Housing La Habana Vieja
Reframing the Formal & Informal Vernacular
Jessica Isabella Baralt
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Reframing the Formal & Informal Vernacular

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Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Masters of Architecture
In
Architecture

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Marcia Feuerstein
David Lever

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Havana, heritage, housing, vernacular, informal
Abstract

The design of housing in an urban fabric designated as a UNESCO World Heritage Site requires consideration of the historic character and how each building contributes to the streetscape. Beyond the façade, one discovers the unique story of each parcel through the transformations that its residents have enacted over many centuries in order to accommodate greater density and the evolution of family structures. One might even find a record of building periods following a hurricane, for example, inscribed by hand on a column in the shared patio for the collective memory of current and future tenants. These transformations are almost all realized through self-effort construction and are a community-building exercise. Unfortunately, the paradox that accompanies the informal typologies to construct additional housing is destructive more often than not. The additions to and division of the highly articulated residential architecture in Havana have a pervasive impact on the building structure and exacerbates the decay of the built environment. The formal typologies established to define thresholds and transition between public and private spaces are as much a part of the social landscape as the informal insertions. Housing la Habana Vieja calls for a reconciliation of the architectural heritage with contemporary building attitudes in its design for multi-family housing in the historic city center of Cuba.

This project addresses the housing crisis in Havana and proposes a resolution that is suited to the “economy of means, both material and aesthetic,” to appropriate the design philosophy of Cuban-American architect Belmont Freeman. The context investigates the underpinnings of housing attitudes by identifying milestones and gaining perspective from dialogue with the residents of la Habana Vieja. Documenting the formal and informal typologies allowed for a comparison of both their spatial implications and their performance, or function. The design proposal explores the intersection of these typologies to manifest the social behaviors and cultural values in the definition of shared and private space. The formal typologies engage the transitional qualities of space by layering building elements as thresholds to private realms. The informal typologies are engaged in the construction of habitable space by activating the immediate built environment through the addition and multiplication of planes. To design at the corner of the past and present is to preserve the vernacular and brandish the opportunities that the future holds for Housing la Habana Vieja.
Design multifamily housing to reconcile formal and informal housing typologies of La Habana Vieja.

By transcending its architectural heritage and resolving the spatial implications of Cuban contemporary living.
Acknowledgements

To my family:

Thank you for planting the roots, even when yours were transplanted, and for inspiring me to deepen my own roots through this project.

To my mentors:

I consider myself lucky for having the opportunity to grow in the light of your wisdom.
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Milestones

Typology

Conditions

Inventar

Demographics

Profiles
The Context: Housing Crisis

The 2010 census estimated a shortage of 500,000 housing units to meet the needs of the population.

To remediate the housing crisis, one million housing units would need to be built in the next decade, with 200,000 of those located in the province of La Habana.

The magnitude of the housing deficit increases annually, and at present is between 600,000 and one million housing units.

UNESCO registered an average of two partial or full building collapses in a three day period.
Milestones

Framing the Proposal in Time
Key events and legislation in Cuba’s history define the housing crisis

1948
National Congress on Architecture affirms that the local geography, climate, and traditions supersede contemporary architecture design


1960
Law of Urban Reform replaces the bourgeois concept of property with its “social function”

1972
Socialist Constitution decrees housing as one of three fundamental rights

1982
UNESCO designates La Habana Vieja as a World Heritage Site

2011
Free-market sales legalized by the Cuban government

2012
Subsidies launched for low-income residents to build or repair homes

1990
Migration to cities due to national economic crisis exacerbates housing infrastructure
# Housing Typologies

**Formal**
- Portal | Portico
- Persianas | Louvers
- Zaguan | Vestibule
- Galleria | Exterior Corridor

**Patio | Courtyard**
- Pasillo | Corridor
- Balcon | Balcony

The three ‘P’s (*portales, persianas, and patios*) of residential architecture in Cuba articulate thresholds and define transitional spaces between public and private realms.

