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This thesis will present a proposal in a conceptual approach, to even the unmet housing need of urban single-person households in the U.S. demographics. The existing architectural housing demand has been built largely based on the needs of family housing.

My proposal is the introduction of pre-fabricated micro-apartments. All units are self-contained units with self-ventilation and functions.

Given the radically increase in single-person households over the past few decades, a significant gap has formed in the availability of properly priced housing to meet the needs of people who would prefer to live alone. Whereas average household size in 1900 was 4.60 persons, today the average household size is 2.58.

I have worked with this housing demand as an opportunity for architecture to take strain off of family housing, and create innovative housing types that satisfy the needs of their fastest growing demographic and meet future demands. This thesis present micro-apartments as a logical approach to ease the strain on housing.

In conclusion, the single person units are developed and assembled into a building system, easy to construct and put together on site. Micro-apartments are a viable solution to filling the supply gap for single-person households, and with land costs at an all-time high, apartments with less square footage will be beneficial.
The U.S. demographics of today have changed radically in the past 50 years, from when the majority of our urban housing plan was constructed. As the presence of families continues to decline and single-person households increase, development patterns are not fully accommodating this remarkable demographic shift. Leading to a significant mismatch between housing supply and demand. Not only in the US, but as one of the countries with the biggest average new home size.

The U.S have a average home size by 2480 ft². (~230 m²)

Almost three times more than Sweden with 893 ft².

I see this as a problem that they have all these square meters that they don’t use efficiently, I propose to make it 30 m².
SINGLE PERSON HOUSEHOLD GROWTH IN THE UNITED STATES

BACKGROUND
PERCENT OF POPULATION GENERATIONS

- **Next Generation**
  - 2011-2025
  - 7% in 2000, 20% in 2010, 7% in 2020, 20% in 2030

- **Millennials**
  - 1995-2010
  - 26% in 2000, 25% in 2010, 25% in 2020, 22% in 2030

- **Generation Y**
  - 1977-1994
  - 17% in 2000, 25% in 2010, 24% in 2020, 22% in 2030

- **Generation X**
  - 1965-1976
  - 28% in 2000, 16% in 2010, 15% in 2020, 13% in 2030

- **Baby Boomers**
  - 1946-1964
  - 13% in 2000, 25% in 2010, 22% in 2020, 17% in 2030

- **WWII Generation**
  - 1935-1945
  - 9% in 2000, 10% in 2010, 6% in 2020, 3% in 2030

- **Silent Generation**
  - 1934
  - 4% in 2000, 6% in 2010, 3% in 2020, 3% in 2030
SHIFTING DEMOGRAPHICS

One change that has impacted our housing demand over the past few decades in the United States is the rapidly shrinking household size. Whereas the average household size in 1900 was 4.60 persons, today the average household size is 2.58.

6 IN 10 PEOPLE LIVE ALONE IN STOCKHOLM
THE RISE OF SINGLE-PERSON HOUSEHOLDS

The most remarkable demographic shift that has impacted housing demand, one that has had the most profound effect on the mismatch between housing supply and demand, is the rise of the single-person household over the past fifty years.

This demographic shift has resulted from young people delaying marriage until a later age, a divorce rate hovering around 50%, clearly a move away from traditional family structures, and more women are entering lifelong careers instead of pursuing stable a family. (Euromonitor International, 2013).

By 2025, the number of single households will equal the number of households containing families with children, each representing just below thirty percent of households (Leinberger, 2008).

