Inhabitants Within Threshold

Threshold as Antidote for Urban Density

Thesis for Master of Architecture Degree
Virginia Polytechnic Institute and State University / Washington-Alexandria Architecture Center
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Inhabitants Within Threshold
Threshold as Antidote for Urban Density

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ABSTRACT

The objective of my thesis is to explore and re-define the relationship between threshold and urban density. Threshold is an architectural medium, which divides and bridges spaces with certain meanings. Density is the defining character of the urban condition expressed consistently at different scales: from a city to a block, to a building and to the human habitation. My design project is about an application of threshold in architectural design within the context of urban density. The efficacy of threshold is tested in both external and internal conditions: the existing condition of the site and the internal workings of the program. To test the thesis, a design of a youth hostel in Washington D.C. was undertaken.

The experiment was carried out with the following hypotheses:
1) that threshold is an architectural instrument that mitigates the urban density.
2) that threshold negotiates the territories among the inhabitants.

The design experiment demonstrated the hypotheses and therefore, confirmed the relationship between threshold and urban density.
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Dedication

To my parents, who supported me from distance.
And to my dearest friend, Jiankun Li, who stood by me along the way.
Acknowledgement

I would like to acknowledge and extend my gratitude to my thesis committee for their support and guidance. Without their expertise, I would not have completed this project.

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I wish to thank my friends and classmates who helped and encouraged me along the way.


Special thanks goes to my girlfriend Jiankun Li.
When I consider my thesis as a journey, its departure point is clearly marked by my extensive trip in Japan in the summer of 2007. I visited Machiya (townhouse), one type of Japanese vernacular architecture. The foyer, as shown in the photograph, was so inspiring that it provoked me to reconsider the notion of threshold in architecture. It was this ambiguous space that mysteriously drew my attention. The encountering has marked the beginning of my journey.

In traditional sense, threshold is a strip or line that marks a clear separation of two spaces. It is rather an abrupt moment of the spatial transition.

My interest in threshold, however, lies in the ambiguous moment in which one can inhabit and experience the spatial transition. It is the intermediary space that constructs relations between inside/outside, light/dark, and public/private. The Japanese concept of Ma portrays more accurate description for the threshold in question.

Ma means an "interval" between two (or more) spatial or temporal things and events. It carries an experiential connotation in space and time. It is not only "something" within objective, descriptive reality but also signifies particular modes of experience.¹

My thesis is an attempt to inject threshold (Ma) to generate design for collective dwellings in the context of urban density. Its application will be investigated through the negotiation of territories at different scales: between the site/neighborhood, the public/private, and among the individual inhabitants.

¹ Pilgrim
Research
Analysis on the Chinese character of Ma - 間

It is made up of two elements, the enclosing gate or door (mon) and the inner character meaning either sun (ひ) or moon (tsuki.) The visual image suggests a light shining through a gate or door.¹

Therefore, Ma implies not only the spatial condition but also the particular moment of time.

Below are the combinations of Ma with other characters, which extend its meaning to people, space and time.

- 人間 (nin-gen) - people
- 空間 (kuu-kan) - space
- 時間 (ji-kan) - time
- 間 (ma) - moment, interval, threshold

¹ Pilgrim
Machiya, which literally means a townhouse in Japanese, is an urban type of Japanese vernacular architecture. The notable characteristic of Machiya design is in its deliberate way of planning to counterbalance the surrounding density. Amid the dense layout of rooms, the notion of threshold is evident. An example is the foyer shown in the previous photograph. The foyer is a threshold where one can experience the spatial transition from the outdoor to indoor, from the public to the private. Another design element is the eaves on the storefront. They not only provide protection from the rain but also define the threshold before the entrance. The following passage describes how the threshold, the eaves in this case, can affect the behavior of the inhabitants:

There is a man standing at the door, casually looking out. Whether he is looking up the sky, or waiting for his guest’s arrival, such is an act of vagueness without clear purpose, just looking out. It is as if he is just breathing in the air from outside. The evening sky with stars, the moonlight, and the lights from the neighborhood, the occasional pedestrians – he is simply observing the scenes, pausing at the threshold.¹

Machiya exemplifies the effective use of threshold as an architectural device to alleviate the urban density.

