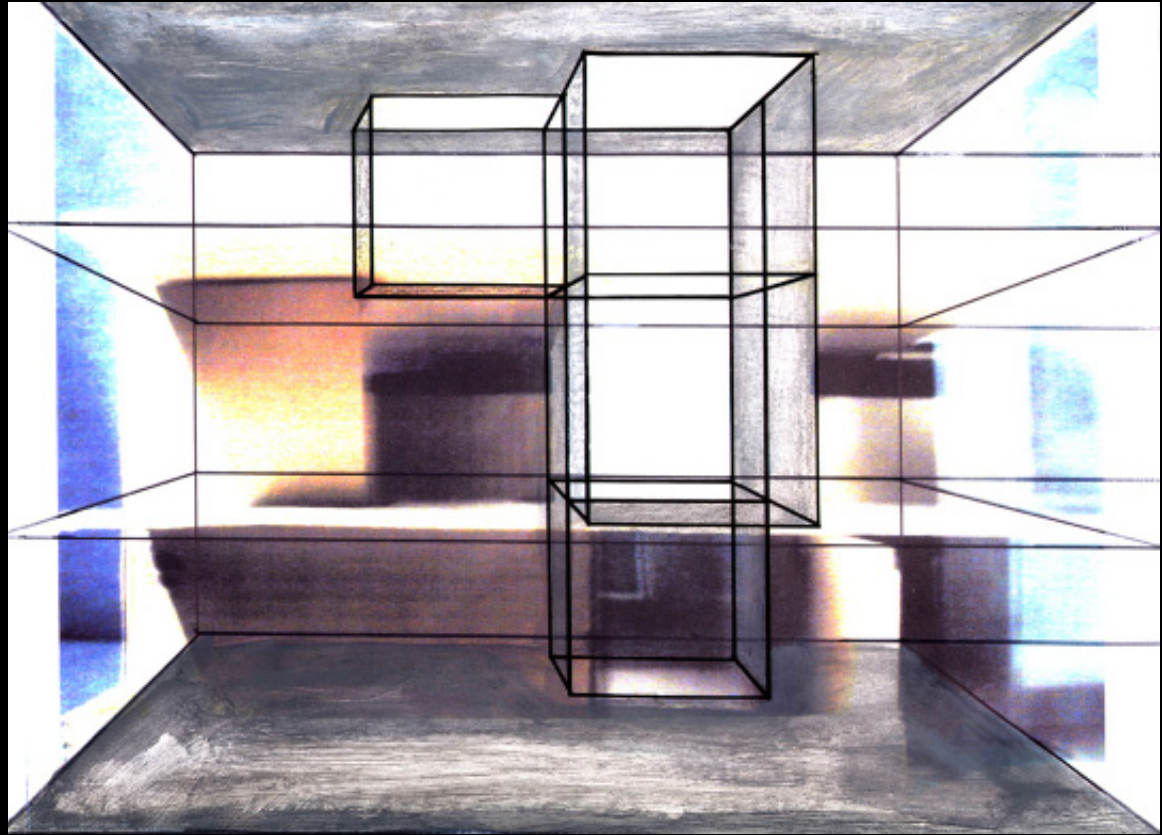
Experimenting with wood inspired the conceptualizing of this project.

Making a wood object conjured up two ideas, one involving light and one influencing the spatial configuration of the apartments. The latter is the interlocking configuration of the apartments in plan and section, the former is an outdoor area within each apartment. The interlocking nature of the apartments originated in part due to the relationship between the pieces in the wood object. Because the intent behind the object was to maximize the potential of the material, wood, the pieces are all interdependent and held together by a combination of finger joints and wooden rods. The ease in carving wood allows interlocking pieces to make joints. These joints have the grain of the wood running perpendicular to each other for strength. The relationships between the finger joints, in particular, lead to the development of interconnecting apartments.

Opposite Page: Exploded axon drawing of a wood object. The design of the wood object came from the extrusion of a 2d drawing made with the proportions of the golden section. The construction lines of the 2d drawing determined the joints for the wood object.

Above and Left: Through playing with the pieces making up the wood object, the idea of interlocking small, medium and large apartments came to fruition. The gap between the interlocking pieces initiated the idea of outdoor areas within each apartment.

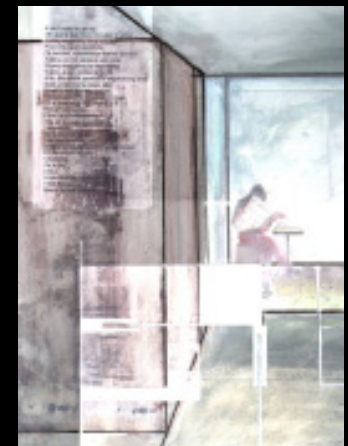
Outdoor areas were also inspired from the pieces of the wood object. The gap made from pulling apart the finger joint pieces of the object developed into outdoor areas. In this way, similar to the serif in typography, the gap creates the joint, and, in this case, the joint is between the apartments. The serif was developed from the necessity of the stonemason to find a way to finish the end of line to form a letter in a refined manner. This led to a perpendicular blow to the stone at the end of each line, creating the serif. One could say the gap becomes the joint. With this in mind, each apartment has a terrace area, but the large apartments, because they are formed from two units joined have two terrace areas.

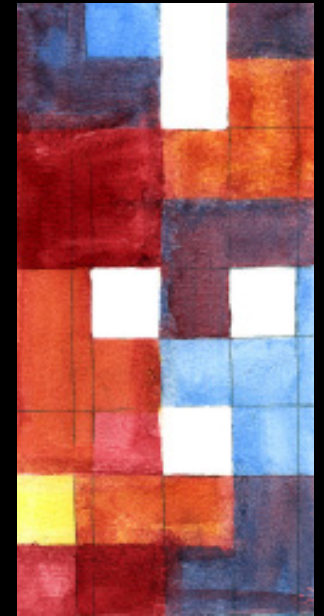
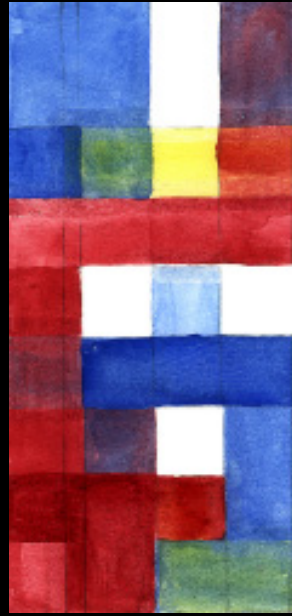
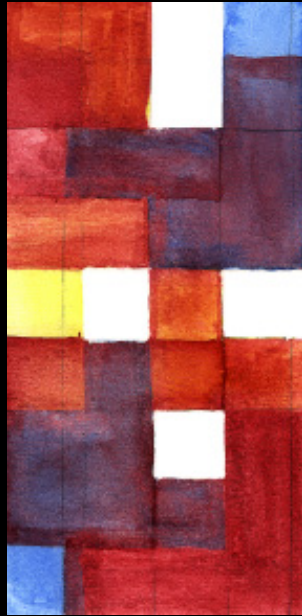


Top left: Initial perspective drawing showing outdoor areas

Left bottom: Study of ventilation within the apartment and outdoor areas made in part with in a wind tunnel device.

Right bottom: Collage drawing showing initial conception of the outdoor areas.





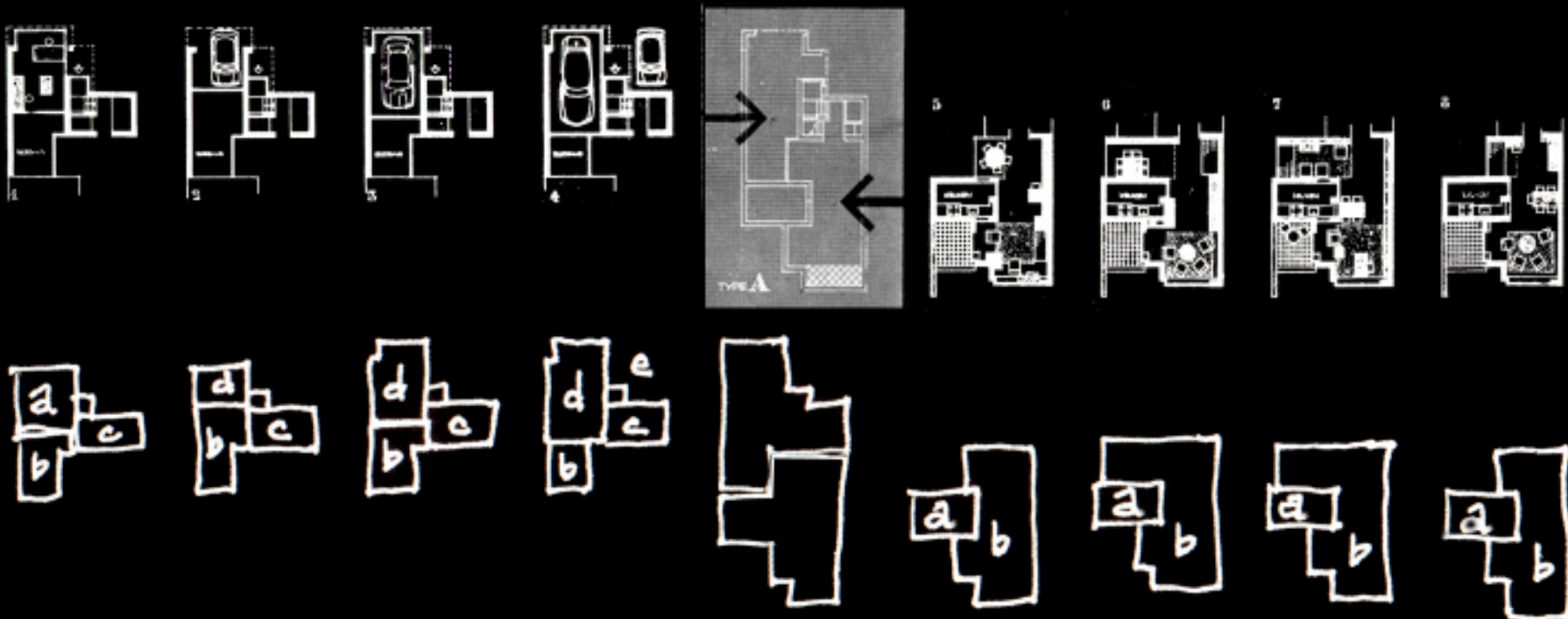
Top right: Using the primary colors to represent the small, medium and large apartments, a watercolor study was done. This study shows the interlocking relationship of the apartments through layers of overlapping colors. Secondary colors are formed where the apartments overlap.

Typically, apartments are not designed for flexibility. Walls between apartments are stationary and not easily removed. If a tenant's needs change he or she will have to move to a different apartment which accommodates their developing circumstances. In our modern, ever-changing society, it seems logical to question how housing can be designed to adapt to the inhabitants changing needs over time.

The closest example of an architect focusing on the changing aspirations of residents over time by conceiving of both the stationary and

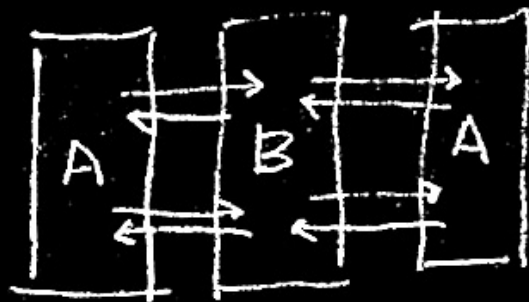


the convertible openings created around them is Herman Hertzberger. In Hertzberger's experimental housing called Diagoon housing, Delft (1969-1970), "the main idea determining these eight experimental houses is that they are in principle incomplete. The plan is indefinite so that the occupants themselves will be able to decide how to divide the space and live in it; where they will sleep, where they will eat, where they will gather. If the composition of the family changes, the house can be adjusted and, to a certain extent, enlarged." Hertzberger does allow for flexibility in the design on a life change basis by incorporating a variety of possible configurations of space with minor adjustments to the walls themselves. If the family circumstances change, the dwellings can adjust to their needs, by adjusting the walls to make slightly larger or smaller spaces.



'Architects should not merely demonstrate what is possible, they should also and especially indicate the possibilities that are inherent in the design and within everyone's reach. It is of the utmost importance to realize that there is a lot to be learned from how occupants respond individually to the suggestions contained in the design. Housing is still designed accordingly to what local government bodies, investors, sociologists and architects think people want. And what they think cannot be other than stereotyped: such solutions may well be roughly adequate, but they can never be wholly satisfactory. They are the collective interpretation by a few of the individual wishes of a multitude. What do we really know about everyone's individual wishes, and how should we set out to discover what they are?'

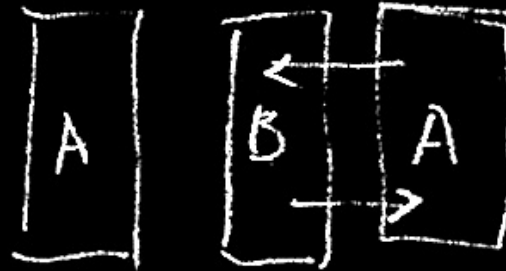
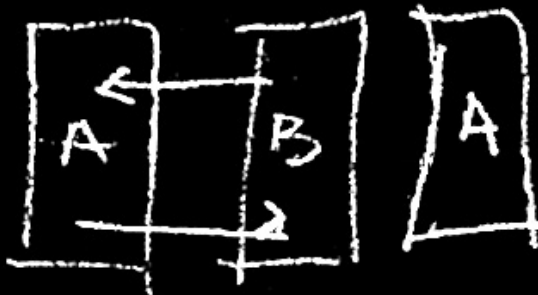
-Herman Hertzberger



A = Small apartment

B = Medium apartment

C = Large apartment



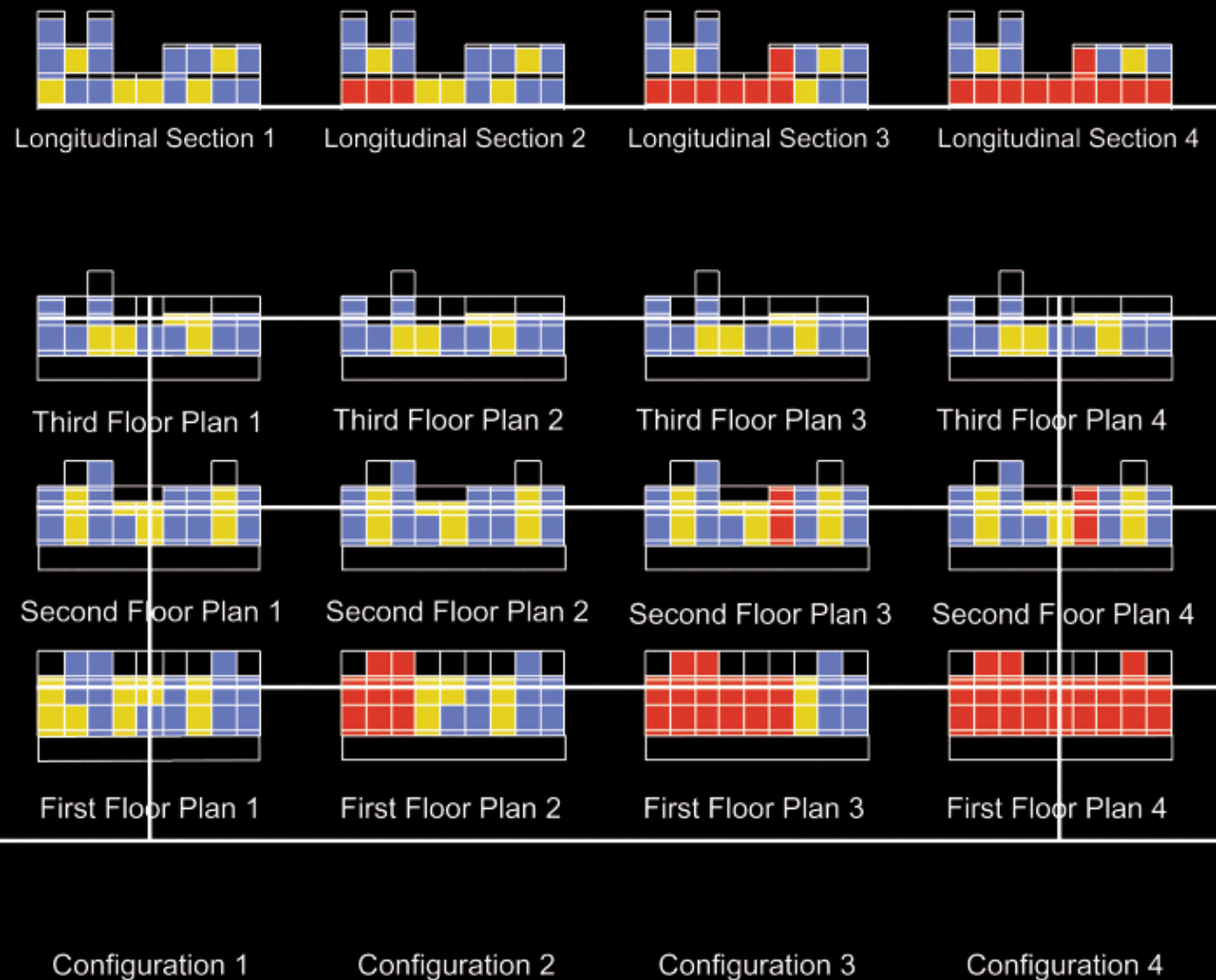
In this project, the adaptation is different from Hertzberger's innovations. A contemporary example of the basic idea is a typical hotel with adjoining rooms. By accessing the rooms from either side, they combine the rooms into a suite when in the open position. The rooms can expand or retract, depending on the desire of the occupants. In this way, the building itself is a living organism. The objective for this housing proposition, a collection of small and medium apartments, is, through their adjacency, to have the capacity to combine and become large apartments. The large apartments in turn can be divided back again into small and medium dwellings when a more modest living space is desirable. The premise for this proposal is based on two kinds of change, (1) within units, a modification internal to the living quarters to reconfigure and accommodate changing spatial needs on a daily basis, and 2) between units, a transformation that allows expansion and contraction in the dimensions of the residences as spatial needs change over decades.

Left top: Typical apartment building floor plan

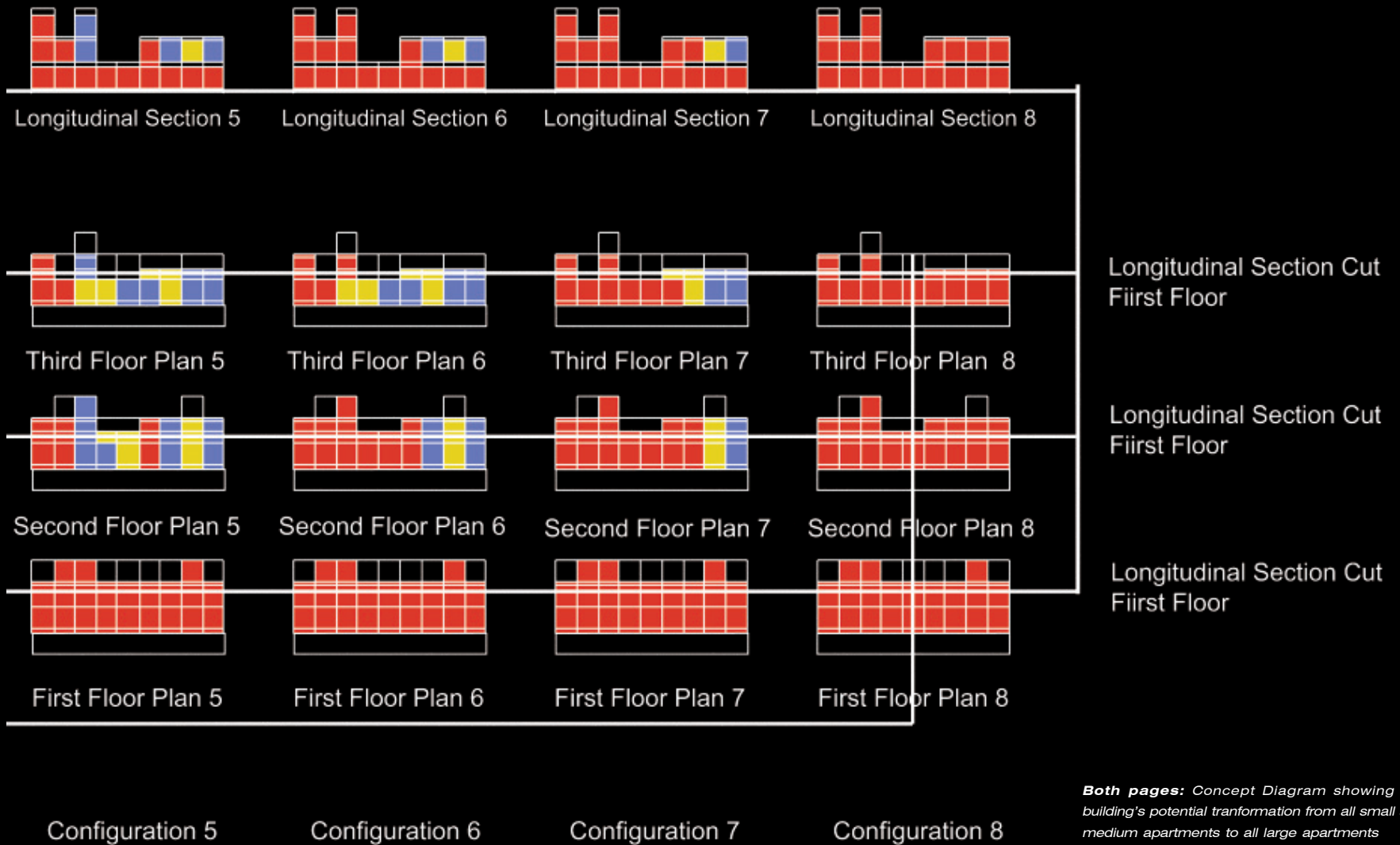
Left bottom: Hertzberger's housing dynamic floor plan

Opposite Page: New housing initial concept diagram

Similar to the potential in Jazz Fusion, the transformation of apartments can lead to an almost unlimited number of possible configurations within the building, depending on the spatial needs of each new tenant or a life change of a current resident. In one extreme, the building could be exclusively small and medium dwellings or could embody only large residences. In practice, variations between the two extremes would be most likely.



