A System for Change
Accommodating Individuality in Student Housing
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The way buildings are designed influence the way in which they are used; activities that are conducted influence the way a building is perceived. People adapt to a building’s form just as sometimes a building’s form must adapt to the people and activities within its walls. There is an interaction between building and user and within that, creativity springs forth.

The way we live and where we live are not independent of one another. When structures are designed with one specific function in mind and allow limited possibilities, the users are forced to conform to the way they live to where they live. The more open a building is to interpretation, the more freedom the user has within its walls.

Change is inevitable. As time passes, the world changes, societies grow and lifestyles change. A person’s needs are always evolving and being redefined. A building must be able to support these changes. When it cannot, it may become discarded, abandoned or, worse yet, destroyed.

Designers can not only accept but embrace the reality of change. Why not design with change in mind, leaving the building open for new interpretations? Buildings can strive to meet the needs of the initial users and then look beyond to those who will come next. Buildings should stretch and grow as the needs and desires of those it serves transform with time.

This new architecture designed with flexibility in mind is not an empty white box with no life and no meaning but rather a place of inspiration and beauty which encourages its inhabitants to create and be creative. These places would guide and direct change and growth without stifling it. A space should accommodate and encourage change, a change with ease, not always requiring hammers and screws. A space should allow its users to create and recreate as new needs arise. For this type of architecture to exist, a new look at the concept of flexibility is required. For this type of architecture to exist, the flexible building must be redefined.
Flexibility is needed to accommodate the change that occurs over time but it is also required when there is a change in occupancy. Needs evolve as an individual grows and evolves but a building's requirements can change even more drastically when those who inhabit it change.

The frame is the structural part of the building. This creates a foundation from which flexibility can grow. It is the permanent part of the building.

The plane consists of the materials that infill between the structural components and make up the exterior walls. This can be changed easier than the frame.

The panel constitutes as the interior walls separating spaces. The panel is free from some of the weatherproofing issues that hinder the plane.

The furniture is the easiest to manipulate. It is small and relatively lightweight as well as being independent of other objects.
Panel systems allow a certain degree of change but it is still somewhat limiting. Often it is for only option A or B. But with other variations of the two, it is a good start towards flexibility but this project wants to be more interactive than just swinging a panel this way or that.

The interiors are designed with “hidden spaces” by which the plan of each apartment can be reconfigured using pivoting doors, panels, and cabinets.

A Changing World
Change happens at many different rates. There are daily cycles as well as yearly cycles. There is also a progressive change from one year to the next as societies grow and evolve. Change happens with time. Structures should not only change with the changing needs of its world but also with the changing needs of its inhabitants and then with the changing of its inhabitants. Steven Holl and Gerrit Rietveld use panel systems in their work to make spaces grow and shrink as the activities within expand and contract.
This building, like the site, is a mediator between the vastness of educational resources found at the university with the quite, peaceful independence of the residential neighborhood.

University of Cincinnati

Design, Architecture, Art, and Planning (DAAP)

Residential Neighborhood
Location, Location, Location

The site is located on the edge of Burnet Woods adjacent to the University of Cincinnati and near the Design, Architecture, Art, and Planning (DAAP) building. This new building will sit between the campus, the park, and a residential neighborhood. DAAP participates in a Cooperative Education Program where part of their education is spent on an internship. This creates a great turnover rate in housing and dormitories. New people with new needs come and go quickly making flexibility a desire.
The residential neighborhood that borders the project site is made up of mostly row style housing used by UC students.

These houses were used as a starting point by which the new student housing was modeled after.
The frame is the first degree of change meaning that it is the most difficult to change. It sets up the foundation for flexibility. It is the framework which guides the change within. This Frame cannot be changed without heavy construction and an Architect's aid. It is the one part that the user has little, if any, control over.

The influence of Frame on:
1. Site
2. Plan
3. Section
4. Elevation
Burnet Woods has many grade changes. There are 20 foot in-between the street level of the neighborhood and the lowest part of the site. This difference in elevation creates a separation of activities. If the whole building were put on the street level, it would turn its back on the park, only looking down at it from above through the trees like so many of the houses on that street already do. If the whole building were on the park level, it would ignore what is already existing in the neighborhood. This change in grade is part of the park’s Frame. It sets up parameters for how the new student housing should be organized.

The stair tower on the south side of the housing complex is large in scale, especially when observed from the park. This helps to relate the building to those found on the UC campus.