¹ Shimamura
Precedents Study: Kowloon Walled City, HK

Kowloon Walled City was an urban settlement which has exhibited the sheer power of human habitation in its extreme urban density. The City’s rise and fall coincides with its political background. The area was free from the jurisdiction of British colony and was also left ungoverned by Mainland China. This has made the City home to many refugees from China after WWII. The City saw a rapid growth in 1970s until late 1980s. It was ordered to be evacuated and was eventually demolished in 1993.

This precedent demonstrates fundamental ideas about urban dwellings:
1) that a building can be perceived as a city, as it is a conglomeration of components that form the whole.
2) that a building is ephemeral, as a city is in constant state of mutation, like a biological organism.

The idea on scale and relationship between a city and a building is condensed in an analogy made by an architect Aldo Van Eyck as follows:

Tree is leaf and leaf is tree
House is city and city is house
A tree is a tree but it is also a huge leaf
A leaf is a leaf, but it is also a tiny tree
A city is not a city unless it is also a huge house
A house is a house only if it is also a tiny city

---
1 Aldo Van Eyck
Program
My Program and Site are thoughtfully selected in concert with my thesis topic.

The Program is a youth hostel. It is a collective dwelling for travelers, whose lodgings are transient in nature. The travelers enter the City and experience a series of thresholds in scale and density as they arrive in the hostel. Strangers at first, the guests may seek to socialize with others or isolate themselves for reflection. Particular events and the nature of functions challenge the notion of thresholds among the inhabitants.
The purpose of these diagrams is to analyze and re-arrange the components of basic functions of a hostel. It breaks down to the simplest terms such as bed, room and bathroom.

A conventional hostel provides a maximum number of beds per room and separate communal bathrooms to share. Its efficient space planning and high occupancy make it possible to keep the hostel accommodation at low-cost.

My proposal is to alleviate the density of occupants in the hostel by diversifying the room types and sizes. The ultimate challenge is to bring more sense of privacy, and at the same time, promote the interactions among the guests. The idea of threshold plays a key role in order to achieve this goal.
Site
Fig. 6 Aerial photo of the vicinity of the Site.
The Site is at the intersection of M and 11th Streets, NW Washington DC, a few blocks west of the Convention Center. With an existing building intact on the corner, the site poses a challenge to fill in the void space; it is an urban infill project. The adjacent apartment building exposes its façade with many windows facing west, confirming the sense of density. The negotiation of territories between the Site and the neighborhood is a vital part of the design problems.
The existing building remains as a solitary structure on the site.
The adjacent apartment building shows its façade with apertures.

View from M Street

View from 11th Street

View from the intersection
Design Project

Act One: Articulation of the Concept
Abstract drawing in attempt to articulate the idea of threshold or *Ma* - intermediary space between the two territories.

Imaginary building section that emphasizes the notion of threshold. Threshold can be represented in three architectural elements:

- Lines of Floor elements (change in elevation, change in material)
- Layers of Wall elements (means of separation / enclosure)
- Edges of Roof elements (change in height, edge of overhang)
Above: A conceptual model - a cube with implosion of thresholds.
Left: A collage with the cube as modules - the idea of repetition of units.
Parts as constituents of the whole.
Above: A conceptual model - linear elements that interweave in section.
Left: A collage with the model.
Act Two: Preliminary Design I
This was the very first scheme. It is comprised of three separate buildings. The row houses on 11th Street are suites for the hostel guests. The dormitory building replaces the existing liquor store on the north side of the site. And the third component, which faces on M Street, contains the communal functions of the hostel. Access to the guest rooms is fed by the walkway on the back, which connects all three buildings, making the circulation a dialogue with the adjacent apartment building. This scheme revealed the design problems concerning the Site and Program: on which street does the hostel belong to? From which street should the main access be given to the building? Is the access central and controlled? Would the typology of row house be appropriate for the program? These were the questions to be considered further on.
A photo montage showing the elevation on M street.

A photo montage showing the elevation on 11th street.
Act Three: Preliminary Design II
The next scheme has evolved on the formation of modular units around a courtyard. As beginning, the structural bay was determined by the width of a conventional hotel room (about 13 ft), which is then set by the orientation and size of bed. The module plan would allow the rooms to stack vertically, and therefore making the structural grid simple. But the design challenge remained on how to diversify the room types and sizes while keeping the structural grid.
Design Project

Act Four: Design Development
At this stage, the building started to take its own shape, expressing its own parts that compose the whole. The components are clearly articulated by the reveals, which helped to unite the ensemble, including the existing building on the corner. The reveals bridge the old and the new, acting as thresholds. They also contribute to the experience within; multiple entrances/exits are set up at these in-between spaces. They are also aligned with the circulation axes, and the framed views from inside give the sense of density within.