- Small apartment
- Medium apartment
- Large apartment



Both pages: Concept Diagram showing the building's potential transformation from all small and medium apartments to all large apartments



Chicago

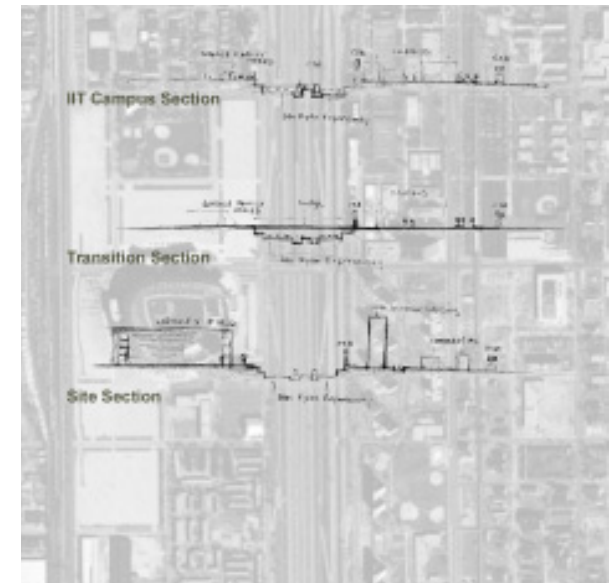
The site of this project is limited to one block in the Grand Boulevard District of Chicago's south side on the southern perimeter of IIT (Illinois Institute of Technology), west of Lake Michigan and east of Comisky Park, home of the Chicago White Sox. This district is the nucleus of one of the oldest and largest Black communities in the United States.

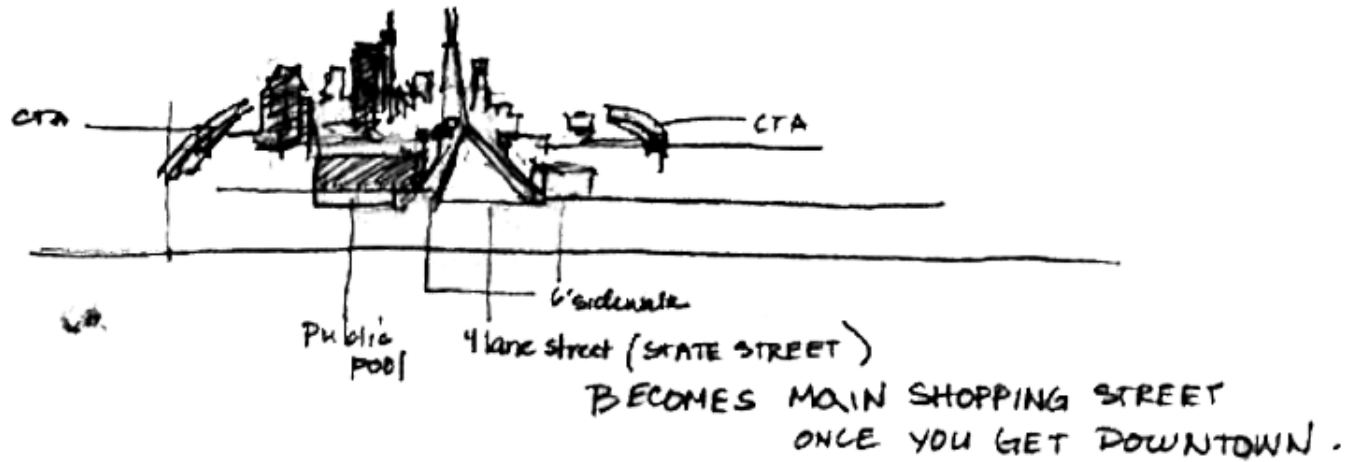
Left top: Aerial view of site

Right top: View from site looking towards downtown Chicago

Left bottom: Siteplan of neighborhood

Right bottom: Sectional diagram of site





The population around the site is diverse, consisting of students and professors to the north, commercial spaces along the perimeter of State Street to the east, low-income housing trailing to the south and single-family homes scattered throughout. The demolishing of the low-income housing on the site provides an opportunity for a variety of housing for a social and economically diverse population, while re-establishing infrastructure. The over-arching concept is to design variable housing for a diverse population, which can adjust to the changing needs of its residents over time.

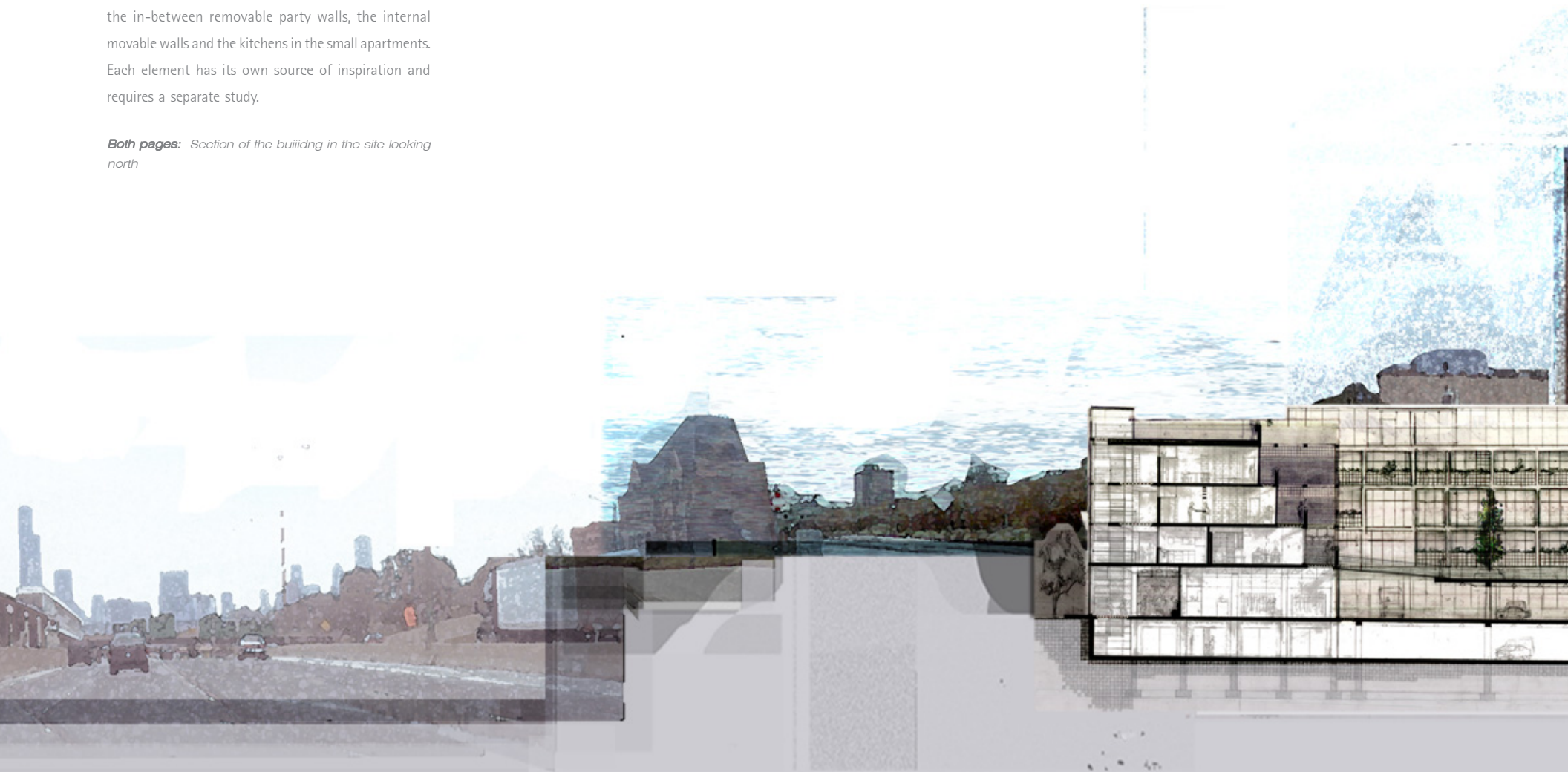
Top: Drawing showing the site's relationship to downtown

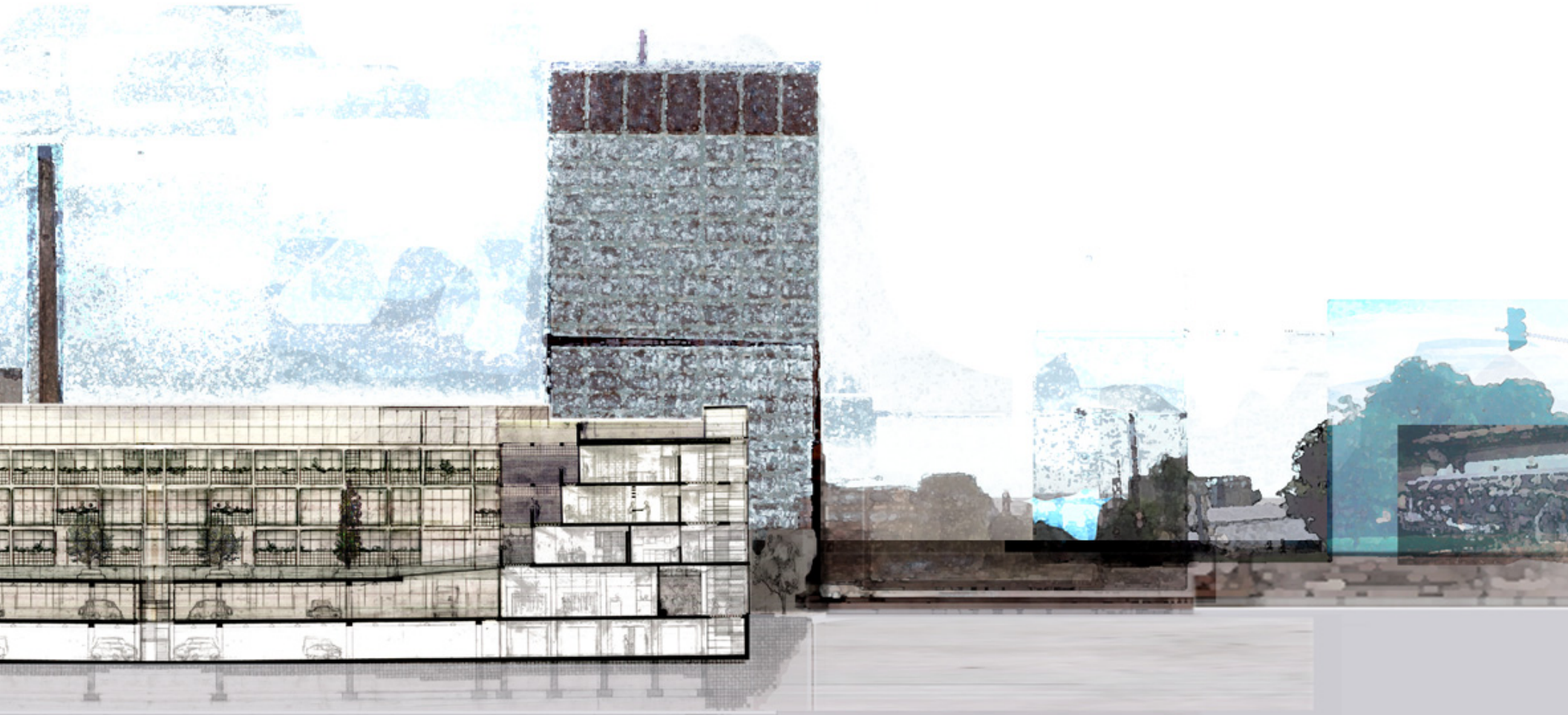
Bottom: Photographic collage of site



This concept requires differentiating between those elements that are constant and those that are more improvisational. The static elements are the structure, and a plinth containing a park on top and parking below, a connection to the outdoors, access, which includes the entrance to the apartments and built-in furniture. The elements that have the potential to change are the in-between removable party walls, the internal movable walls and the kitchens in the small apartments. Each element has its own source of inspiration and requires a separate study.

Both pages: Section of the building in the site looking north



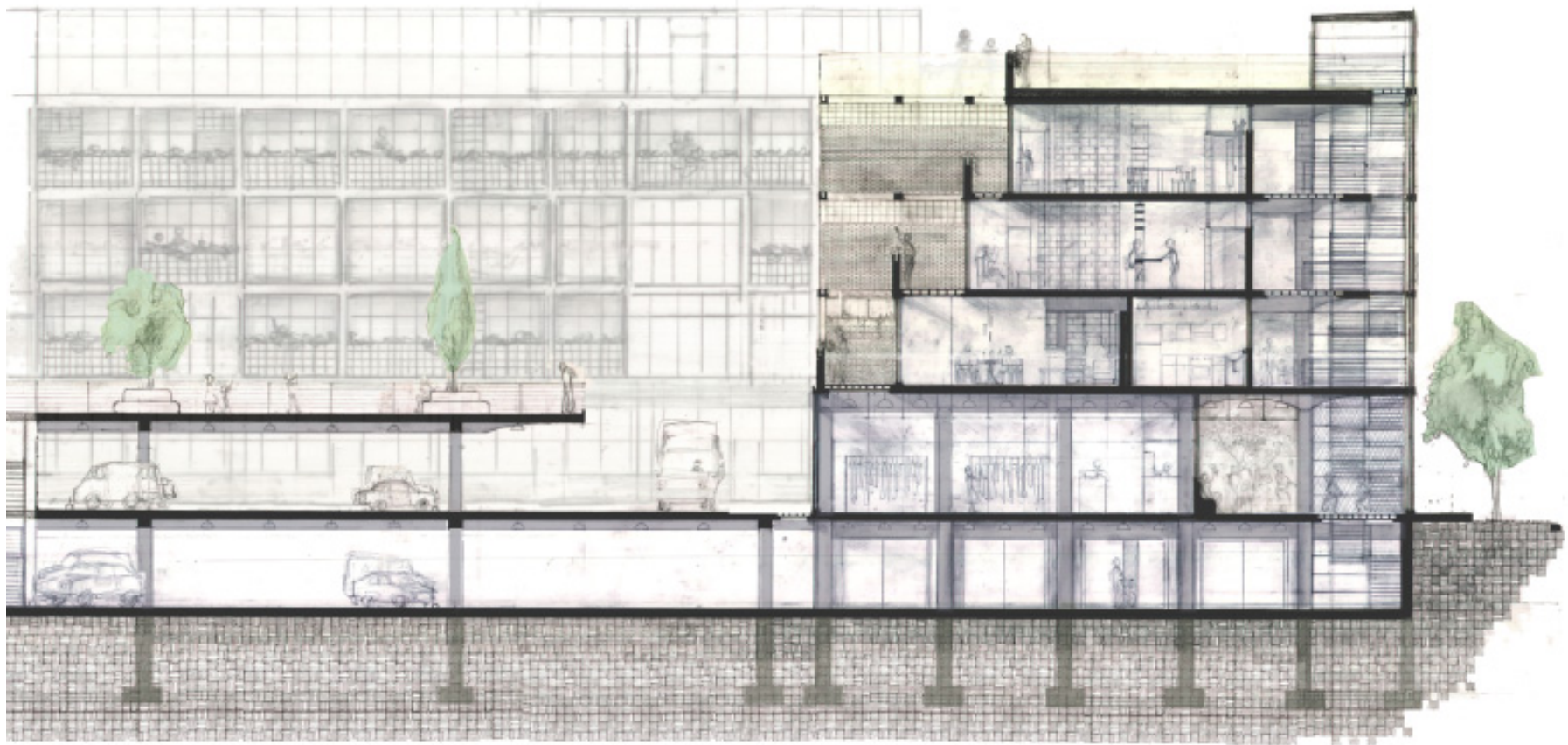


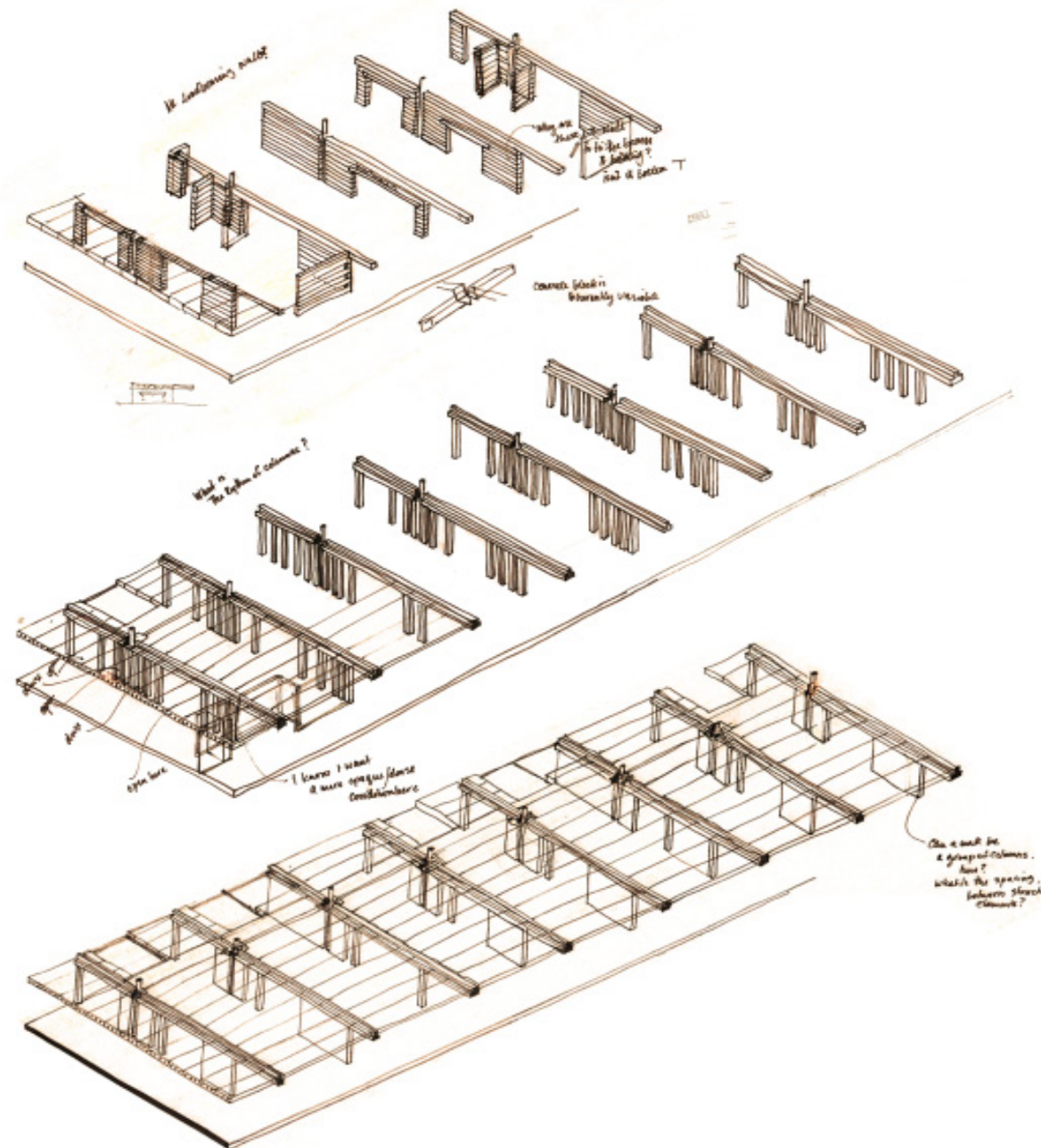
The Stationary

22

Structure

The structure is most consequential because, like the notes in a song, it provides a framework in which the changes both between apartments and within apartments occurs.

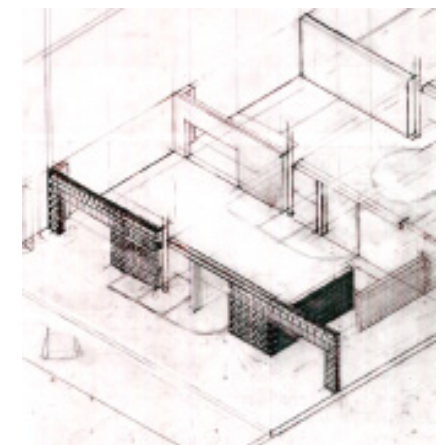


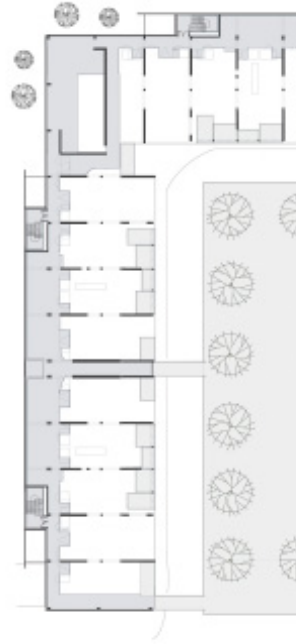
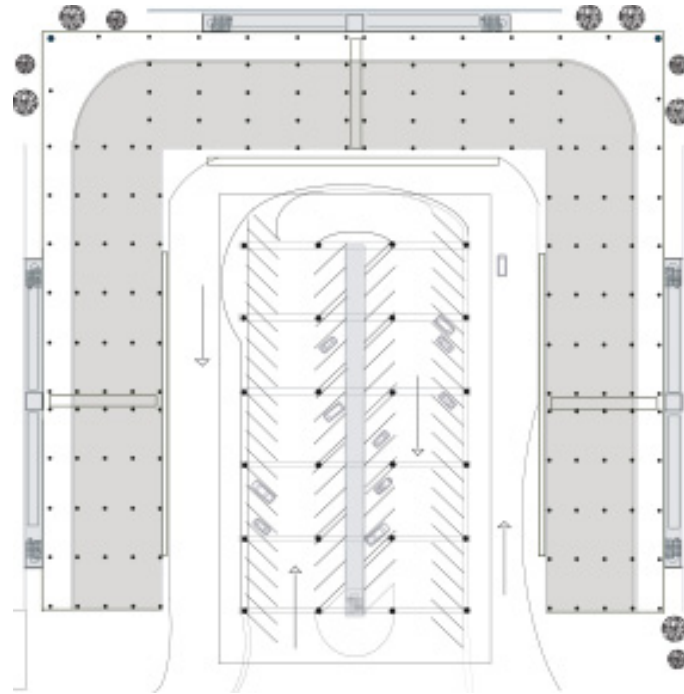
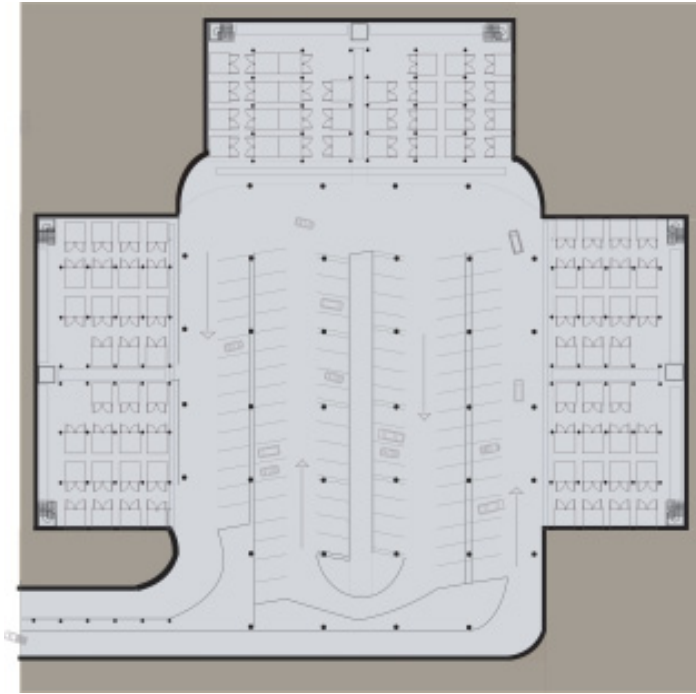


A combination of columns and a load-bearing wall construction was chosen as the structure to both divide space and allow openings for the conversion between apartments to occur. This structural design consists of a combination of reinforced cmu (concrete masonry unit) load-bearing walls and a concrete column carrying a concrete beam spaced regularly every 24 feet and cantilevering 6 feet towards the plumbing stack. The column and beam structure spans across openings in the cmu wall allowing for the transformation between apartments to take place.