North to South Site Section

\[ \text{Scale: } T = 1:20 \]
Site

The site has some preestablished patterns that give it identity. This foundation, or frame, sets up guidelines that are continued through this project. The grade changes in the park, the scale of the campus, and the grid of the neighborhood meet in this building.
East/West Building Section Through Side Court
Scale: 1" = 20'

East/West Building Section Through Apartment
Scale: 1" = 20'
Traditional row houses have two parallel bearing walls (top). A lot of times units share a party wall but sometimes an outdoor space is left in-between. These spaces are typically very small and cannot be used for much. They become tall narrow alleys in which nothing can grow nor light can enter between the two tall blank faced facades.

The spaces between this building's apartments are larger allowing activities to take place. Also, the structure on the south side of each apartment opens up (bottom), allowing for the possibility of the activity within to spill out into the side courtyard. Openings also become a possibility with this type of structure.

Unusable space found between two row houses.
The Frame establishes *public and private zones* within the new student housing. The public community space wraps around and weaves between the private apartments. An even more private zone is established within the apartments with the addition of a mezzanine along the north and west walls.

**North to South Building Section Through Apartment**

*Scale: 1" = 10'

The Frame of the apartments support the panels. It directs the growth.
<table>
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<tr>
<th>Style</th>
<th>Roof Description</th>
<th>Plane Size Description</th>
<th>Materials Description</th>
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<tr>
<td><strong>Italianate</strong></td>
<td>The roofs are usually flat and have large bracketed cornices.</td>
<td>Window and door openings are oversized, usually reaching from ceiling to floor.</td>
<td>Italianate houses are typically clad with masonry.</td>
</tr>
<tr>
<td><em>(Italian)</em></td>
<td></td>
<td></td>
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<tr>
<td><strong>Federalist</strong></td>
<td>The roofs are either hipped or gabled with the ridge parallel to the street.</td>
<td>The openings are smaller. Windows do not reach down to the floor.</td>
<td>Masonry occurs slightly more often than wood paneling on the exteriors.</td>
</tr>
<tr>
<td><em>(American)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Queen Anne</strong></td>
<td>The roofs are usually steeply pitched gables or hipped and of unusual shape.</td>
<td>Opening sizes are similar to that of the Federalist style while slightly larger.</td>
<td>Wood paneling and shingles are more common on the facades.</td>
</tr>
<tr>
<td><em>(French)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Second Empire</strong></td>
<td>Buildings done in the Second Empire style typically have mansard roofs.</td>
<td>Opening sizes are similar to that of the Italianate style.</td>
<td>Wood paneling and masonry are both very common.</td>
</tr>
<tr>
<td><em>(French)</em></td>
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**Architectural Style**

Scale: 1" = 16'
The end walls of row houses are nonstructural. In the new student housing, a frame was established in order to connect the facades of the apartments with the neighborhood while allowing for individual expression. The framework in which flexible Planes lie helps to maintain the character of the neighborhood no matter how much the facades may change.

Architectural Style
Scale: 1" = 15'

Style:
- Italianate
- Federalist
- Queen Anne
- Second Empire

Research was conducted on architectural styles typically found in row houses. Four styles were chosen based on what already exists within the neighborhood. These styles were analyzed and basic key concepts were taken from these styles, reinterpreted to be used in this project. This research and analysis helped to define some of the permanent characteristics such as roof style, Plane placement, and materiality. This helps to be the apartments in to the rest of the neighborhood.
The plane is the second degree of change. The plane constitutes the materials that infill in-between the structural components of the building making up the rest of the building envelope. The plane has fewer structural requirements than the frame making it easier to manipulate. Flexibility can begin to appear within a building’s planes.

Opportunities for the Plane in:

1. Site
2. Plan
3. Section
4. Elevation
Burnet Woods has some steep drop-offs due to the drastic grade changes, however the foliage begins to blur any edges that might begin to appear. The grass softens the edges of the path and shrubs are layered alongside.

The Plane begins to blur the boundaries of the building. The building's shell is not merely designated by walls but with zones within which the building envelope is allowed to move. Activities can push and pull on these zones, better meeting their space requirements.
The neighborhood starts to create some zones within the facades of the row houses. No straight line can be drawn across a line of facades connecting every window and door but they come close. Each picks up an element from its neighbors whether it is big or small. This starts to create character in the streetscape.