Provision of the Mezzanine level was also an important factor in the design. The Mezzanine level serves as a threshold between the ground floor (public domain) and the second floor (private domain.)
Ground Floor Plan

Mezzanine Floor Plan
Typical Floor Plan

4th Floor Plan
West Elevation (11th Street)  

South Elevation (M Street)
Design Project

Act Five: Final Design
1. Entrance
2. Reception
3. Staff Office
4. Lobby
5. Courtyard
6. Multi-purpose Room
7. Cafeteria
8. Bar
9. Kitchen

Ground Floor Plan
Mezzanine Floor Plan

1. Lounge
2. Terrace
3. Dining Space
4. Void

Design Project
2nd Floor Plan

1. Common
2. Kitchen
3. Void

Guestroom Key Plan

1. Common
2. Kitchen
3. Void
4th Floor Plan

1. Storage + Housekeeping
2. Common
3. Roof Terrace
Roof Plan

1. Swimming Pool
2. Decking
**Unit Types**

**Type A**
- Unit Area = 130 sf.
- No. of Bed = 1 Single

**Type B₁**
- Unit Area = 146 sf.
- No. of Bed = 1 Single

**Type B₂**
- Unit Area = 196 sf.
- No. of Bed = 2 Singles

**Type C**
- Unit Area = 291 sf.
- No. of Bed = 2 Singles

*Unit Types*
*Scale: 1/8" = 1'-0"*
Type D
Unit Area = 253 sf.
No. of Bed = 1 Queen

Type E
Unit Area = 297 sf.
No. of Bed = 2 bunks
[Unit Types]

Type F
Unit Area = 409 sf.
No. of Bed = 3 bunks

Type G
Unit Area = 199 sf.
No. of Bed = 1 King

[Scale: 1/8" = 1'-0"]
# Hostel 11-M

## Guestroom Mix

<table>
<thead>
<tr>
<th>Room Type</th>
<th>Unit Area (sf.)</th>
<th>No. of Beds</th>
<th>Occupants</th>
<th>No. of Units</th>
<th>Total Net Area (sf.)</th>
<th>Total Occupants</th>
<th>Area / Occupant (sf.)</th>
<th>Comment</th>
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<tbody>
<tr>
<td>A</td>
<td>130</td>
<td>1 Single</td>
<td>1</td>
<td>6</td>
<td>780</td>
<td>6</td>
<td>130</td>
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<tr>
<td>B-1</td>
<td>146</td>
<td>1 Single</td>
<td>1</td>
<td>8</td>
<td>1168</td>
<td>8</td>
<td>146</td>
<td></td>
</tr>
<tr>
<td>B-2</td>
<td>196</td>
<td>2 Single</td>
<td>2</td>
<td>8</td>
<td>1568</td>
<td>16</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>291</td>
<td>2 Single</td>
<td>2</td>
<td>3</td>
<td>873</td>
<td>6</td>
<td>146</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>253</td>
<td>1 Queen</td>
<td>1-2</td>
<td>4</td>
<td>1012</td>
<td>8</td>
<td>126.5</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>297</td>
<td>2 Bunks</td>
<td>4</td>
<td>6</td>
<td>1782</td>
<td>24</td>
<td>74.25</td>
<td>Dormitory</td>
</tr>
<tr>
<td>F</td>
<td>409</td>
<td>3 Bunks</td>
<td>6</td>
<td>3</td>
<td>1227</td>
<td>18</td>
<td>68</td>
<td>Dormitory</td>
</tr>
<tr>
<td>G</td>
<td>199</td>
<td>1 King</td>
<td>2</td>
<td>3</td>
<td>597</td>
<td>6</td>
<td>99.5</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>41</strong></td>
<td><strong>9007</strong></td>
<td></td>
<td><strong>92</strong></td>
<td><strong>98 sf.</strong></td>
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</table>
My research and thesis was about confirming on the efficacy of thresholds in urban density. The design project was an experiment, in which, combined with the site and program, my thesis was demonstrated. Through the design experiment, I have come to understand that the denser the environment we surround ourselves, the greater the efficacy of threshold becomes. Threshold is an architectural instrument that mitigates the density, negotiates the territories, blurs the boundaries, and it is inhabitable.


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Figure 1, on page 4:

Figure 2, 3, 4, 5, on page 5:

Figure 6, on page 11:
Google Map