Opposite page: Section highlighting the structure
Left: Isometric showing three variations of potential structural configurations; a system of columns, a system of load bearing walls, and a combination of both.

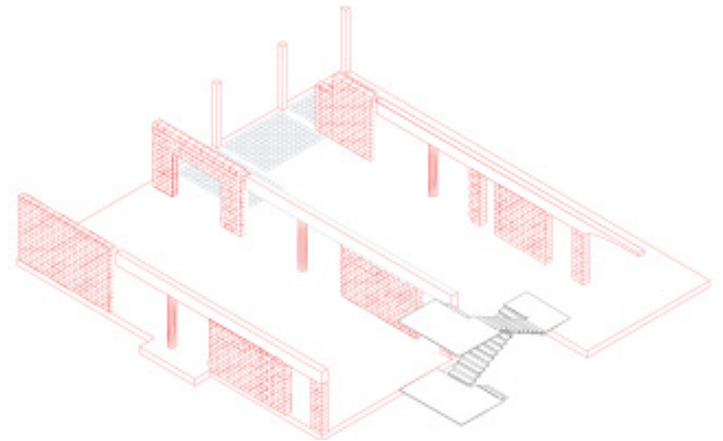
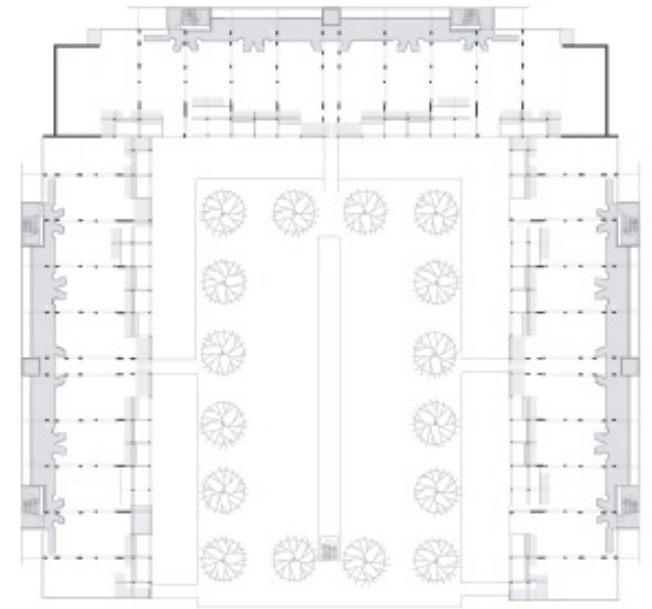
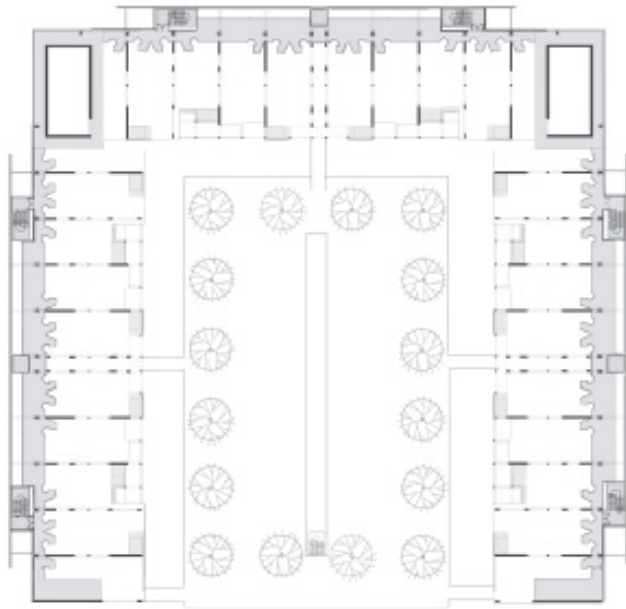
Below: Axon of the structure





Above: Below grade, ground level, first, second and third floorplans showing structure.

Right bottom: Axon showing structure

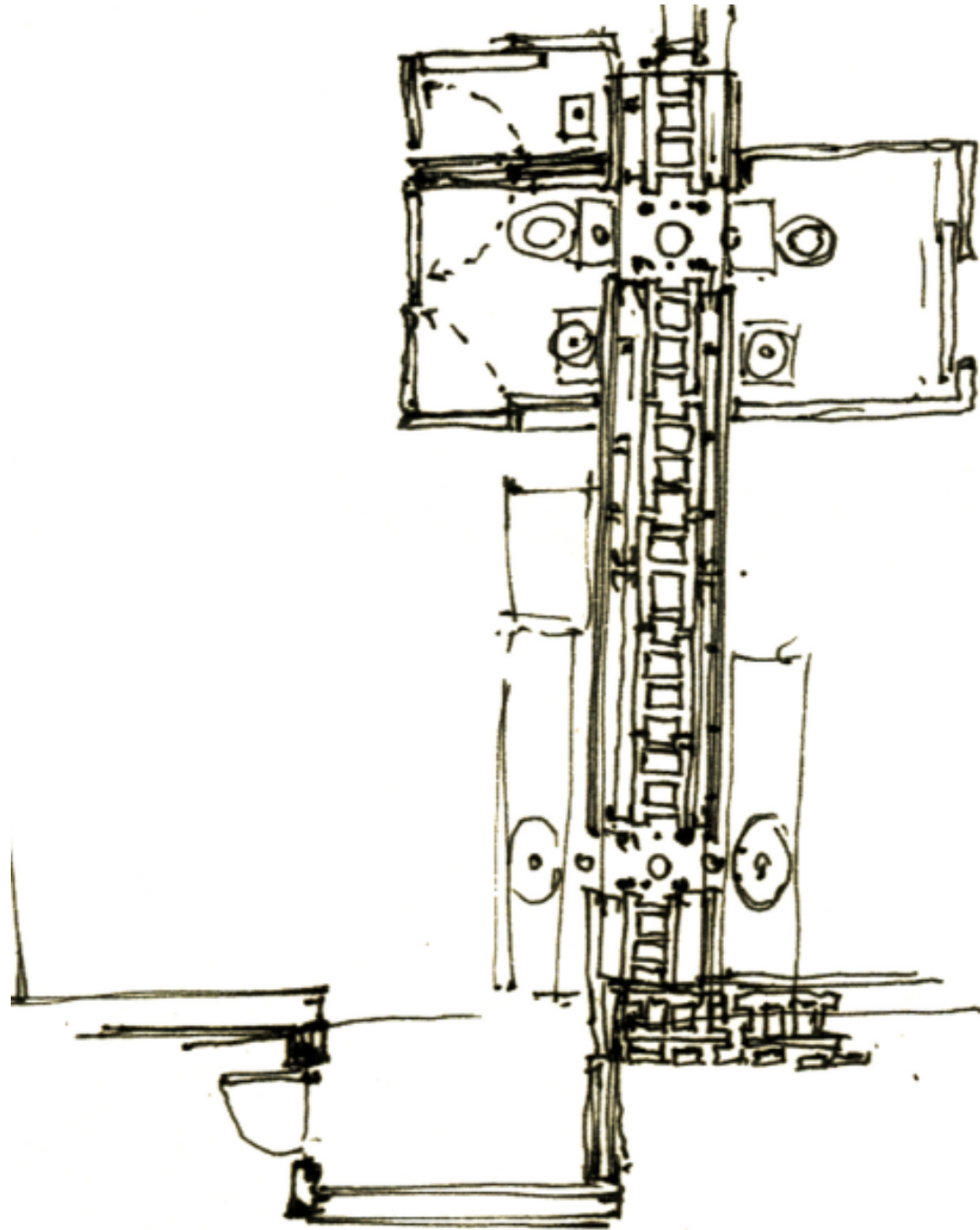


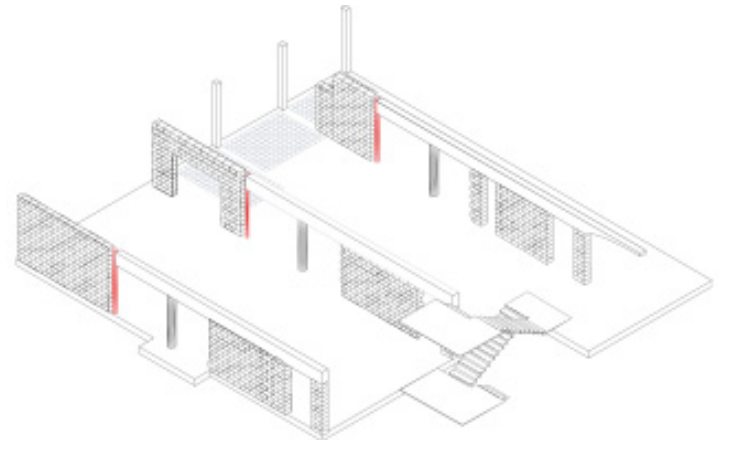
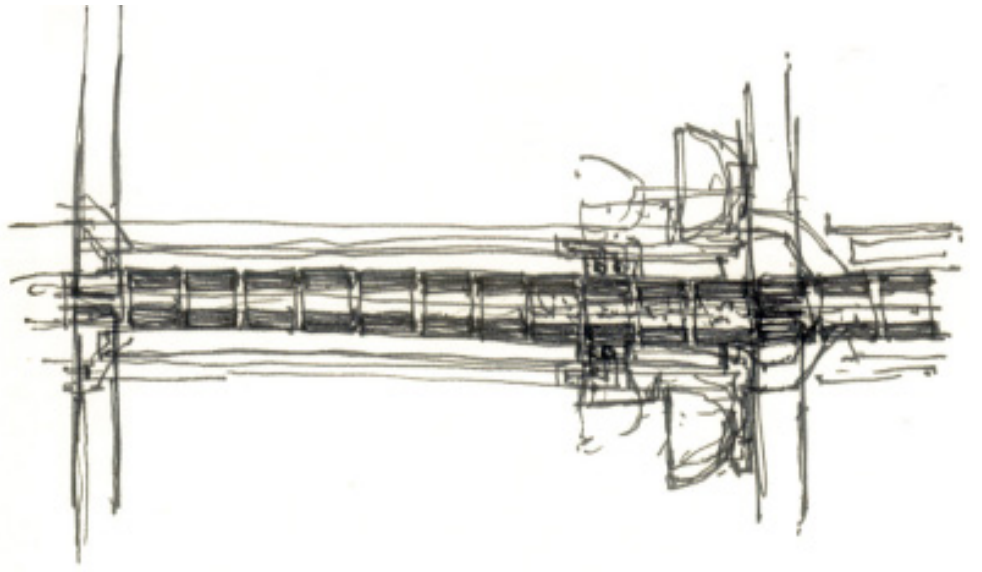
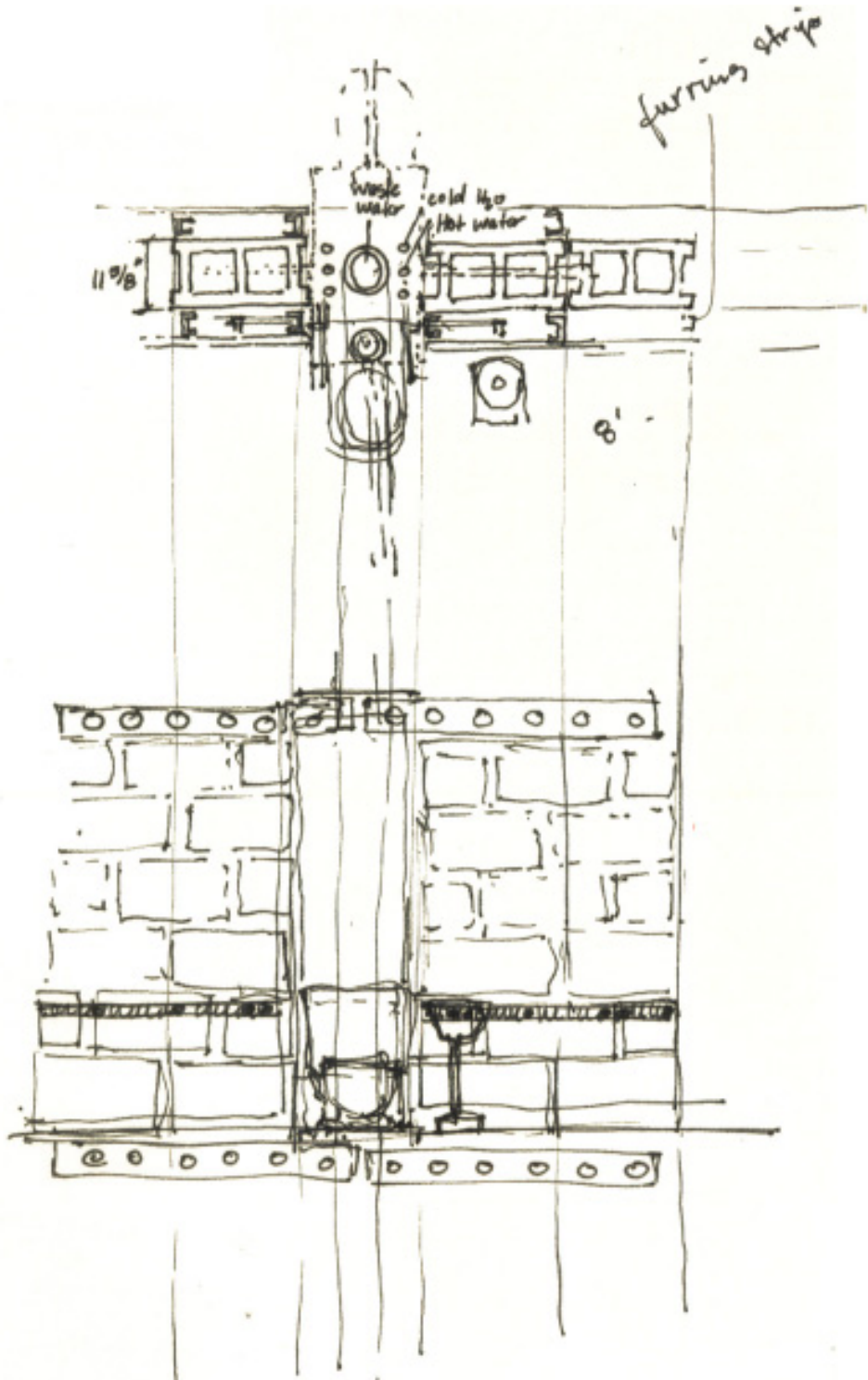
The cantilever in the beam leaves a place for the plumbing vent stack. The plumbing in multi-family dwellings becomes significant to the design because of the requirement that it be vertical, like a column in the structure.

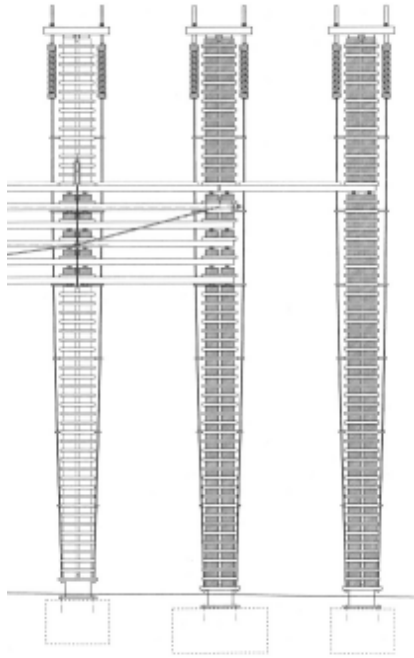
Left: Initial Plan of vent stack's relationship to the fixtures.

Opposite Page: Working Plan, Section, Elevation of the plumbing's relationship to the structure.

Opposite page, right, bottom: Axon showing the concluding relationship between the vent stack and the structure.

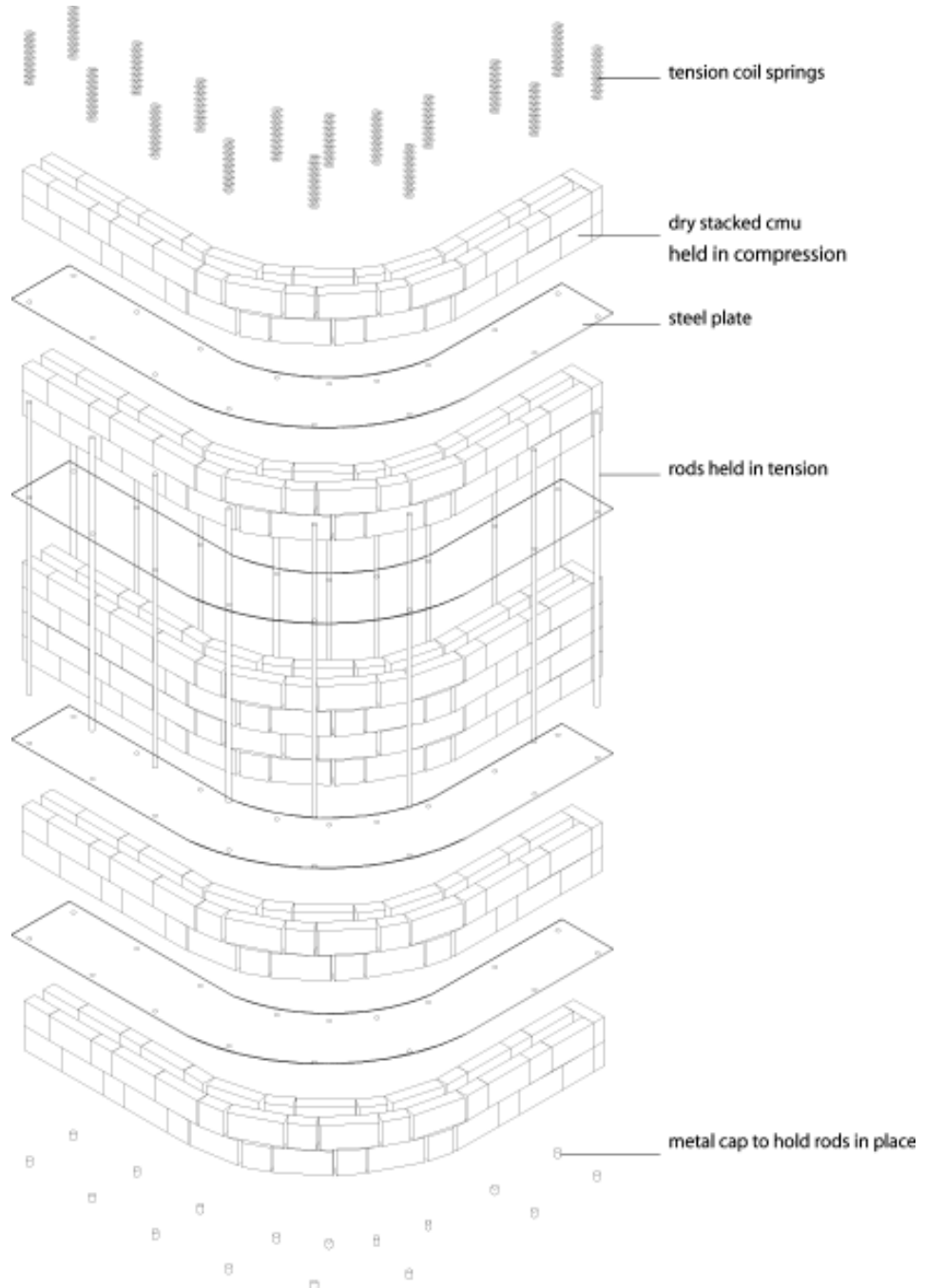


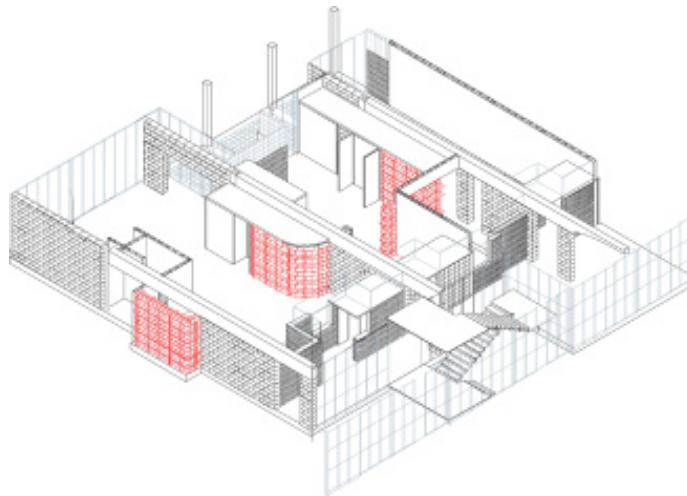
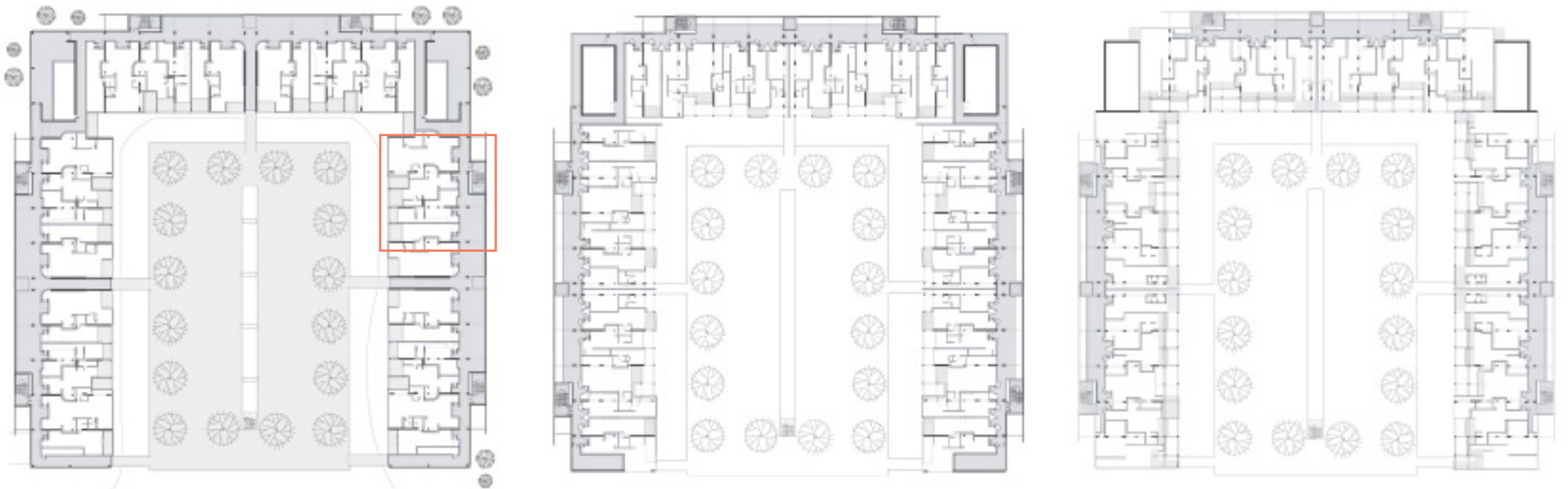




The metamorphosis of the apartments happens by two means. On a daily basis, the transformation of space occurs using the movable wall, and, as life changes occur, the apartments can expand or contract using the removable wall.