Site
The Plane creates zones on the facades of the apartments. These Planes can change making room for individual expression. The Plane also softens the boundaries and creates layers rather than solid edges.
Floor Plans
Scale: 1" = 32'

NORTH
Plan

The Planes on the south and east facades allow the spaces within the apartment to grow. The principles embedded in this type of change are already evident in the existing residential neighborhood.
Oversized Planes open up the community space into the park, allowing activity to flow in and out of the building.

Facade Section
Scale: 1" = 5'

Plane
The Planes of the apartment facades can be pushed and pulled to extend interior or exterior spaces. Shading devices and operable windows can be added in order to accommodate daily and seasonal changes in lighting and temperature.
The facade of each apartment is made up of a series of panels which can be pushed or pulled or be completely redesigned and reconstructed by the students giving each facade a unique look. Protruding elements can be connected to the beams running at the floor lines. Similar changes can be done to the south wall which faces the side court, extending the interior out into the courtyard. These changes are slow because there are a lot of factors involved such as weatherproofing and insulation. Preconstructed panels can be used as well as custom made panels made by the students. Window units and other basic facade elements could be collected from local distributors.
The panel is the third degree of change. This level deals with the interior workings of a building. The interior walls are not weighted down with the same demands that are required by the exterior walls. Weatherproofing and insulation are not a concern. The Panel is the architectural element with the most potential for flexibility.

Opportunities for the Panel in:
1. Plan
2. Section
The apartments are set up on a four foot by four foot grid from which endless room arrangements can be configured. Steel posts can be locked in at these grid points in the subfloor. Panels are attached to the post. There will be a variety of panels provided composed of lightweight steel and Homasote, a recycled sheathing material with a tackable surface. Custom panels can also be crafted by students in the first floor workshop, limiting the design only to a person’s imagination.
The north walls of the apartments are beam walls with an air space for electrical and plumbing elements. This space can be accessed through panels for the students to experiment with. The plumbing and electrical can then be run throughout the apartments through the use of Infinite Access Flooding.

North to South Building Section Through Apartment
Scale: 1" = 5'
**Section**

The north walls of the apartments are bearing walls which contain accessible plumbing and electrical elements. The students can use this an opportunity to explore the principles in these areas. Panels can be added to extend the area of the upper mezzanine to create a second level.
The furniture is the fourth and final degree of change. It is relatively lightweight and can be moved by one or two people. Furniture is independent of the building form although the form may dictate to some degree the arrangement of it. Furniture can be added or subtracted from a space at any time.
The designs of Joe Colombo can be pushed and pulled to reveal hidden compartments and functions and then be tucked away when not in use.

Mini-Kitchen 1963

Tube-Chair 1969

Total Furnishing Unit 1971

Roto-Living 1969
Potential for Flexible Furniture

Furniture can be very versatile. It can be easily moved from place to place and some pieces can be transformed into various configurations, performing several functions. The grid set up in the apartment can begin to guide the placement and design of the furniture that is used within them.
This thesis has barely touched the tip of the iceberg when it comes to designing for a flexible way of dwelling. The possibilities are endless; the full extent is not yet explored. As technology evolves and new generations of creative geniuses spring up, the ideas of flexibility will continue to develop. It is my hope that one day these ideas of designing for change will grow closer to a reality. Maybe one day the world will be able to accept a less permanent way of living in order to allow dwellings to evolve. In order to create flexible housing, we must first redefine the dwelling. We must have a less egocentric view and begin to look to the future both in the way we design and in the way we build so that our dwellings will begin to outlast us and the generations to come.

In my design process, I would have liked to further explore some of the innovative designs that already exist. There is so much knowledge and information out there that is just waiting to be utilized. There are remarkable designs and ideas that would have greatly enhanced my design. I encourage anyone interested in creating a building for change to look at what other designers, and not just architects, are doing with their resources and to use their ideas to create something better, more efficient, and more practical. The design process is never complete; there is always a better way, and don’t be afraid to dream a little. If there isn’t a way now, invent one. I was inclined to get stuck within the limits of my own knowledge bank.

I want to design buildings that users can interact with. I want dwellings to change moods along with their tenants. The act of living is a learning process and dwellings should further support and enhance the learning process. Dwellings should inspire everyone they touch.
The apartments revolve around the concept of "hinged space". Pivoting doors, panels, and cabinets can be reconfigured to meet the wishes and needs of those who inhabit the space.
This apartment is part of a mixed-use block in Fukuoka, Japan. There are 28 units divided into 18 variants of five types. The ground floor is commercial space. The apartments are arranged around four courtyards that are flooded with water and corresponding courts that are paved. Three longitudinal walkways give variety in the ways the courtyards are experienced.