**Informal**
- Barbacoa | Loft
- Entresuelo | Mezzanine
- Desglosar | Mezzanine with Separate Entry
- Ampliar | Addition or Expansion
- Azotea | Rooftop Addition
- Casa de Vecindad | Subdivided Housing

The transformations above collectively present a paradox wherein the self-effort solution to the housing crisis exacerbates the decay of the city fabric and the destruction of its architecture.
Progression of Residential Architecture in Havana

Emergence of Architectural Elements
Informal Housing Typologies

Barbacoa | Loft

Entresuelo | Mezzanine

Desglosar | Separate Entry

Ampliar | Addition

Azotea | Rooftop

Casa de Vecindad
Architectural Decay and Restoration in Havana

STRUCTURE

BEARING WALLS

STRUCTURE + WALLS

WALLS + INFILL

COLLAPSE

RESTORATION
Building Conditions | Exterior
Building Conditions | Interior
“When you need to increase the size of your house, and there is no patio to build upon, no garden to take up, not even a balcony, when you need to expand and you live with your family in an apartment, the only thing left to do is to raise your eyes to the sky and discover that, amidst the height of the ceiling, one could well fit in another floor, a barbacoa. You discover, in short, the vertical generosity of your space, which allows the building of new houses inside.”

- Antonio José Ponte, An Art of Building Ruins
51% buildings within the UNESCO World Heritage Site exposed the pervasive impact of *barbacoas* on the structure
“When one sees the phenomenon from afar, one knows that the barbacoa is an assault on the building. One which places its structural stability in danger. But, at the same time, it is part of the vernacular heritage of the city. The barbacoas’ insolence in doing without architects makes us incapable of forgiving it for existing without us. How could we possibly recognize its value. This endangers it. If La Habana Vleja is restored, the barbacoa ceases to exist.”

- Orlando Inclán Castañeda,
Architect for the Office of the City Historian
Comparison

La Habana Vieja + Washington, DC

2017 Population Estimate:
La Habana Vieja: 95,400
Washington, DC: 681,700

Area:
La Habana Vieja: 4 km
Washington, DC: 177 km

Population Density:
La Habana Vieja: 23,850 / km²
Washington, DC: 3,850 / km²
Demographics of Havana

- 20% are students
- 25% stay at home or are retired
- 50% of health problems reported are allergies
Housing Deficit Calculation for La Habana Vieja

Estimated Housing Deficit in La Habana: 200,000 units
Percentage of Population in La Habana Vieja: 4.5%

Housing Deficit in La Habana Vieja: 9,085 units
Average footprint of a housing unit: 60 m²
Total footprint of additional housing required: 0.55 km²

Percentage of City Footprint for Additional Housing: 13.6%
Survey of Home Life in Havana
La ampliacion es hacia fuera y dentro, con las barbacoas. El que invento eso de la barbacoa se quedo frío!

Se vuelve arquitecto aquí en Cuba… Luchando y trabajando, poco a poco lo logre. Y ahí esta, me hice mi casa.

Se mezclan las dos arquitecturas, la del pasado y la de ahora. Si no, ya tu sabes, se cae esto a pedazos.

Gladys
The expansion is towards the exterior and interior, with the barbacoas. The one who came up with that barbacoa was astounded!

One becomes an architect here in Cuba… Striving and working for it, little by little, I accomplished it. And there it is, I made my house.

The two architectures are blended, the past and the present. If not, you know, this would fall to pieces.

Aracelio
Idalmis

Profiles | Resident Interviews
Normas Cubanas | Codes

Plan Maestro | Master Plan

Cost of Construction

Tourism + Casas Particulares

Elemental Housing Precedent

Urban Farming + Food Security
+ define housing types and composition
+ describe spatial characteristics and circulation
+ provides direction for finishes, lighting, noise control, solar protection and ventilation
+ establishes requirements for life safety and minimum room dimensions
+ references relevant documents

EDIFICACIONES, VIENIDAS DE MEDIANO Y ALTO ESTANDAR. REQUISITOS DE PROYECTO

Residential Building Codes

NORMA CUBANA

Experimental

102. 2001

Buildings. Medium and high standard dwellings. Project requirements

Las observaciones a la presente norma experimental deben ser dirigidas a la Oficina Nacional de Normalización, ser expedite al Ministerio de la Construcción, antes del 15 de marzo del 2003.

ICB: 91.046.30

1. Edición Marzo 2001

REPRODUCCION PROHIBIDA

Oficina Nacional de Normalización (ONC) Calle E No. 261 Vedado, Ciudad de La Habana.
Tel.: 36-0315 Fax: (537) 33-3048 E-mail: oncnorm@conslai.onc

ANEXO A
(normalizado)

Espacios obligatorios-Áreas mínimas (m²)

<table>
<thead>
<tr>
<th>Espacio</th>
<th>Tipos de viviendas</th>
<th>Lado mínimo (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3D</td>
<td>20D</td>
</tr>
<tr>
<td>Cocina</td>
<td>6,0</td>
<td>6,0</td>
</tr>
<tr>
<td>baño</td>
<td>4,0</td>
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</tr>
<tr>
<td>Estancias</td>
<td>6,0</td>
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</tr>
<tr>
<td>Dormitorios</td>
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</tr>
<tr>
<td>Salas</td>
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<td>6,0</td>
</tr>
<tr>
<td>Baños</td>
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<td>6,0</td>
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<tr>
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</tr>
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</tr>
<tr>
<td>Total</td>
<td>56,7</td>
<td>56,7</td>
</tr>
</tbody>
</table>