The inspiration for this wall came from Peter Zumthor's Sound Box Pavilion, constructed for the Hanover Exhibition in 2000. In this example, Zumthor stacked timber planks 45 by 45 by 544 mm, with spacer blocks inserted between the planks and clamped in place between steel plates by rods held in tension. In both the Zumthor example and this project, the main idea is to design a structure that is easily removed, easily reassembled and leaves no debris behind in the process.





Opposite page, upper left: Section detail of Peter Zumthor's Sound Box Pavilion

Opposite page: Exploded axon of re-movable wall

Above: First, second and third floorplans showing structure with partition walls and re-moveable wall

Right bottom: Axon showing re-moveable walls with partition walls.

The removable wall, below the concrete structure, is the key to transforming two smaller apartments into one larger unit and back again. The removable wall is two layers of dry stacked cmu with a layer of acoustical insulation in-between. To keep the blocks in place, metal plates are sandwiched between every two or three layers of block, which are held together by metal rods on both sides of the wall. The metal rods are held in tension by a spring at the top and act similarly to post-tensioning strands in reinforced concrete. This wall is easily unbolted and unstacked by two people within one day. The mass of the cmu stack provides acoustic separation between the apartments when in place, and when disassembled, leaves few remnants behind, while the parts are reused when two separate smaller apartments are preferred.

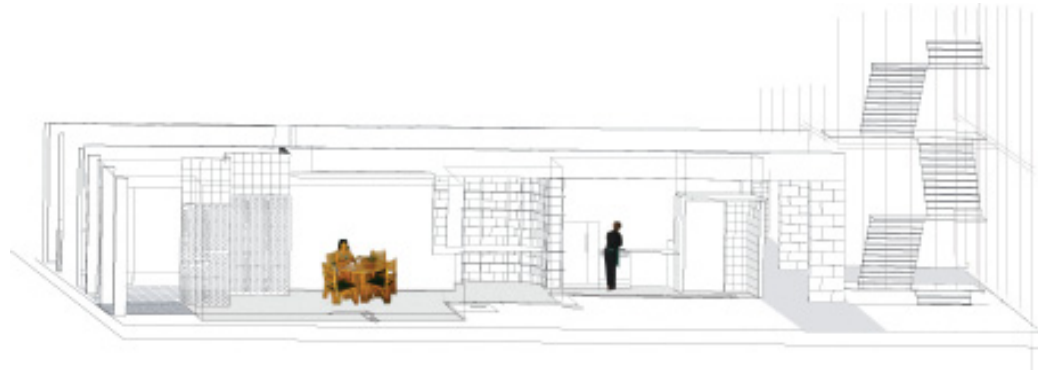
Transformation of Square Footage

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Small Apartment

Closed

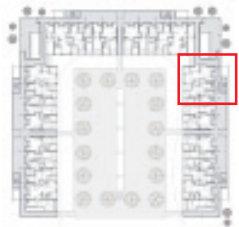
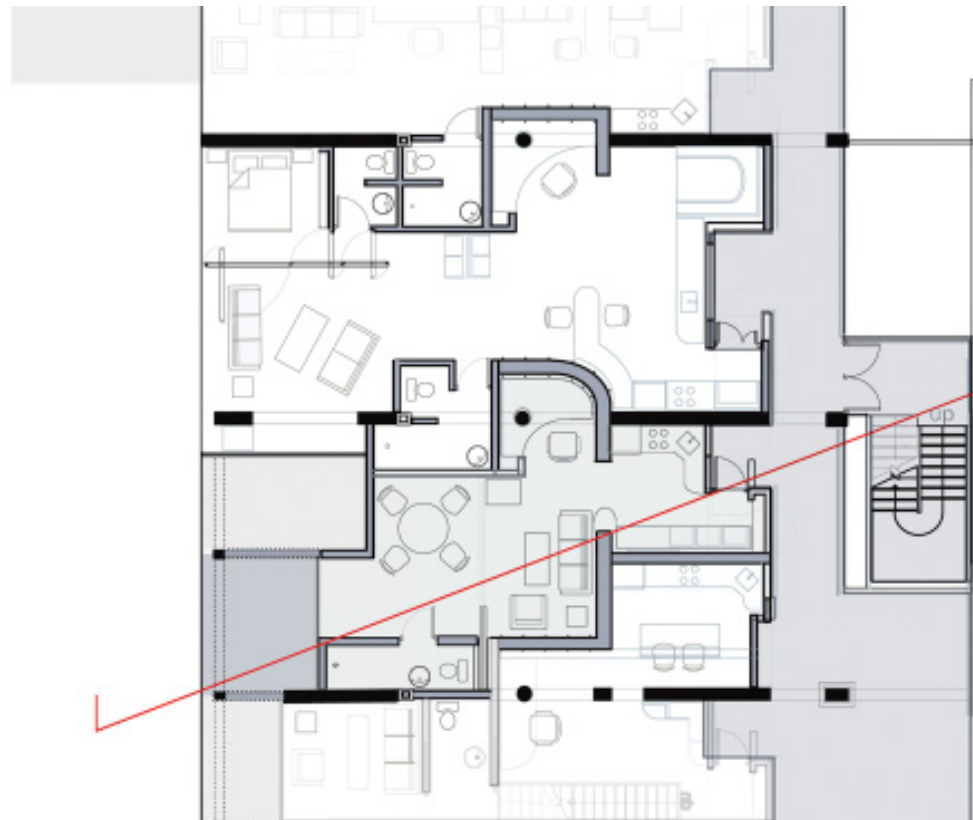
The small and medium configuration is considered closed when the two apartments are separate. The large configuration is open, when the apartments merge into one unit. In the open condition, the kitchen of the small studio apartment is transformed into space for a bedroom.

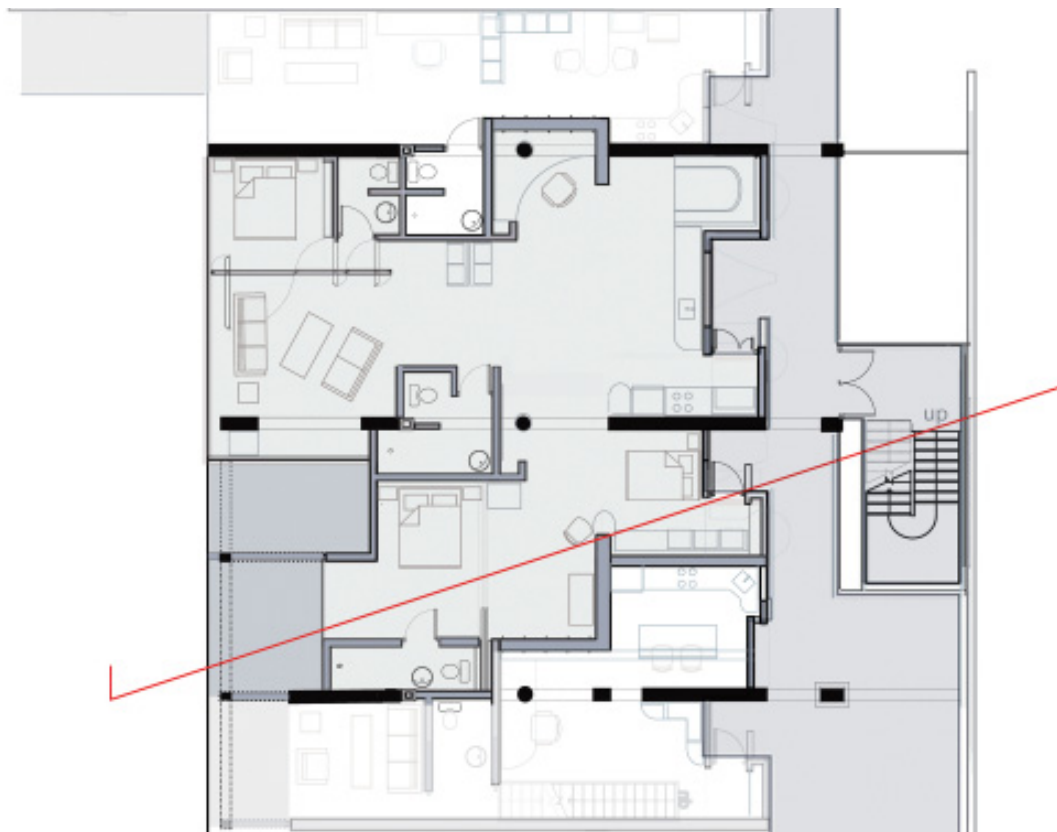
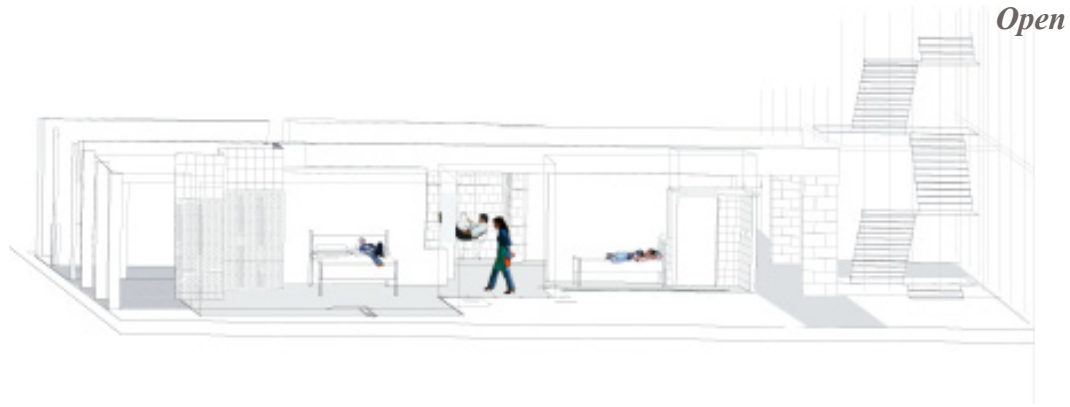


Upper right: View into small apartment.

Lower right: Floorplan of small apartment.

Left bottom: Floorplan of first floor.

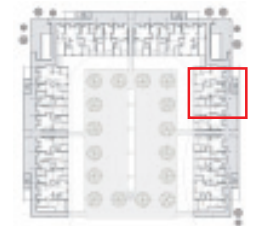




Upper left: View into small apartment transformed into a large apartment.

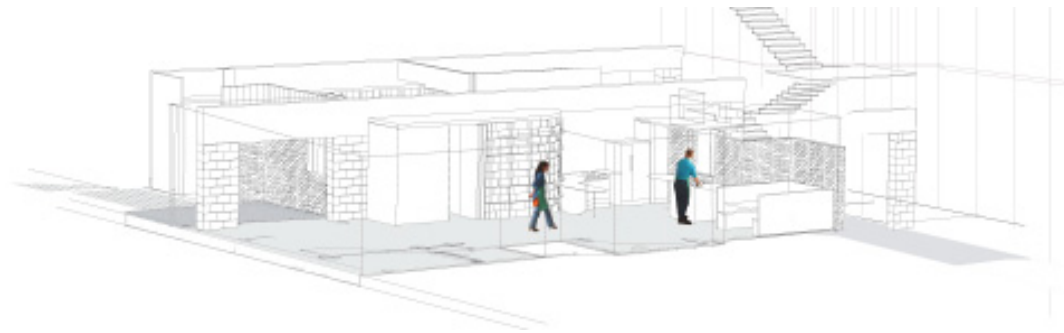
Lower left: Floorplan of large apartment.

Right bottom: Floorplan of first floor.

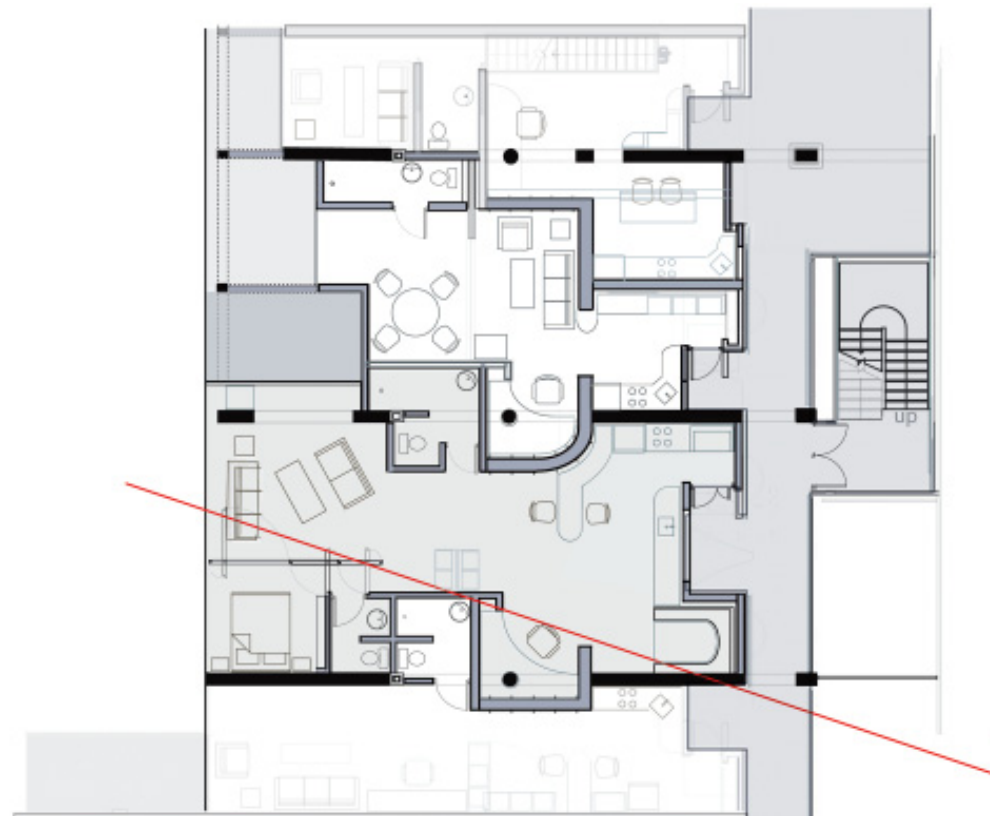
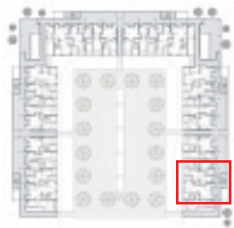


Closed

In turn, when a smaller apartment is desired, the removable wall along with the kitchen appliances can again be set in place, and one small and one medium apartment will exist adjacent to one another once again.

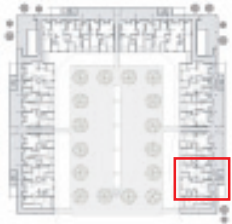
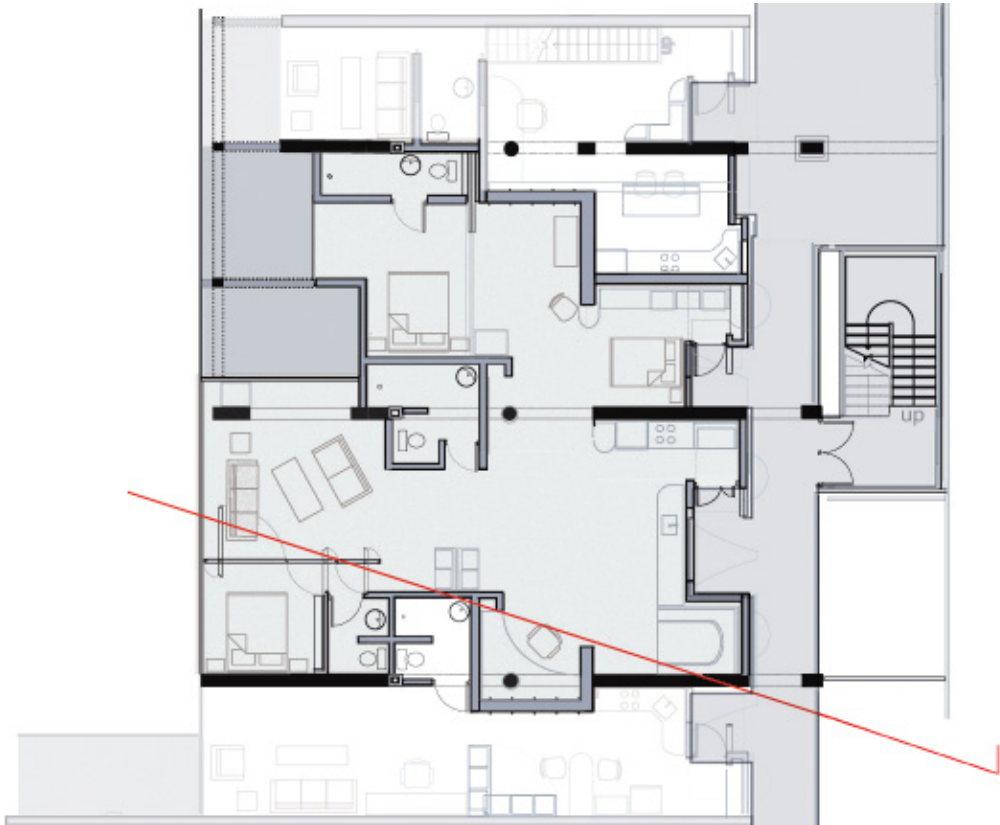


Upper right: View into medium apartment.
Lower left: Floorplan of medium apartment.
Right bottom: Floorplan of first floor.





Upper left: View into medium apartment transformed into a large apartment.
Lower left: Floorplan of large apartment.
Left bottom: Floorplan of first floor.



Internal Movement

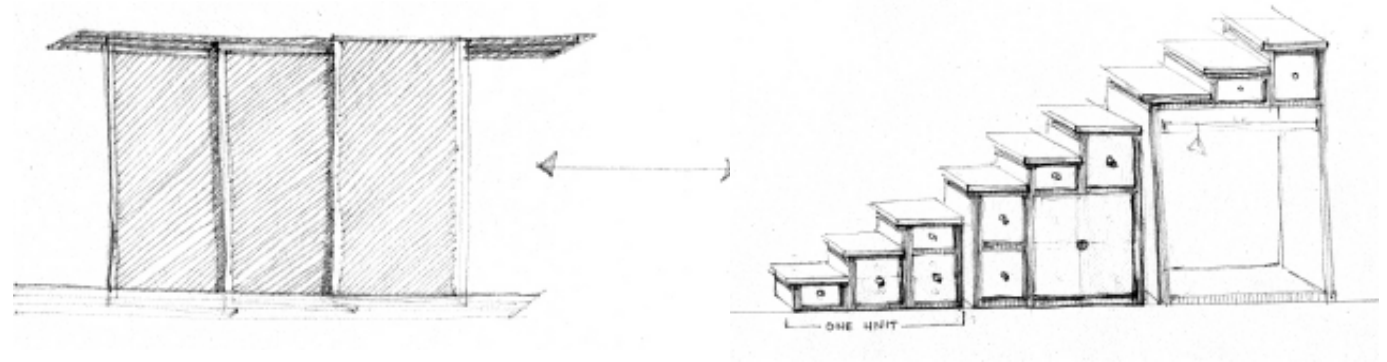
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Moveable Parts

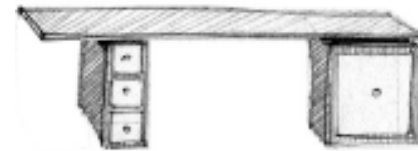
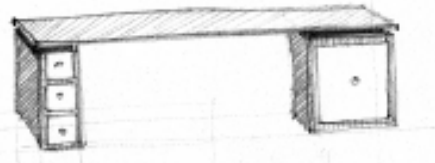
The convertibility within each apartment comes from the personalization of space through movable parts. This proposition builds upon a notion inspired by both Gerrit Rietveld and Steven Holl using interior alterations to space as a transformation of place.

In this project, Two apartments join to become one large apartment by dismantling and storing the removable wall for future use. In this metamorphosis, the kitchen transforms into a bedroom. This happens by means of appliances on wheels and modular cabinetry.