This household type has come to be known as the SINKS (Single Income No Kids). In 1950, 9% of the U.S. population lived alone. Today, 27.6% of all households in the U.S.
Single-Person Households Will Account for Almost Half of All Renter Growth Over the Next Decade

Share of Projected Renter Growth (Percent)

- Single Person: 44%
- Married with Children: 13%
- Married without Children: 18%
- Single Parent: 44%
- All Other Household Types: 16%

Total Growth: 3.6 Million Households
PERCENT SINGLE-PERSON HOUSEHOLDS BY COUNTRY

- Sweden: 40%
- United Kingdom: 30%
- Japan: 20%
- United States: 10%

Comparing the percentage of single-person households across different countries, Sweden leads with 40%, followed by the United Kingdom with 30%, Japan with 20%, and the United States with 10%.
SINGLE-PERSON HOUSEHOLDS BUILT IN %

Seattle
42%

Portland
34%

Boise
31%

San Francisco
40%

Salt Lake City
37%

Denver
40%

Los Angeles
30%

Santa Fe
40%

Oklahoma City
31%

Little Rock
36%

New Orleans
36%

Huston
32%

Miami
36%

Pierre
37%

Minneapolis
43%

Chicago
35%

Des Moines
32%

Cleveland
40%

St. Louis
44%

Boston
38%

New York
32%

Manhattan
48%

Washington D.C.
48%

Bozeman
32%

Santa Fe
40%

Oklahoma City
31%

Little Rock
36%

New Orleans
36%

Huston
32%

Miami
36%

Salt Lake City
37%

Pierre
37%

Minneapolis
43%

Chicago
35%

Des Moines
32%

Cleveland
40%

St. Louis
44%

Boston
38%

New York
32%

Manhattan
48%

Washington D.C.
48%

Salt Lake City
37%

Pierre
37%

Minneapolis
43%

Chicago
35%

Des Moines
32%

Cleveland
40%

St. Louis
44%

Boston
38%

New York
32%

Manhattan
48%

Washington D.C.
48%

Salt Lake City
37%

Pierre
37%

Minneapolis
43%

Chicago
35%

Des Moines
32%

Cleveland
40%

St. Louis
44%

Boston
38%

New York
32%

Manhattan
48%

Washington D.C.
48%
POPULATION DISTRIBUTION BY AGE, 1970-2030

(Percent of total population)
STEP 1
6*7 MODULE SYSTEM

STEP 2
32 APARTMENTS MODULES
BALCONY ENTRANCENS
7 VERTICAL CONNECTION MODULES

STEP 3
FILL VOID WITH NINE SHARED OUTSIDE AREAS

CONSTRUCTION AND CONCEPT
STEP 4
- GREEN WALLS AND VEGETATION
- SHADE PANELS
- WIND PANELS
- SIX GROUNDLEVEL GARDEN

KEEP TEMP DOWN
PROTECT FROM WIND
SHADE DECK
SUN DECK

STEP 5
FLIP SYSTEM TO CREATE SHADED BACKYARD AND SEMI PRIVATE BALCONY ENTRANCES
TOTAL 72 APARTMENTS

FIT SKYLINE
ADD RESIDENTS
LOWER SITE COSTS
LESS SUN

APARTMENT MODULE
BALCONY MODULE A & B
BOXED APARTMENTS
AXONOMETRIC 3D MODEL 30m²

3D MODULE INTERIOR A

BOXED APARTMENTS
VARIATIONS

PLAN - VARIATIONS

1:100

BOXED APARTMENTS
MATERIALS

FUNCTIONAL WALL - SECTION 1:50

WHITE PAINT
WOODEN FLOOR
NATURAL DETAILS
LIGHT MOSAIC
WHITE FRONTS
WOODEN PANEL OUTSIDE
DETAILED MODULE A SECTION
STORAGE M³ A-E

TOTAL INTEGRATED STORAGE 7 M³

BOX MODULE DETAIL
“Ocean breezes and miles of sandy beach distinguish this neighborhood, where the iconic SANTA MONICA PIER has stood for more than a century. Ocean Avenue is famous for the gem located at its southern end: The 106-year-old Santa Monica Pier, with its oft-photographed Ferris wheel, is justifiably popular with visitors thanks to a mix of amusement rides and games found at Pacific Park, the venerable theme park at its tip. Seafood restaurants and beaches.”