NOTAS:

1. El área asignada al estar y al comedor cuando se agrupen en un solo espacio, puede reducirse hasta un 10% excepto en la vivienda tipo E.
2. El aislamiento de rejas incluido en las áreas de comedor se ha considerado un volumen mínimo por persona equivalente a 0,05 m³ de ancho, 0,60 m de profundidad y 2,00 m de alto, para un volumen de 1,00 m³ por persona.
3. Para el aislamiento de viviendas en la cocina se debe considerar un mínimo de 0,15 m² por persona, que puede estar en un chaflán o en los muros de la cocina.
4. La vivienda debe contar con un aislamiento de tipo general con un mínimo de 0,15 m² por persona.
5. En el caso de la vivienda tipo estudio el aislamiento se ha consensuado con las siguientes dimensiones, ancho 2,00 m, profundidad 0,60 m y altura 2,00 m y tendrá el final una superficie de utilidad al frente del mismo.
6. La circulación deberá ser el mínimo posible y no sobrepasará el 7% del total del área de la vivienda.

Espacios opcionales – Algunas áreas mínimas (m²)

<table>
<thead>
<tr>
<th>Espacio</th>
<th>Área (m²)</th>
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</thead>
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<td>Servicio sanitario varias</td>
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<tr>
<td>Vestíbulo</td>
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<td>Parter o cochilla</td>
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<td>1,20</td>
</tr>
<tr>
<td>Vindicación</td>
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<tr>
<td>Balcón</td>
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<tr>
<td>Portal</td>
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<td>1,20</td>
</tr>
<tr>
<td>Terraza</td>
<td></td>
<td>1,50</td>
</tr>
<tr>
<td>Otros locales de uso diverso</td>
<td></td>
<td>2,10</td>
</tr>
<tr>
<td>Terraza</td>
<td>0,72</td>
<td>0,80</td>
</tr>
</tbody>
</table>
Plan Maestro
Office of the City Historian

PEDI 2020
Strategic Plan for Integral Development

Housing Objectives + Indicators

Density: minimum of 200 residents / hectare

Diversify housing stock: accommodate average household size

Building conditions: improve quality of housing

Building footprint: mixed-use residential
2.1.1. Medio urbano

2.1.1.1. Aumentar la actividad habitacional en el Centro Histórico, garantizando indicadores de calidad de vida y una mejor calidad de vida en la distribución territorial.

2.1.1.2. En el periodo colonial la ciudad fue escenario de la actividad urbana con unos 400 mil habitantes, en niveles relativamente bajos, hasta alcanzar un poblado de unos 70 mil habitantes, unos 1800 años después, en el siglo XIX. Hasta nuestros días, medimos en una ciudad de 607 mil habitantes en los últimos años.

2.1.1.3. El proyecto de reconstrucción urbana se lleva a cabo en el Centro Histórico desde 1998. Ha conseguido un cambio en la percepción de la ciudad por parte de la población, en la imagen externa y en la imagen interna.

2.1.2. Desarrollo de zonas habitacionales

2.1.2.1. El proyecto de reconstrucción urbana se lleva a cabo en el Centro Histórico desde 1998. Ha conseguido un cambio en la percepción de la ciudad por parte de la población, en la imagen externa y en la imagen interna.

2.1.2.2. La idea principal del proyecto es la de dar una calidad ambiental a los distintos sectores de la ciudad, pasando por criterios generales de intervención y adaptabilidad de distintos tipos de viviendas, según criterios de calidad.

2.1.2.3. En este sentido, se pretende fomentar la circulación de viviendas en progresión al tamaño y composición de las familias (más pintores de 3 habitaciones por vivienda, adaptadas para familias de grandes edades [un segmento singular y creciente de la población]), y otras modalidades que permitan la adaptación y enreda en el proceso de reconstrucción de las viviendas, además de la reutilización de las fachadas de las nuevas viviendas, como en el caso de las viviendas de trámite. A pesar de las ideas legadas en esta etapa, que se recolectan una serie de medidas (regulatorias, financieras) que podrían redactar en especiales obras para favorecer el acceso a nuevas viviendas de sectores más amplios y diversos del conjunto público.