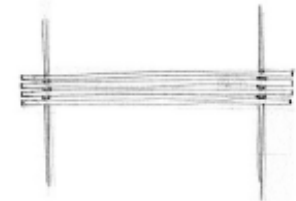
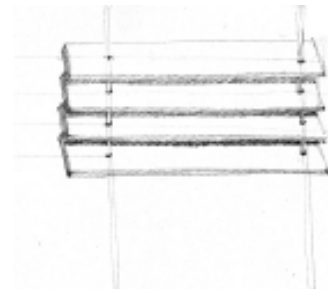
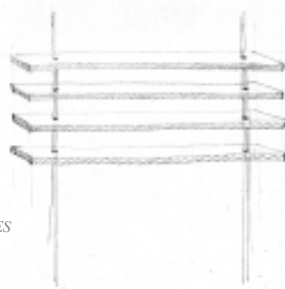
The transformable kitchen concept is in part inspired by Gerrit Rietveld's Schroeder house. The design of the Rietveld bathroom has the fixtures hidden behind a closet in one state, and with a few minor adjustments, is transformed into an operable bathroom.



PARTITIONS



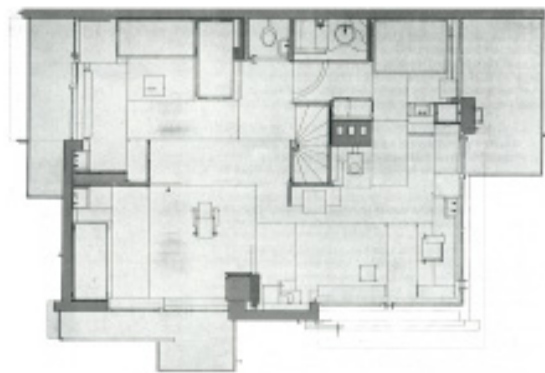
COUNTERS



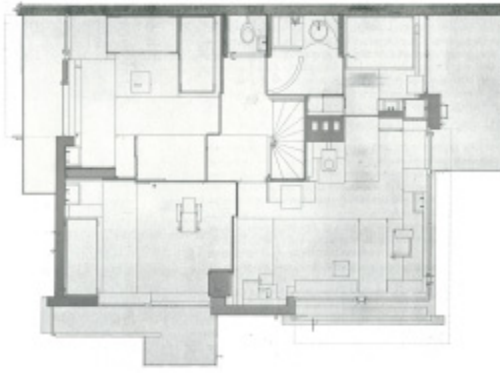
SHELVES

Right: Dynamic furniture and appliances.

Below: Plan of Schroeder house by Gerrit Rietveld showing the transformable bathroom on the second floor.



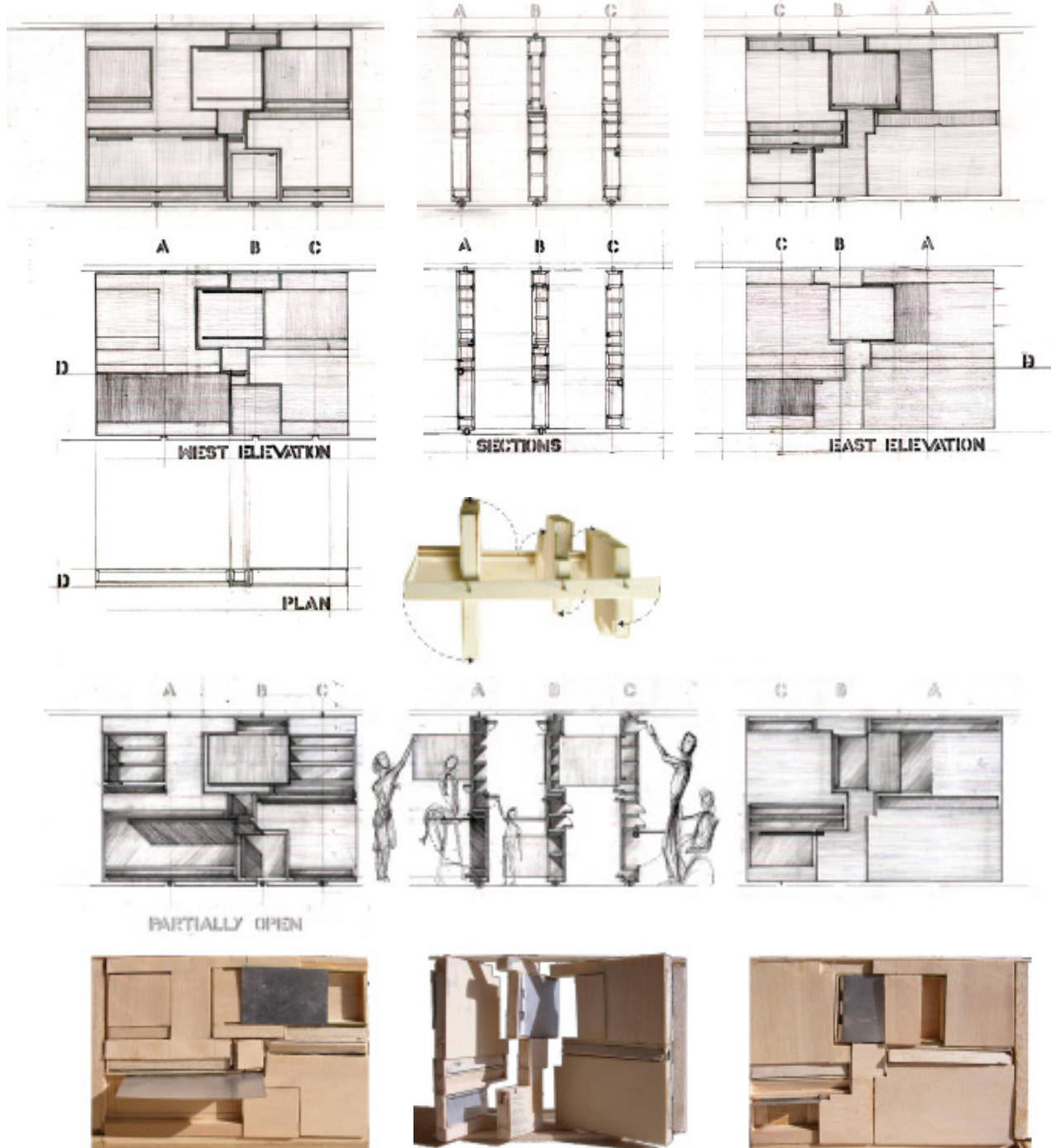
Second Floor Plan OPEN



Second Floor Plan CLOSED



APPLIANCES

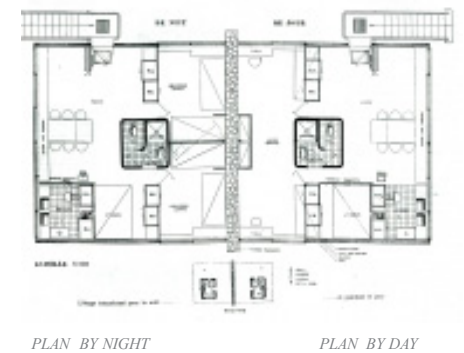


A pivoting wall serves as an internal modifier of the space within the apartments. This dynamic transformation (Corbusier's La Maison Loucheur) can occur on a daily basis if desired. In it, separate parts pivot to reconfigure the room to accommodate the different needs during the daytime and nighttime. An analysis of critical ergonomic heights aided in positioning of parts within this movable wall. Men, women, children and the handicapped were all grouped to find the commonality and differences in eye height and reach levels while standing and sitting. This developed into a three-segment wall, which pivots, carries parts, pulls down and up, and slides across and opens at the most favorable heights. The pivoting wall's interlocking appearance resembles the interlocking spaces in each apartment within the building, albeit at different scales.

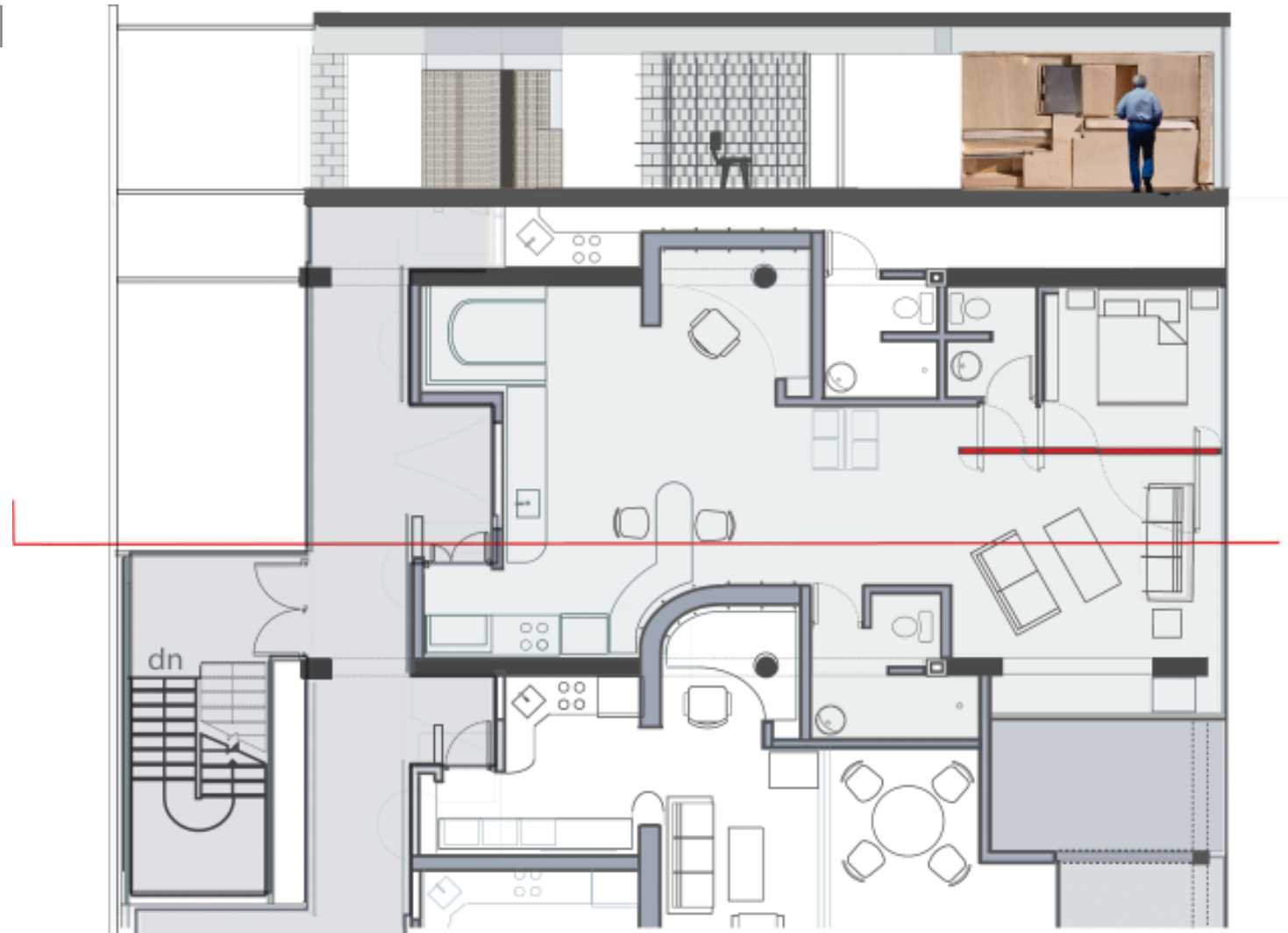
Left: Plan, Section and Elevation of moveable walls within the apartments.

Below Left: model of moveable wall shown in locked, unlocked but closed and open positions.

Below: Plan of Corbusier's La Maison Loucheur



A moveable pivoting wall serves as an internal modifier of the space within the apartments. This dynamic transformation can occur on a daily basis if desired. Separate parts pivot to reconfigure the room.

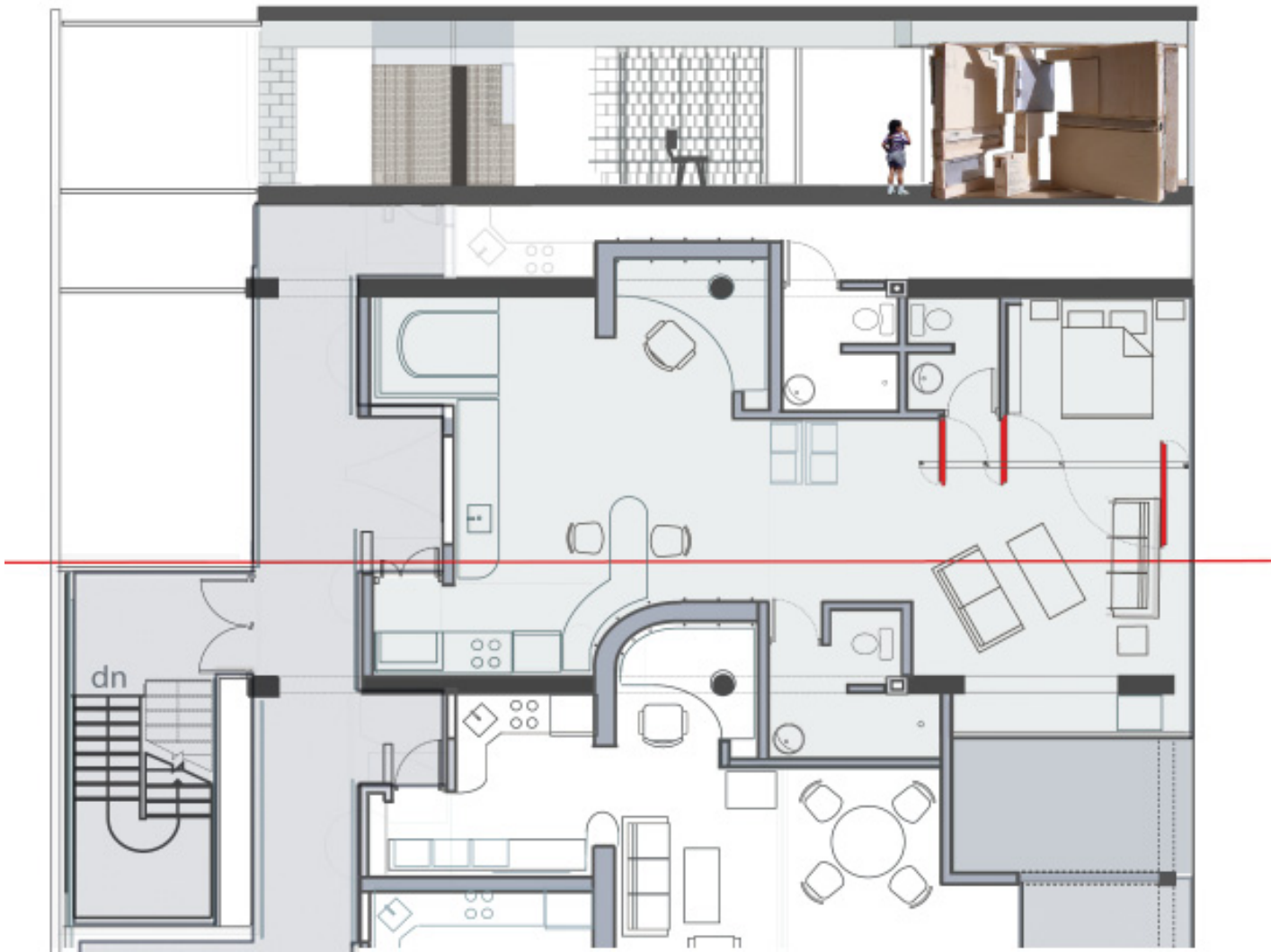


Closed

Right Above: Section of medium apartment/ view of moveable wall closed.

Right Below: Plan of medium apartment highlighting wall.

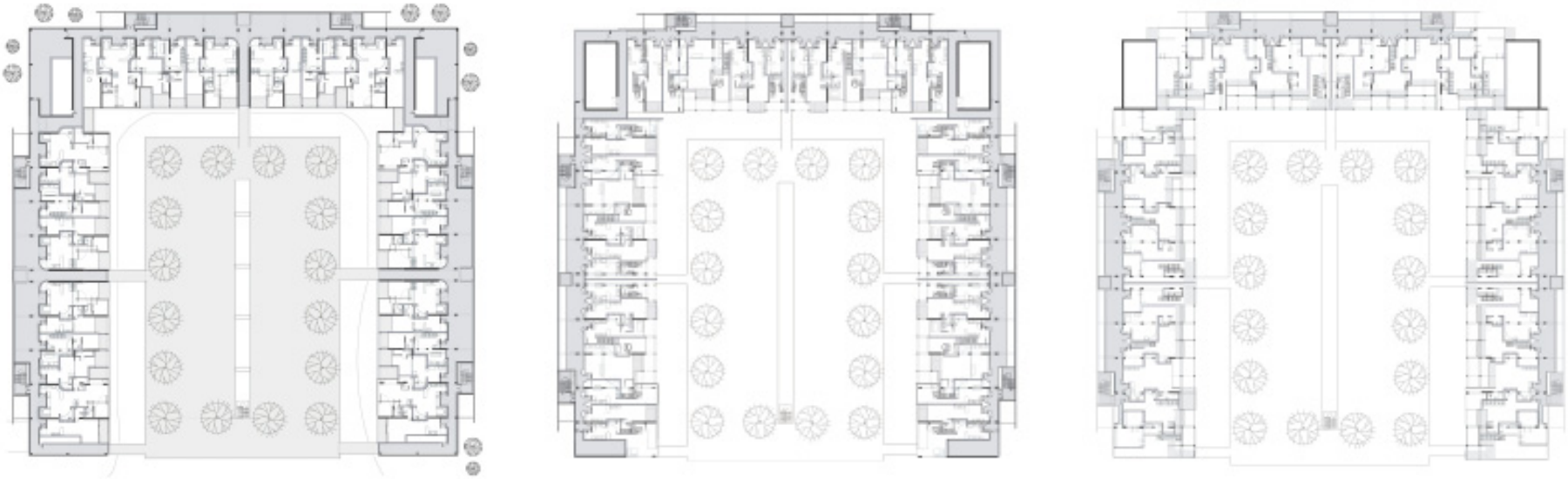
The pivoting walls have adjustable parts to transform the space within the apartments when open or closed. In its unused state, the pivoting wall acts as storage and shelving, and when moved, it further defines the space within the apartments.



Open

Left Above: Section of medium apartment / view of moveable wall open.

Right Below: Plan of medium apartment highlighting wall.

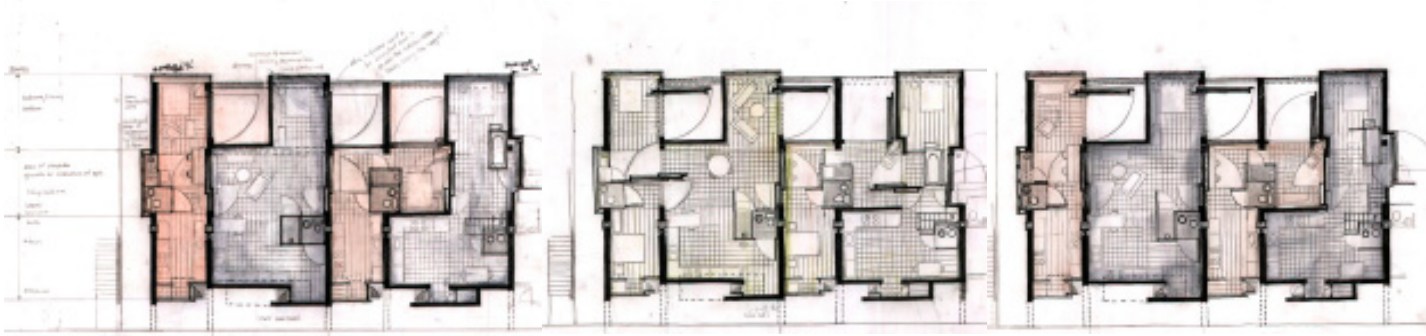


Above: Floorplans of first, second and third floors showing structure and partitions with built-in furniture; including moveable walls.

Opposite page top: Initial floorplan, intermittent floorplan and final floorplan.

Opposite page right: Plan of Aldo Van Eyck's orphanage in Amsterdam.

Development of the Floorplan 39



The interlocking relationship is between the apartments, in both plan and section throughout the project. Refining beyond the initial geometry to make the spaces more habitable gives more room for functions, which need more space and streamline conditions for easier flow through the spaces.



Staggering the rooms in relation to each other creates separated spaces without the necessity of fixed walls. This concept is from Japanese gardens where a staggered organization of the rooms in relation to each other conveys a sense of traveling far. This kind of diagonal spatial relationship between rooms is in Aldo Van Eyck's floor plan of the Orphanage in Amsterdam. In his design, the room layout alternates rhythmically on either side of center, aiding the division of space within the living quarters.

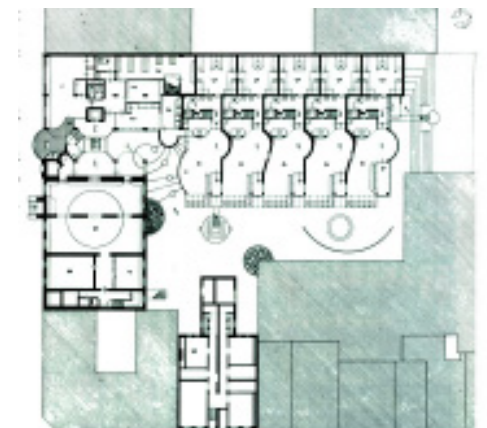
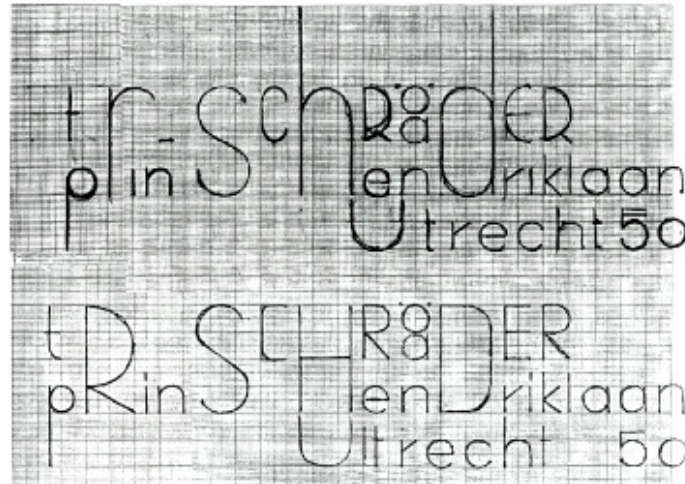


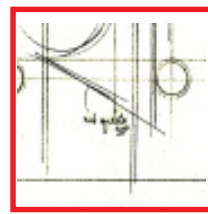
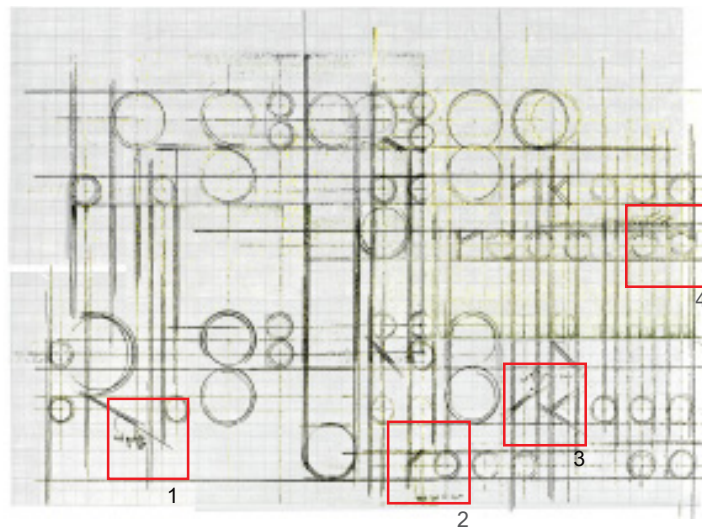


Photo of Han Schroeder (1918-1992)

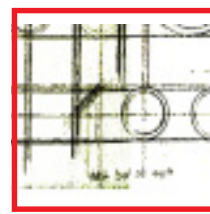
Han Schroeder was an architect, graphic designer and the daughter of Truss Schroeder. Truss Schroeder helped Gerrit Rietveld design the famous Schroeder house. In her writing, Han describes her desire to play with graphics because of their freedom from the constraints of architecture. She also mentions her desire to break from De Stijl ideas (*Programs and Manifestoes on 20th Century Architecture*), found in the Schroeder house in which she lived. De Stijl ideas centering on typography emphasize the use of a triangle, T-square and a compass as an efficient means of forming type, and is a clear influence on Han Schroeder's style. However, She occasionally breaks from this approach by slightly swelling or shrinking the letters to streamline conditions in the overall design. The result is a greater harmony to the graphic work, aiding the legibility of the type. Han Schroeder's concept seen in her occasional breaks from the DeStijl tradition was the inspiration for breaking from rigid geometry in this project in order to accommodate humanistic needs more gracefully.