“SANTA MONICA STATE BEACH is an iconic destination that draws visitors from around the globe. It is 3 miles long, covering 245 acres of sand along Santa Monica Bay. With bike and walking paths inspiring views of the Santa Monica Mountains year-round.”
SUN SECTION

AIR FROM SHADED BACKYARD

32° 56° 80°

SUN PLAN

AIR FROM SHADED BACKYARD AND SHAFT

32° 56°

32° 56° 80°

COOLED AREA

SUN ANGLES DURING THE YEAR IN LOS ANGELES

32° 56° 80°

Winter Spring / Fall Summer

JAN FEB MAR APR MAY JUN
40° 48° 56° 64° 72° 80°

JUL AUG SEP OCT NOV DEC
72° 64° 56° 48° 40° 32°

Figures shown in degrees from horizontal

TEMPERATURE DURING THE YEAR IN LOS ANGELES

JAN FEB MAR APR MAY JUN
High in °C: 17.6 17.4 16.7 17.4 17.6 18.8
Low in °C: 10.1 10.7 11.2 12.2 13.6 15.2

JUL AUG SEP OCT NOV DEC
High in °C: 20.4 21.3 21.4 20.9 19.6 18.2
Low in °C: 16.7 17.3 17 15.2 12.4 10.3

NET ZERO ENERGY
California aims for net zero energy housing by 2020. Most material and contractors are certified by Santa Monica Green Building program (SMGBP). Mainly from the Santa Monica (SM) area and Los Angeles (LA) area.

CONCRETE AND WOOD STRUCTURES
Mostly recycled concrete and bricks and new forms are made from concrete that are a Green Mix solution from SM (SMGBP). All wood structure are FSC certified lumber / plywood, from SM and LA (SMGBP).

THERMAL PROTECTION AND INSULATION are recycled fiberglass and Blown in Cellulose Insulation (SMGBP). Energy Efficient Doors and high performance low -e Windows.

ALL ELEVATORS ARE Energy Efficient and from Cerritos.

ALL APARTMENTS have heat recovery ventilators that ventilate the apartment when needed and radiant floor heating system for colder winter days.

OUTDOOR WALL FINISHES are Green building fiber cement siding (SMGBP). The roof do also have possibilities for Renewable Energy solutions like Roof Mounted Solar Panels from North Hollywood. Vegetation are Biodegradable pots and plants.

ROOFTOP AND OUTDOOR AREAS have Sun control vegetated screens from LA.

INTERIOR FINISHES.
Hardwood Wood Flooring from Burbank (SMGBP). Wall Finishes with Green Seal Zero VOC paint and coating rom SM and LA (SMGBP). All Residential Equipment in Kitchen are Energy star rated and bathroom have High-Efficiency Toilets and showers (SMGBP). All interior furniture are Manufactured Wood Casework with recycled materials from Los Angeles.

MARKET PRICE
Southern California

Medium Studio
722 Square Feet $3440 per month.
Requires salary of > $122,500

Small Studio
471 Square Feet $2665 per month.
Requires salary of > $95,000

BOX Apartment
300 Square Feet $1500-$1800 per month.
Requires salary of > $54,000
4RD THIRDFLOOR

5TH FLOOR
7TH FLOOR

ROOFTOP TERRACE, offers an incomparable vantage point for residents and guests to enjoy the sparkling ocean view over the bay area and the serene Santa Monica pier and Pacific Park skyline.
WALL TEXTURE CONCEPT

SKETCHES
BALCONY MODULE

BALCONY ENTRANCE
BOXFRAME CONCEPT
APARTMENT FOLDED IN AND OUT
MODULAR PLANS

MODULE A

MODULE B

MODULE C

MODULAR PLANS
MODULAR VOLUME
FIRST VOLUME SKETCH
APARTMENT SKETCH
BUILDING VOLUME
BUILDING VOLUME
BUILDING VOLUME