2.1.3.5. El objetivo principal es la generación de nuevas viviendas. Las nuevas viviendas deben adaptarse a la calidad de vida en la ciudad, pero también deben ser adecuadas a la calidad de vida en la ciudad. En este sentido, se pretende fomentar la adaptabilidad de las viviendas en progresión al tamaño y composición de las familias (más pintores de 3 habitaciones por vivienda, adaptadas para familias de grandes edades [un segmento singular y creciente de la población]), y otras modalidades que permitan la adaptación.

2.1.4. La idea principal del proyecto es la de dar una calidad ambiental a los distintos sectores de la ciudad, pasando por criterios generales de intervención y adaptabilidad de distintos tipos de viviendas, según criterios de calidad.
Preservation Priorities and Residential Sectors

Residential Areas in Distress and Potential Developments

Community Facilities and Services
Housing Construction Cost Comparison

HOUSING CONSTRUCTION COST | OFFICIAL

- MATERIALS: 70%
- LABOR: 20%
- EQUIPMENT: 10%

HOUSING CONSTRUCTION COST | SELF-EFFORT

- MATERIALS: 69.7%
- LABOR: 29.8%
- EQUIPMENT: 0.5%
Cost of Construction

Estimate for a 60 m² unit in Havana at market cost

Site + Permitting: $100
Materials: $5,400
Labor: $1,500
Equipment: $800
Total Cost: $7,800
Area Cost: $130 / m²
Viability of Self-Effort Construction

Monthly Salary: $26

Working Years: 42 - 47

Life Expectancy: 80 years

Cost of Construction: $7,800

Annual Salary: $312

Payback Period: 25 years

http://data.worldbank.org/country/cuba
Tourism

Invest in housing over hotels and design units to provide rental opportunities to tourists during periods of increased demand.

The model of demand behavior illustrates why the Casa Particular model should be implemented for housing to anticipate tourism demands and accommodate locals.
Casa Particular

Homestay arrangements can be independent apartments or private rooms in a residence

A stay at a Casa Particular averages between $10-$30

Hotels range between $60-$400+ nightly

In La Habana Vieja, hotel rooms have increased over 125% in price between December 2014 and January 2017

Cuba has become one of the most expensive cities in the world for hotel accommodations

Airbnb in Cuba

In less than a year, 13,000 guests from all 50 states were hosted by Airbnb

Cuba is the fastest growing market in Airbnb history

Approximately 4,000 casa particulares were added in the year following the launch

Airbnb hosts have earned an average of $250 per booking

https://qz.com/314567/what-to-expect-on-your-first-trip-to-cuba/
Viability of Casa Particular

Nightly rate: $25

Peak Season: December - March

Occupancy Rate: 75% during peak (84 nights)
25% during low tourism season (63 nights)
Nights Occupied (total): 147

Annual Income: $3,675

To put it into perspective, the construction of each new hotel room is estimated to cost $200,000

Cost of Construction: $7,800 + $1,300 = $9,100

Annual Income from Rent: $3,675

Payback Period: 2.5 years
Elemental Housing Precedent
Elemental Housing Precedent
Out of the 3 billion people living in cities today, 1 billion is under the line of poverty. By 2030 out of the 5 billion people that will be living in cities, 2 billion are going to be under the line of poverty. That means that we will have to build a 1 million people city per week with 10,000 dollars per family. Given the magnitude of the housing shortage, we won’t solve this problem unless we add people’s own resources and building capacity to that of governments and market. That is why we thought of putting in place an OPEN SYSTEM able to channel all the available forces at play. In that way people will be part of the solution and not part of the problem.

On the other hand, it is a fact that available resources are not enough. To face such scarcity of means, the market tends to do two things: Reduce and Displace; reduce the size of the houses, threatening the quality of life of its inhabitants, and displace them to underserved peripheries where land costs nothing, segregating people from the opportunities that made them come to cities in the first place. In order to face scarcity we propose a principle of INCREMENTALITY.

If you can’t do everything, focus on:  
A. What is more difficult  
B. What cannot be done individually  
C. What will guarantee the common good in the future

We identified 5 design conditions as the ABC of incremental housing:

1. Good location: dense enough projects able to pay for expensive well located sites.  
2. Harmonious growth in time: build strategically the first half (partition structural and firewalls, bathroom, kitchen, stairs, roof) so that expansion happens thanks to the design and not despite it. Frame individual performances and actions, so that we get a customization instead of deterioration of the neighborhood.  
3. Urban layout: introduce in between private space (lot) and public space (street), the collective space, not bigger than 25 families, so that social agreements can be maintained.  
4. Provide structure for the final scenario of growth (middle class) and not just for the initial one.  
5. Middle-class DNA: plan for a final scenario of at least 72m2 or 4 bedrooms (36m2) with space for closet or double bed, bathrooms should not be at the front door (which is the typical case to save pipes) but where bedrooms are; they may include a bathtub and not just a shower receptacle and space for washing machine; there should be possibility of parking place for a car. None of this is even close to be the case in social housing nowadays.