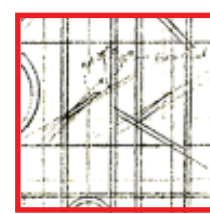
1. Schroeder's Typography
2. Re-Construction of Schroeder's Typography



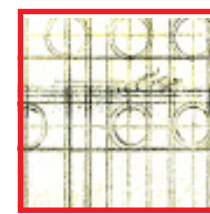
1



2



3



4

"Lack of time has kept me from experimenting with graphics. Letters and numbers allow for a freedom impossible in the discipline of architectural design; they fascinate me. A letter finds it hard to lose its identity; it remains useful at any angle or even upside down. Try that with a chair! So, just for my own little pleasure I have designed some letteheads, a business calendar, and a few well wishers..." *Han Schroeder IAWA*

Re-construction detail 1

The diagonal leg of the "R" is not quite a 30-degree angle. This shows that Schroeder was not using a triangle to form her letters, but instead, it is likely she used the grid to determine the angle and to create an overall congruous design.

Re-construction detail 2

The incline of the lower case "r" is more closely aligned with the grid than the angle of a triangle. Its angle can be found between 30 and 45-degrees. While the angle was likely derived from the grid the bulk of the angle surpasses it.

Re-construction Detail 3

The center of the letter "o" is made from a circle, which has its center slightly outside the grid. This is compatible with the other circles which are vertically in alignment with this letter.

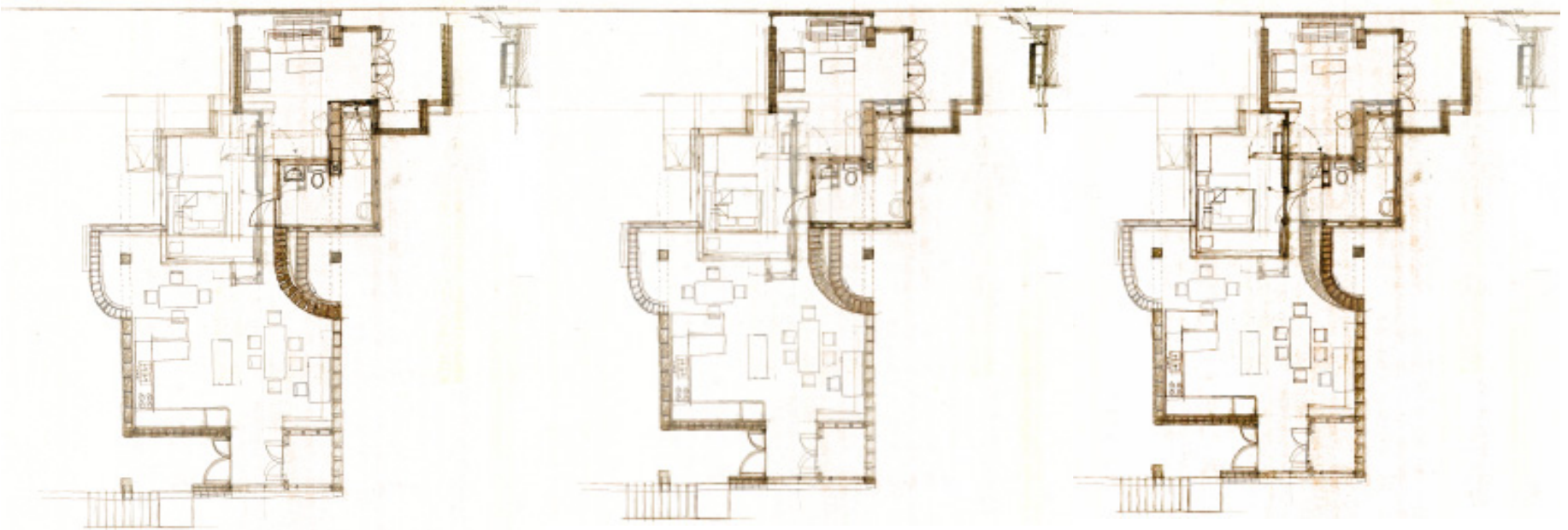
Re-construction Detail 4

The angle of this letter "r" is at a length far beyond the line of the grid. This diagonal line is neither a 30-degree or a 45-degree and, therefore, was not constructed from a triangle. This letter seemsto be aligned with the center of the letter "o" found above it.

The study of Han Schroeder's Typographic design, specifically her work in which she broke from a rigorous grid, helped develop solutions to make the interior space more livable. By breaking from the rigorous grid the size of the spaces could be adjusted based on the function within that area. Also the wall could be moved away from the column creating an intimate nook useful for more intimate functions. For example, many nooks house a desk which creates a perfect place for a computer because of the light conditions.

Opposite page top: Study of Han Schroeder's Graphic work

Left and below: Adjustments made to floorplan



The original three-part-pivoting wall is only necessary in a portion of apartments where internal divisions of space are needed within the apartments. Due to the narrow width of the apartments and the placement of the rooms, a complex system of moveable walls was not necessary. Therefore, a single sliding or pivoting wall is sufficient to close off spaces when more privacy is preferable.

**A****A****A****A****B****B****B****B****B****B****A****B****A****B****A****B****A****C****C****C****C**



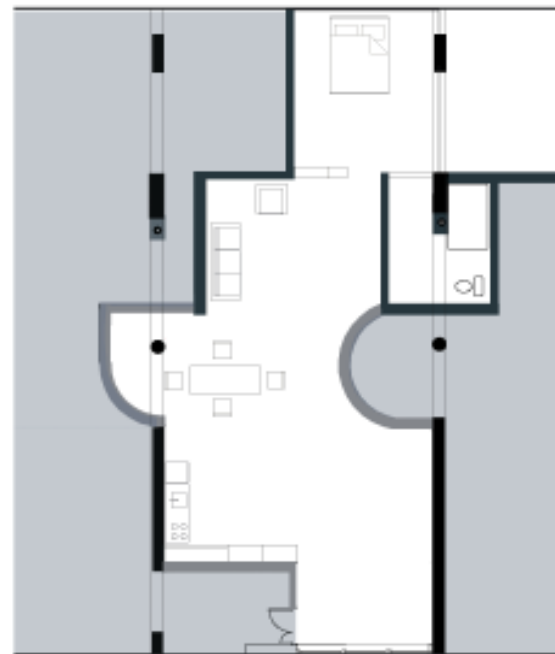
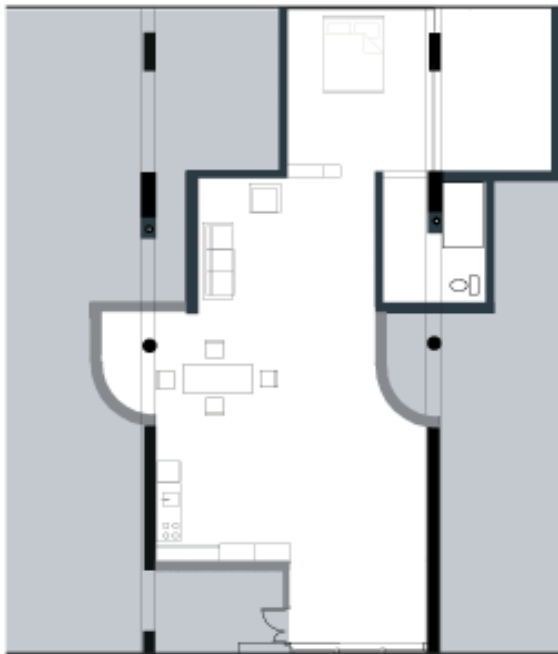
The floorplan was also adjusted to the light conditions within the space.

Opposite page: Model study to determine the appropriate placement for the division of the rooms.

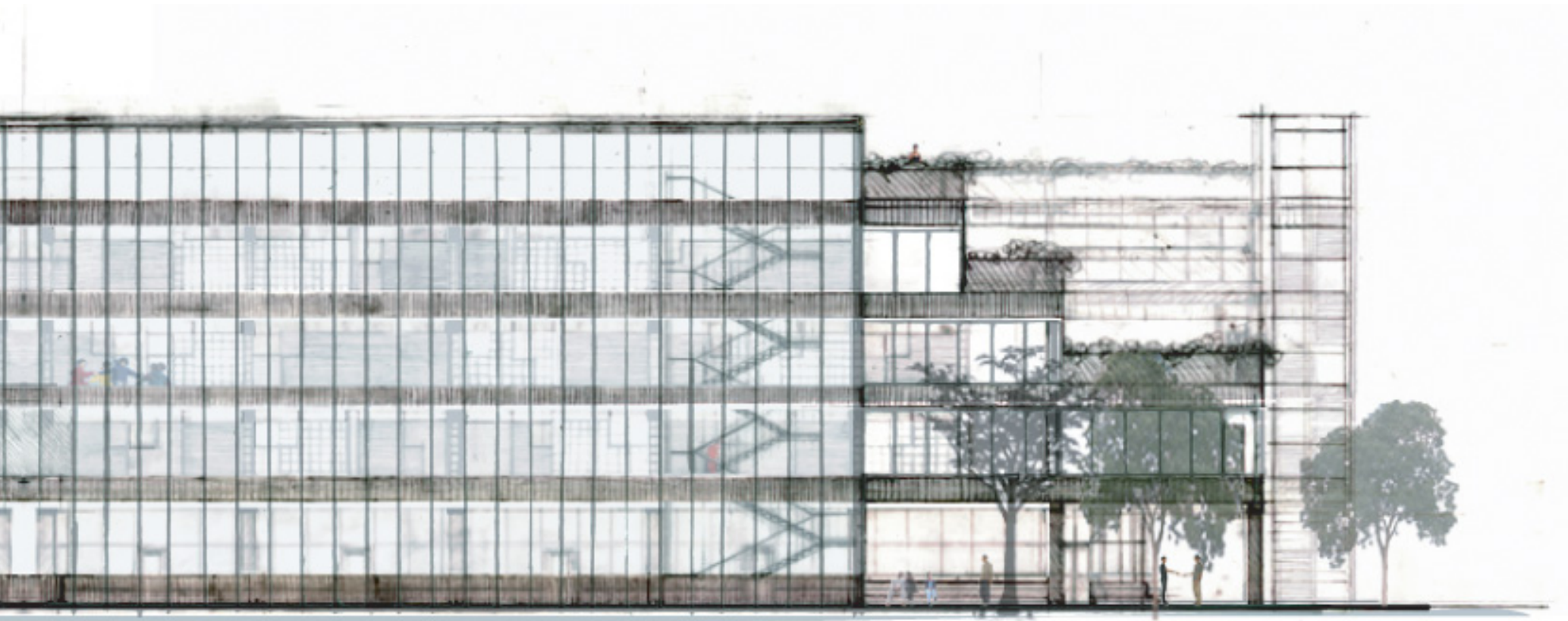
Top left: Lightscape models showing two variations of small apartment.

Bottom left: Floorplans showing two variations of small apartment.

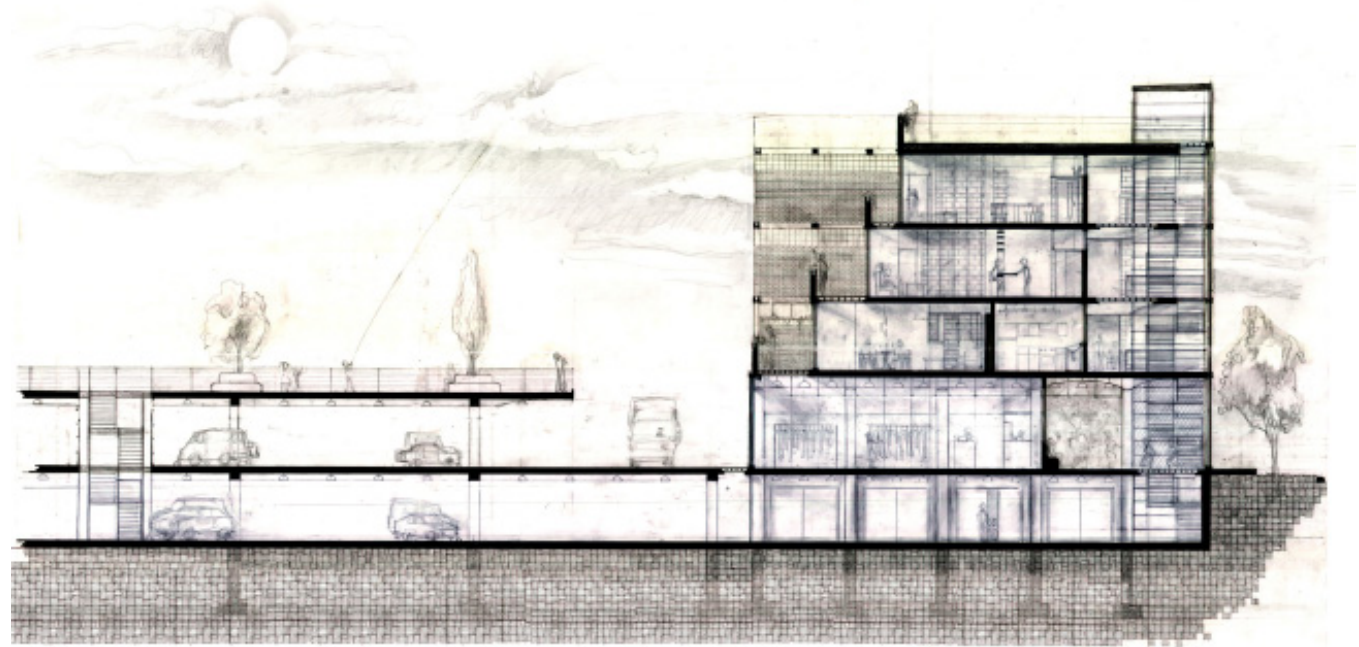
Below: Photographs of model, views into small apartment.







The apartments are configured along an uncommonly utilized single-loaded corridor. The intent of the corridor was to give the feeling of a private entrance sequence while providing all the occupants access to the elevator. The advantage to a single-loaded corridor, as seen in Jose Luis Sert's housing for married students at Harvard, is the potential for light to filter in from both sides of the apartment and providing a more private entrance sequence while maintaining access for the tenants to the elevator. In Sert's design, the apartments wrap around a core of stairs, giving the tenants the potential for an intimate entry into their apartments.



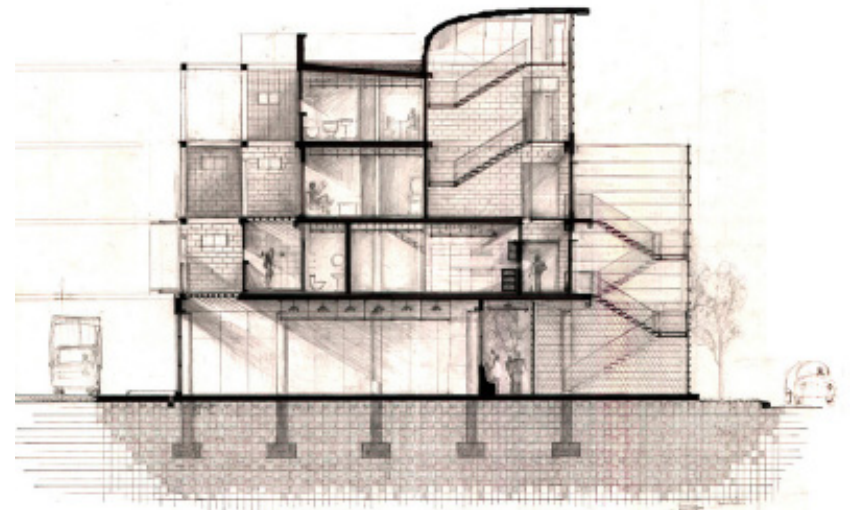
Bottom left: Floorplans of Sert's Housing for married couples at Harvard called 'Peabody Terrace'.

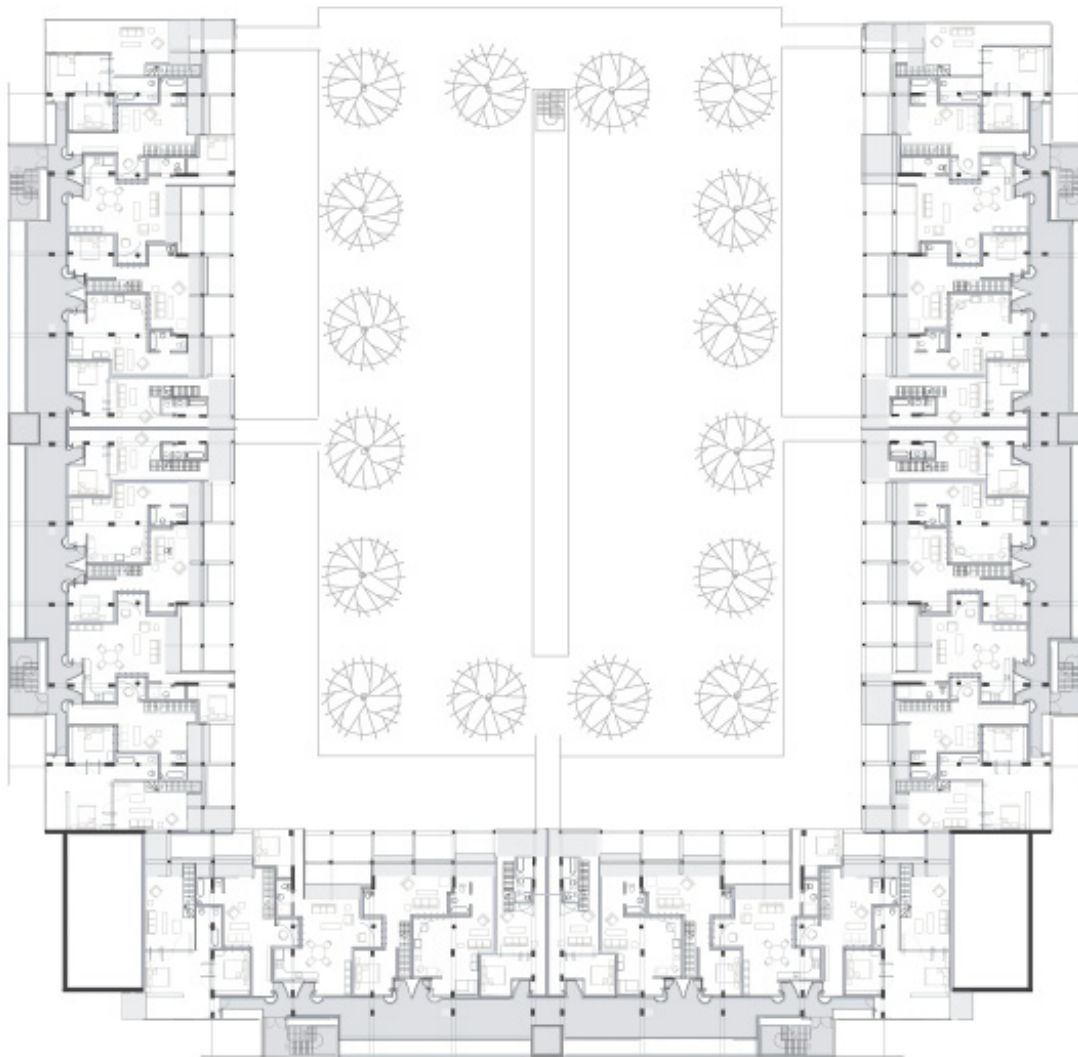
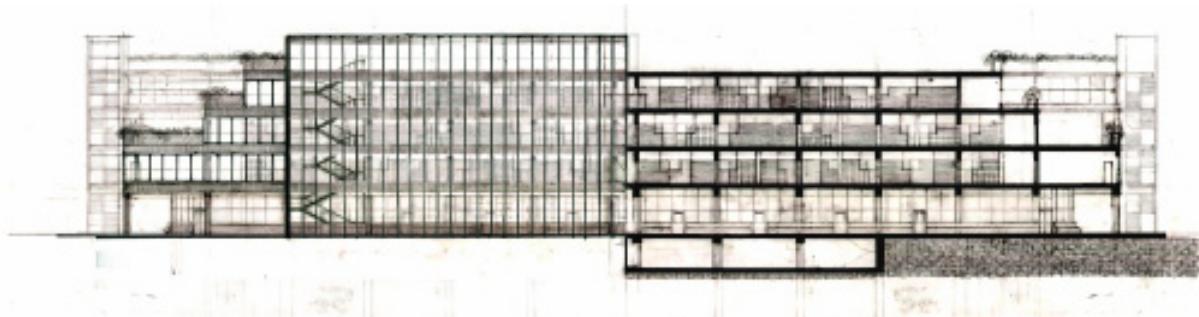
Right top: Section cut through housing showing final design for the corridor

Right bottom: Section cut through housing showing initial concept for corridor

Opposite page left: Elevation showing the facade, section cut through corridor, plan of third level.

Opposite page bottom right: Floorplans of the three levels the the apartments showing the changes in the corridor.





In this design, a set of stairs with an elevator in-between are all pushed out to the façade of the building opposite the apartments and adjacent to the corridor creating a direct relationship of the movement within the building to the movement on the street. Adding to this, the corridor condition changes on the third floor, where it is closed on both ends allowing the apartments to push out to the façade of the building, creating an even more private entry for these occupants and more direct light into their apartments.

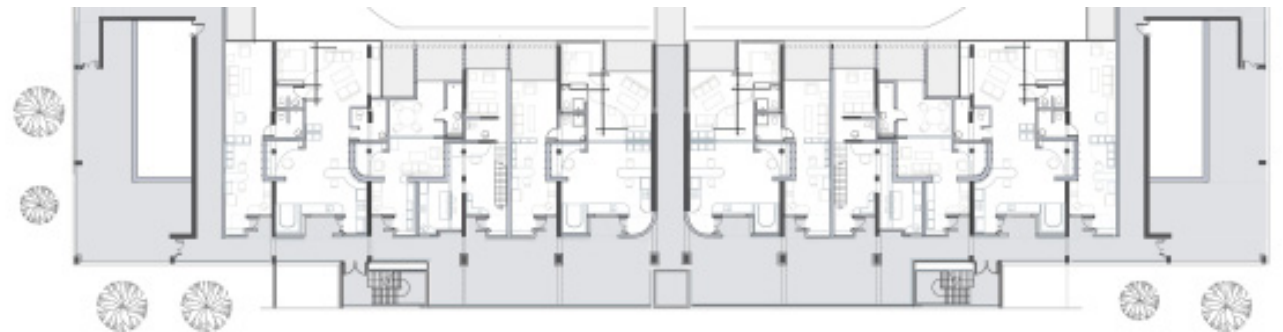
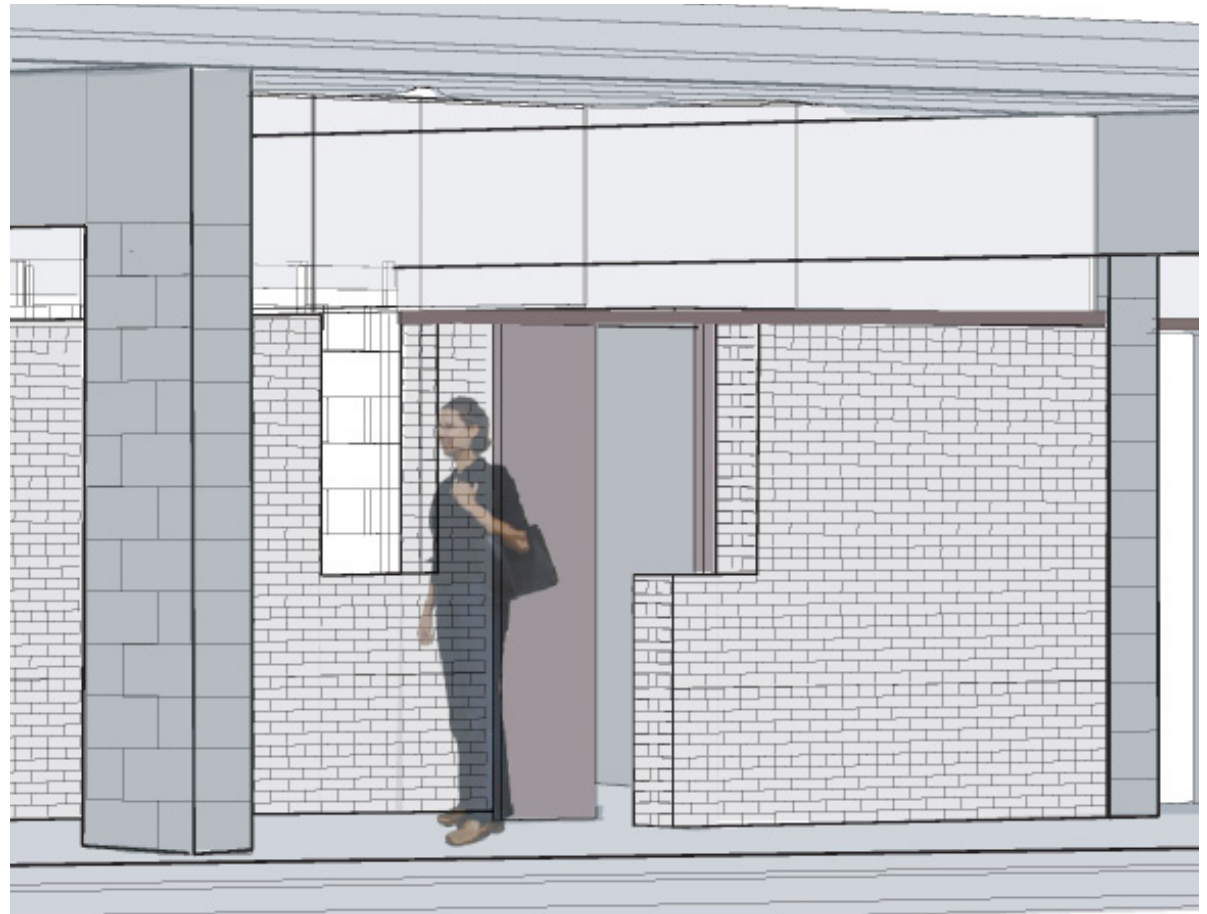
Initially, the corridor at the third level was conceived as being reduced to an entry by a series of stairs from the second level, giving the occupants an entrance shared by only one other resident. This also allowed the face of all the apartments at the third level to be pushed out to the façade of the building giving them more direct sunlight. However, the limitation of access was deemed too severe and was later modified.



The entrance to the apartments is an in-between condition where the residents could appropriate the space immediately outside the front door and make it habitable.

Herman Hertzberger used this idea in De Drie Hoven, his housing design for the elderly. In it, he designed 'Dutch doors' where the lower level could stay closed while the upper portion could be open for informal contact with a passerby while maintaining a safe haven.

Hertzberger encourages the habitation of this in-between space by putting arm-rail high walls adjacent to the doors as a place for the resident to claim leaving space to put a chair and some plants. By modifying Hertzberger's ideas, the entrance doors to the apartments parallel to the corridor to prevent a direct view into the apartment from the corridor. This is the transition between the public corridor and the private entrances.





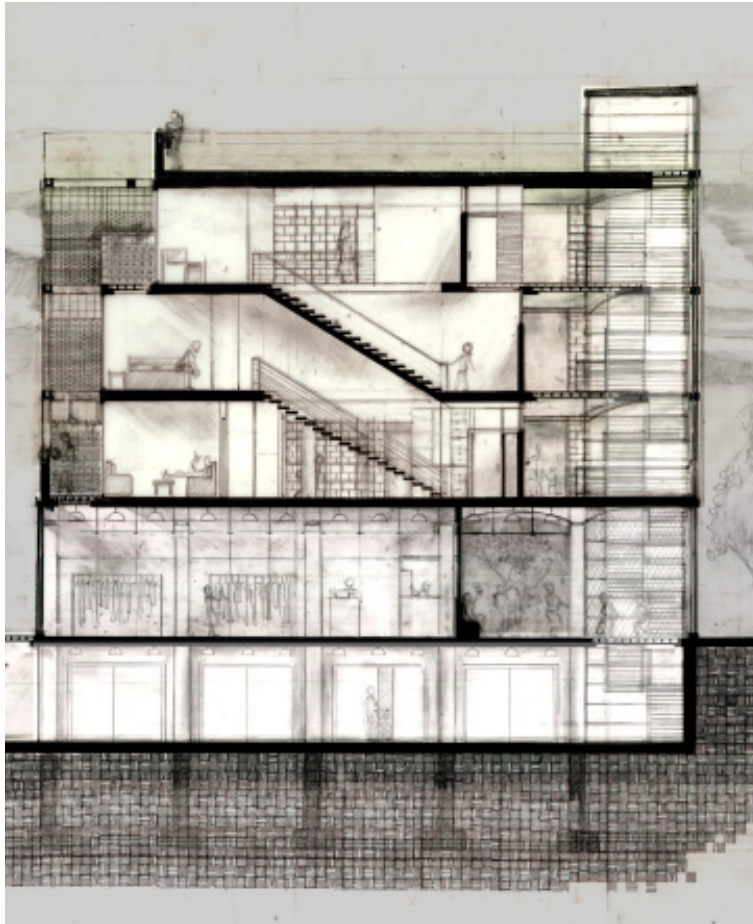
third floor



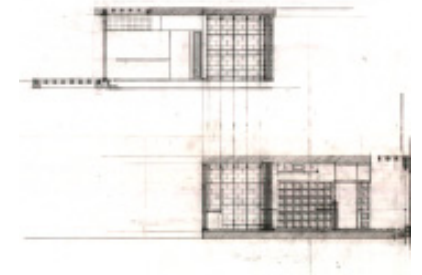
second floor



first floor



The housing has three levels of apartments, with the first floor being mostly accessible units on one level. Most of the second and third level apartments are two stories and stretch between both floors.



Opposite page bottom left: Photo of the entrance to the apartments at Hertzberger's 'De Drie Hoven' (These Three Quaters).

Opposite page right top: Perspective rendering of the entrance to the apartments in this design.

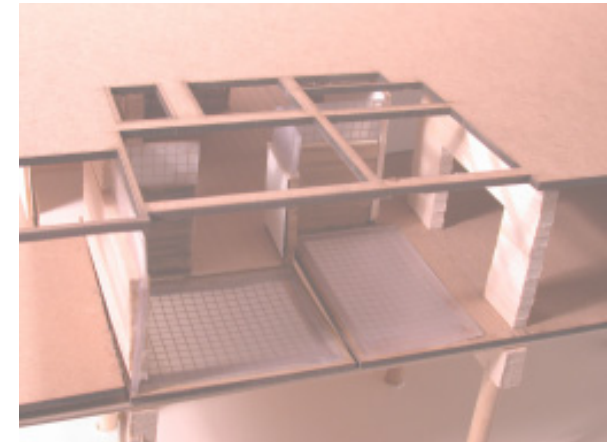
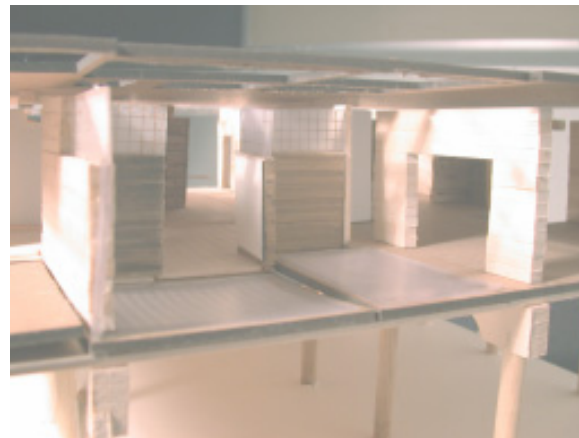
Opposite page right bottom: floorplan of part the first floor corridor and apartments.

Left: The three upper levels of plans corresponding to the section of the building shown in the middle portion.

Middle: Section cut through the building showing portions of a two-story apartment.

Right above: Section cut through one small apartment and the corresponding plan.

Outdoor areas provide a retreat as well as direct sunlight into the apartments. The terraces are generous in dimension, typically 8x12 feet. While these areas are not covered, there is concrete latticework where a cover can be easily inserted if the inhabitants desire one. The removal of the slab above the outdoor terraces at the façade of the building facing the plinth causes the building to step back maximizing daylight to the terraces. The terrace areas increase in size at the upper floors of the building to provide an opportunity for direct sunlight to penetrate deeper into the apartment spaces.



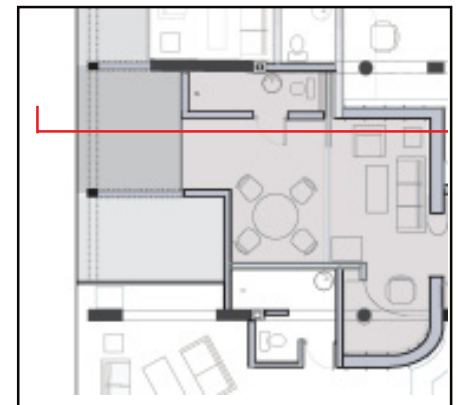
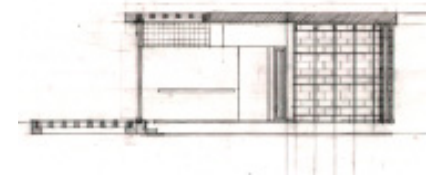
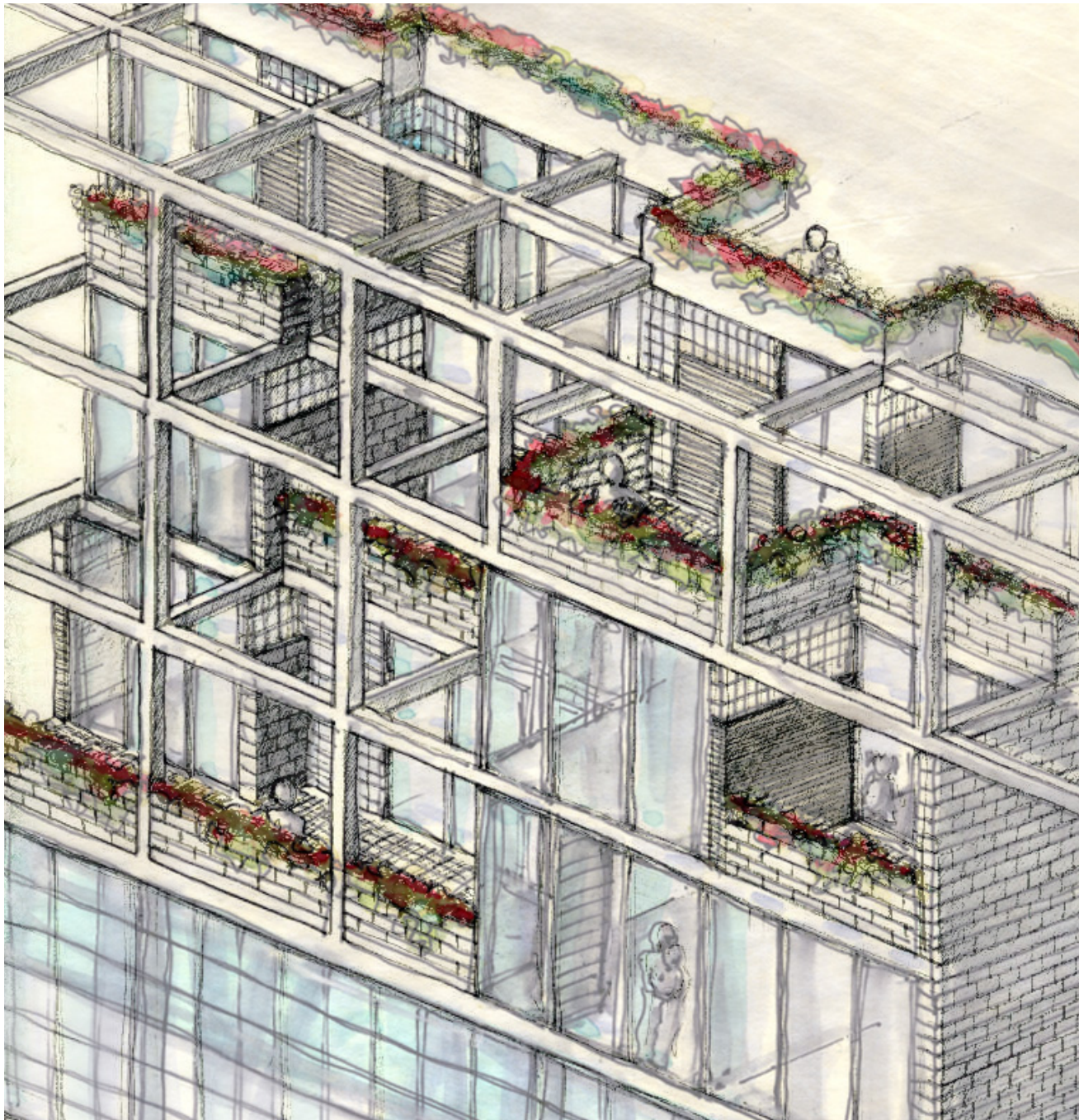
Opposite page left: Rendering of outdoor areas

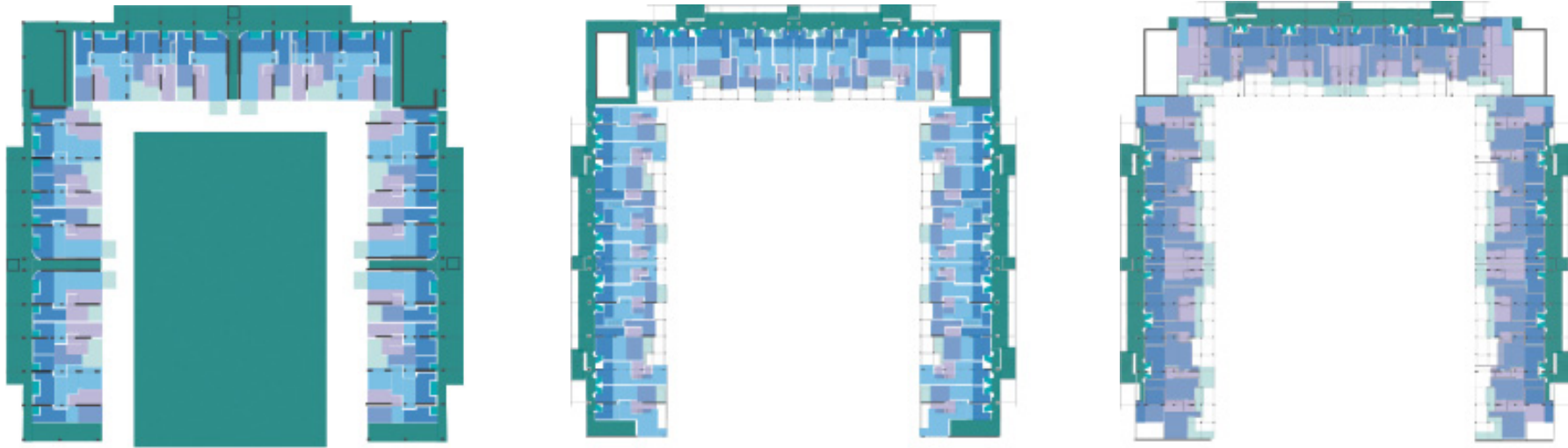
Opposite page right bottom: plan and section of one outdoor area.

Top: Photo of model showing outdoor areas

Bottom | left and right: Photo of model showing outdoor areas

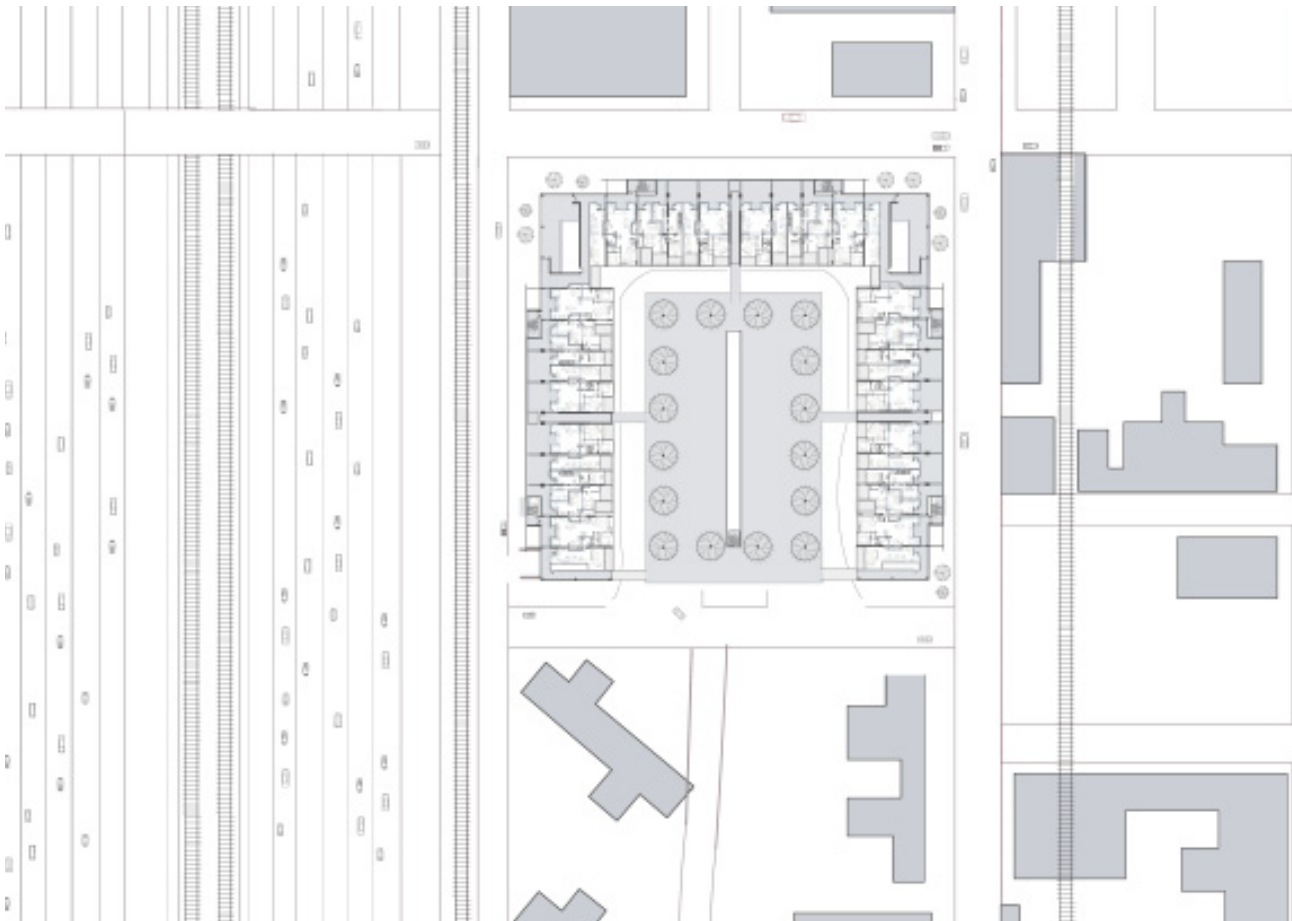
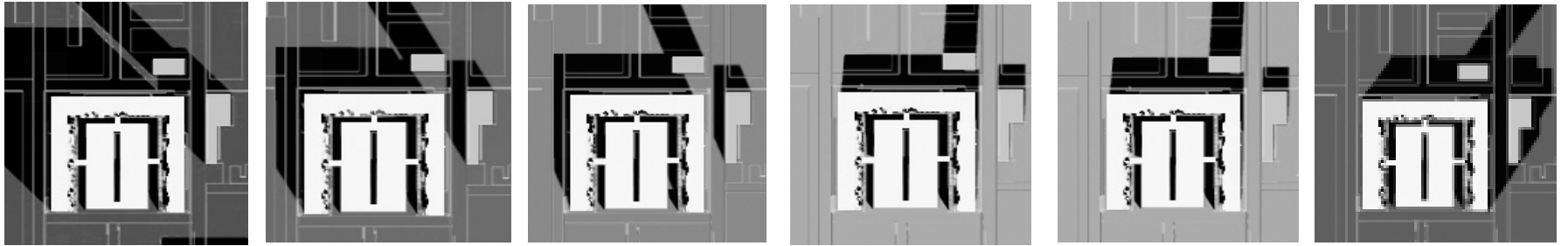
The floors of the terraces are made of glass block, providing another source for filtered light to diffuse into the apartments. The ceiling below the terraces has a cloth stretched across to maintain the privacy of the inhabitants from above, producing a glow in the spaces below.