In other words, make sure you balance:  

\[ \text{low-rise high density,} \]

\[ \text{without overcrowding,} \]

\[ \text{with possibility of expansion (from social housing to middle class dwelling)} \]

Here you will find 4 examples, with four different designs that pursue the same goals and principles. From now on they are public knowledge, an open source that we hope will be able to rule out one more excuse for why markets and governments don’t move in this direction to tackle the challenge of massive rapid urbanisation. These designs may require to be adjusted to comply with local regulations and structural codes, follow local realities and use pertinent building materials. But they are knowledge that we have tested, that has proved to be beneficial to communities and that have been implemented accepting very pressing budget and policy constraints.
90% food consumed in La Habana Vieja is harvested within the province of Havana
Urban Farming

- Canopy Cover
- Cultivated Window Gardens
- Balcony Plantings
- Drainage
Local Crops

Viandas: sweet potato, yucca, squash, yams

Vegetables: Chinese cabbage, beans, lettuce, cucumber, plantain, tomato, okra, beet, turnip, carrots, potatoes, onions, garlic, peppers

Herbs: parsley, oregano, thyme

Grains: maize, rice, taro tubers, lemongrass, mint, chamomile

Flowers: aster, sunflowers, gladiolus, marigold

Fruits: avocado, guava, lemon, coconut, orange, lime, pineapple, mango

Other: honey, soil, seeds
Site Selection
Site Analysis
Site Photography
Site Plan
Diagrams

The Proposal
Proximity
Historic Designation
Morphology by Block
Morphology by Zone
Site Location
AXONOMETRIC
ELEMENTS + FEATURES

1. ZAQUARI VESTIBULE
2. BALLERS | GALLERY
3. PASILLO | CORRIDOR
4. PATIO | COURTYARD
5. BAHÍAS | MEZZANINE
6. COMMERCIAL SPACE
7. PRODUCTIVE SPACE
8. PRIVATE SPACE
9. RENTABLE SPACE
10. SHARED SPACE
11. TECHNICAL FLAT | FLAT ROOF
12. PONTAL | HIGH CEILING
13. PERGOLAS | LOUVRES
14. BALCON | BALCONY
15. VEGETATION
16. COVERED TRELIS SYSTEM AROUND STAIRS
17. PLANTERS FOR ROOF TOP FARMING
18. WHITE ROOF ON CONCRETE SLAB
19. PRECAST CONCRETE BEAMS
20. WOOD FLOOR ON TIMBER FRAMING
21. CONCRETE MASONRY WALL
22. ROOF DRAIN
PLANTA ALTA - UPPER FLOOR PLAN
ENTRESUELO - MEZZANINE PLAN
APT. A
40 SF
1 BEDROOM
PRIVATE SPACE
PATIO (COURTYARD)
PUNTAL | HIGH CEILINGS

APT. B - BARBACOA
60 SF
1 BEDROOM
PRIVATE SPACE
PRODUCTIVE SPACE
PUNTAL | HIGH CEILINGS
GALLERIA | GALLERY

APT. C - ENTRESUELO
70 SF
2 BEDROOMS
PRIVATE | RENTABLE SPACE
SEPARATE ENTRANCE
GALLERIA | GALLERY

APT. D - ENTRESUELO
50 SF
2 BEDROOMS
PRIVATE | RENTABLE SPACE
PRODUCTIVE SPACE
PUNTAL | HIGH CEILINGS
GALLERIA | GALLERY
“After the revolution, in accordance with the policy of “densening up” the bourgeoisie, the enfilade was cut up into pieces, with one family per room. Walls were erected between the rooms - at first of plywood. Subsequently, over the years, boards, brick, and stucco would promote these partitions to the status of architectural norm. If there is an infinite aspect to space, it is not its expansion but its reduction. If only because the reduction of space, oddly enough, is always more coherent.”

- Joseph Brodsky, *In a Room and a Half*
References

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p. 6-8, 10-12 Sandra Calvo, “Tropico Entropico: Multiplicacion del Paisaje Interior”, presented at XII Bienal, Havana, Cuba, May 22-June 22, 2015.


Selected Bibliography


Endnotes