In the overall design of the building, the street-side is designated public, and the portion of the building facing the plinth is private. The public side contains the access portion; the elevator, stairs, corridor and entrances to the apartments, which, in most cases, leads directly into a small foyer-like area extended from the kitchen. The street façade enhances the public nature of the corridor space by being made of glass. The building itself is a south-facing u-shape. In the inside of the "u" a plinth carries a park and covers two levels of parking below. The private side of the building faces the plinth and retains the bedroom, living rooms and terraces. The portion of the building between these public and private conditions and innermost to the apartments, holds offices, consisting of bookshelves and desks to house computers, both of which prefer darker spaces.

- Communal
- Maintained by tenant, but in the zone of the corridor
- Maintained by tenant but has a visual connection to the corridor
- Internal space maintained by tenant, visual connection to main part of living area
- Convertable can have visual connection to the main living area or can be separated
- Maintained by tenant, separated from main living area
- Outdoor area, maintained by tenant, visual connection to the plinth



Positioning the "U" facing south maximizes the potential for sunlight to reflect off the plinth into the apartments in the winter months. Placing these outdoor terraces in the façade facing towards the inner plinth, orienting them, either, south, east or west the apartments can capture direct sunlight in the winter when the heat gained is most desirable.

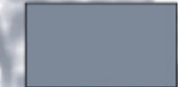
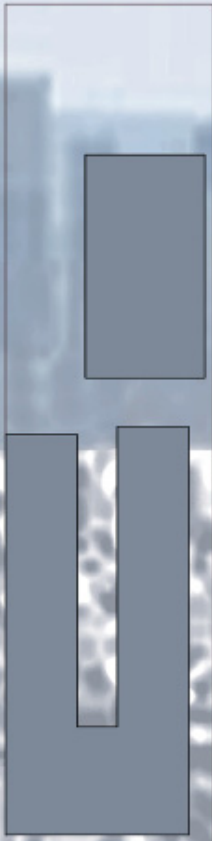
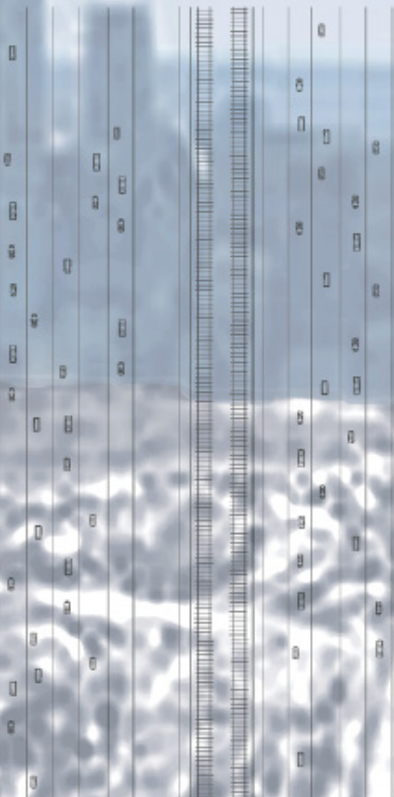
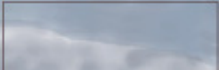
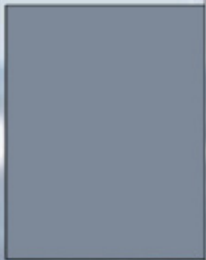
Opposite page: first, second and third floors showing relationship between public and private areas.

Top: sun on Dec 31st

Bottom: building on site

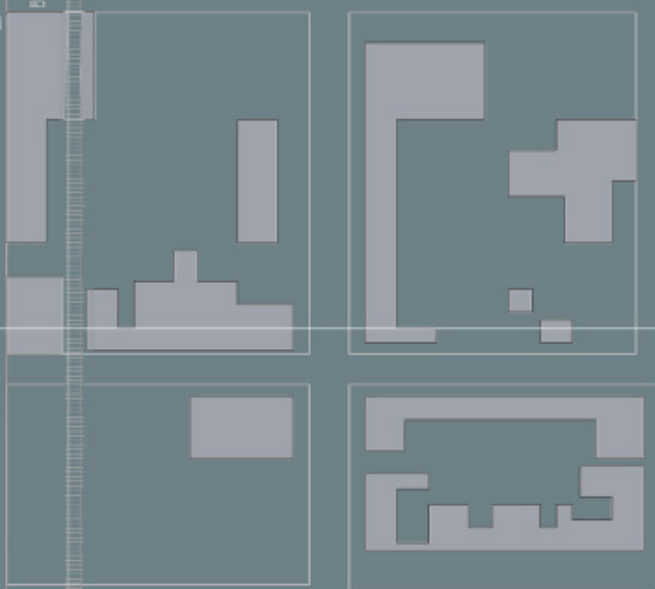


E

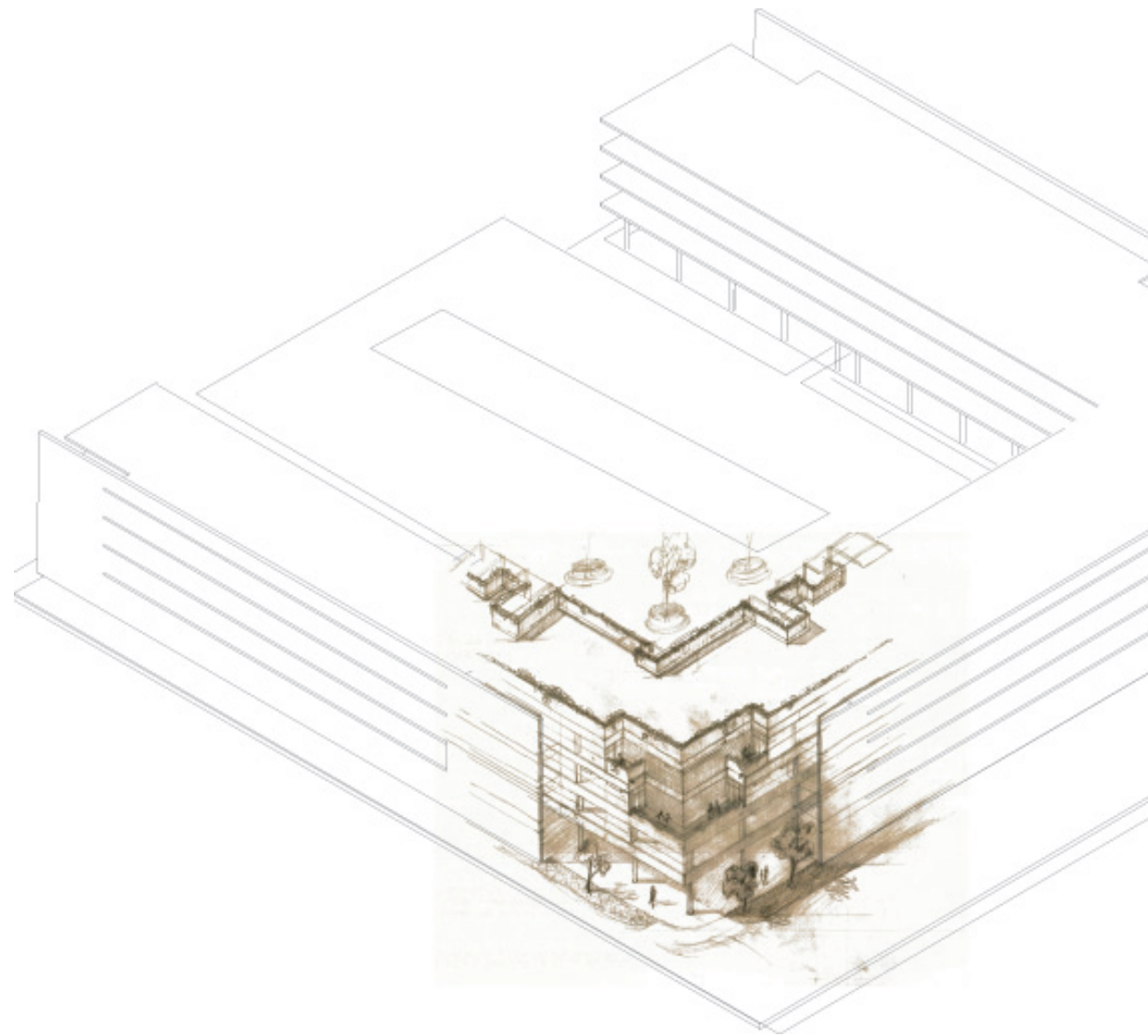


H
D





To address the needs of individual residents is an important consideration in the design of the apartment configurations. Their direct relationship to the street, the outdoors and the ability for the apartments to merge and divide, form the basis for the complex. Representing the individual, the façade facing the plinth has many personal terraces. The communal nature of the corridor, elevator and stairs offers a direct relationship to the street with both a visual and physical connection. Because of this, the movements of traffic, cars, consumers and residents combine yet remain separate.

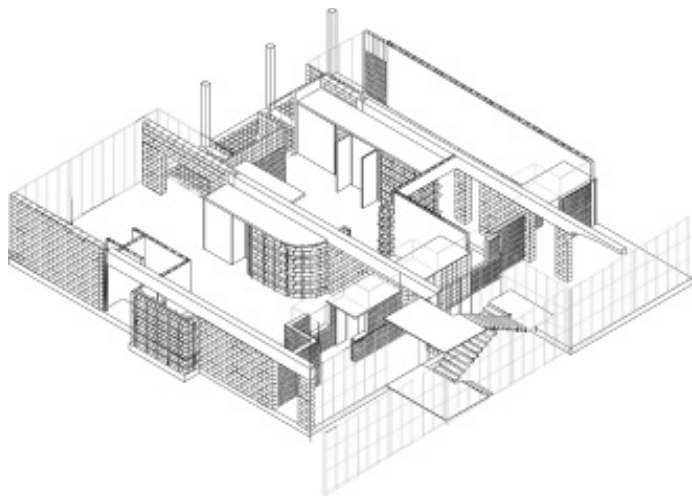
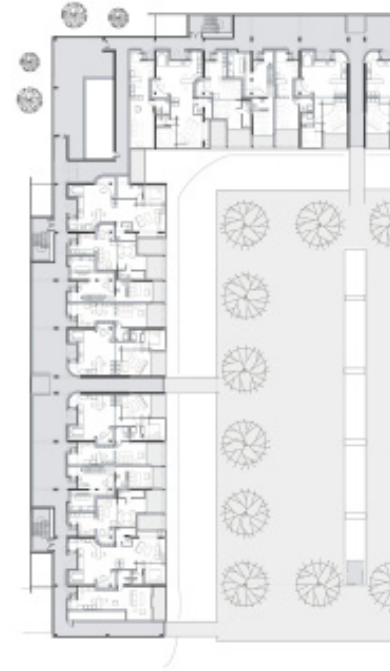
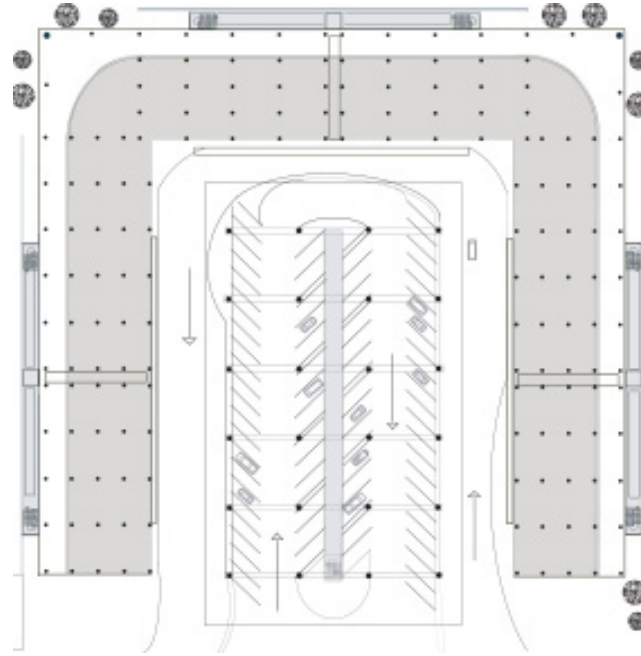
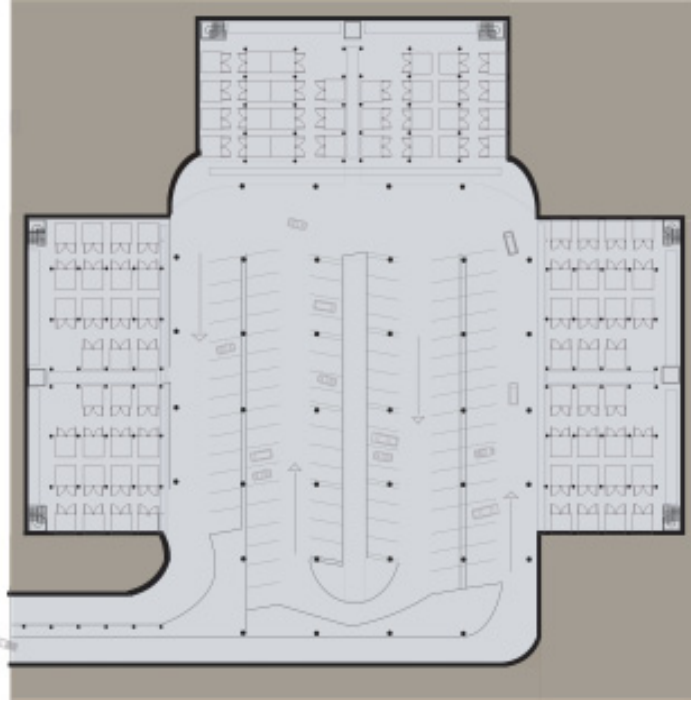


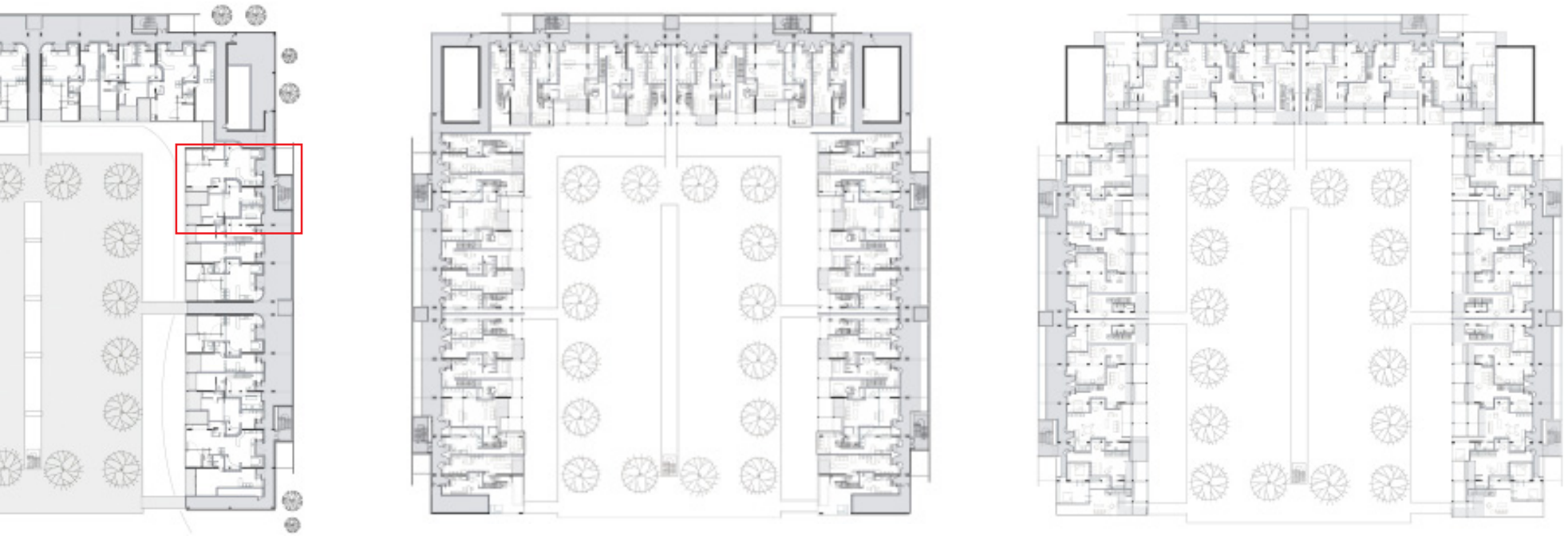
The monolithic character of the building, with its glass curtain wall, addresses the scale of the site and street. The plinth, which provides a place for the community to gather, is three feet lower than the slab of the first floor apartments. This level change maintains the visual privacy of the apartment dwellers. Commercial parking under the plinth at ground level has a direct link to both the street and commercial spaces to help maintain vitality on the site. Below grade is private parking and resident storage, along with stairs leading up to the plinth.

Top left: view of northeast corner of the building

Bottom left: elevation of the building on the site







While issues relating to adaptation are not new to architecture in relation to conventional needs, there has not yet been a proposal to expand and contract overall dimensions of living quarters to accommodate the aspirations of residents. In various ways, architects have designed to aid movement through daily changes. They have also provided the potential of stationary structure to provide spaces for reconfiguration by the inhabitants. However, they have not designed a system with the capacity to diminish or expand substantially the square footage of a dwelling. The potential for this idea works for both single-family homes and apartments, for as long as adjacency exists,

the possibility for expansion or retraction remains. In development of this concept, there is an analogy between the experience with jazz-fusion and the making of architecture. Like the instruments in a jazz band, the architectural elements can work together and yet maintain their autonomy. Just as the pause between the notes of a song gives the opportunity for the musicians to improvise, so too, the structure of a building accommodates openings, which allow for the transformation of apartments. While the music made by the instruments is harmonious and beautiful, they can play separately, creating their own undulating vibration. Similarly, the

elements of the building are like the different instruments playing its own autonomous musical expression. The stationary structure gives the discipline, which allows for play and spontaneity. It is both the fixed and the changeable elements that allow for the transformation of space, whether through internal movement or in-between movement of the apartments. It is through the organization of its parts that the architectural whole is realized.

Top: floorplans of all levels: below grade, ground floor, first floor, second floor, third floor

Bottom left: axon showing three adjacent apartments on the first floor

By the mid fifties, the city of Chicago embarked on an urban renewal program, because of the overcrowding along the black belt, and built high rise low-income housing as fast as possible for tens of thousands of people. The site chosen for this project is in the Bronzeville neighborhood on Chicago's south side and the low-income housing located in this region is known as "Stateway Gardens". These housing units were never adequate for living, is the lack of a connection to the street, and any real connection to the outdoors, being seventeen stories high without enough light or fresh air. This once thriving neighborhood, which furnished jobs, homes and social services to its residents, has become physically deteriorated with severe demographic, social and economic change.

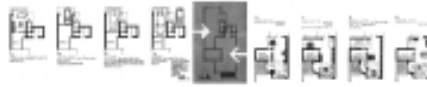
Today, Bronzeville, is struggling to regain its character and vitality. But, because of the ideal location inconnection to the city and excellent opportunities

for public transportation, there is an attempt by middle and high-income residents to renovate the outlying nineteenth-century homes to their original beauty. As the low-income housing is being demolished, there is an excellent opportunity to provide a variety of housing for a social-economically diverse population while re-establishing infrastructure and adequate parking for both residents and non-residents. The program for this project is to integrate residential and commercial spaces into one building and provide plenty parking for both, with the objective this will increase community activity to 24 hours a day. The intent by designing small and medium apartments, which could join to become large apartments, there is the potential for people with different economic backgrounds to live side by side and eliminate the need to move as their lives change..

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SWISS SOUND BOX PAVILION
Peter Zumthor w/ P. Bachmann, K. Gruber, I. Gut,
D. Ott, M. Rigendinger
Birkaiser, 2000



THE RIETVELD SCHROEDER HOUSE
Paul Overy, Lenneke Buller, Frank den Oudsten,
bertus Mulder
The Massachusetts Institute of Technology, 1988



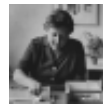
LE CORBUSIER
Oeuvre Complete 1910-1929
New York, 1965



ALDO VAN EYCK
The Shape of Relativity
Amsterdam, 1998



HAN SCHROEDER
Virginia Polytechnic Institute and State University
Womens Archives



MODERN HOUSING PROTOTYPES
Roger Sherwood
Harvard College, 1978



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Rotterdam, 1991



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"FOR THE FUTURE" A MASTER PLAN FOR THE RE-
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Anthony Max, D. Marty
Prepared by the College of Architecture at IIT, Jan 1996

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K. Lynch
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THE RIETVELD SCHROEDER HOUSE

Paul Overy, Lenneke Buller, Frank den Oudsten, bertus
Mulder
The Massachusetts Institute of Technology, 1988

My husband Paul, who has taught me how to laugh at myself and whose love has given me strength and courage.

My Parents, who advocated music, drawing and painting at a very young age and have constantly loved and supported me.

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Group show 1998

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Student Scholarship Exhibition 1989