The Adaptive Dream Home Tower

is a method to investigate dream home desires and configure dream homes in a city. By physically transforming dwellings, dwelling desires are fulfilled. The project relates to "Vertical Village" research by the Why Factory. Where the latter is a model for vertical evolution of housing, this model proposes physical transformations to reduce compromises.
Introduction
For 90 years, architects have been trying to combine technology and desires.

The inhabitants are given access to “powerful ambiance creating resources to construct their own spaces wherever and whenever they desire”

Mark Wigley on Constant’s New Babylon (1998)
The dwelling paradigm has shifted from sprawl to density, still many similarities can be drawn between these typologies.

“\textit{The suburbs seem to act today as the image of all that is bad: unsustainable, sprawl, lack of cosmopolitan culture, racial segregation, protectionism, etc.}”

Beatriz Colomina,
\textit{Mourning the suburbs: Learning from Levittown} (2011)

The growth and densification of cities presents a new challenge in fulfilling our desires for dwelling. Though densities are vastly different, the repetition of the housing typology and small individual interventions are comparable.
The city offers many advantages for a vibrant lifestyle and is attractive for those who can afford it.
Can we increase the amount of people who can fulfil all their dwelling desires?

Penthouses fulfil the dwelling desires of a select few. These select few that can afford it already try to combine their dwelling desire and the attractiveness of the city.
City dwellings are already adapting into areas not seen before to fulfil desires that the density of the city prevent.

Can we envision other ways of adapting dwellings in the city to better desires?
Can we increase the amount of different desires in a single building?

The repetition of singular desires in a dwelling tower has already been adapted from a typical tower typology.
Methodology
What do we want in our dream home?
Social media already provides an unbelievable amount of data about users. This data available to anyone on the internet can provide insight into real dwelling desires.

As architects, we now have access to real trending desires for housing via social media. Pinterest allows people to “pin” images they like and organize them on “boards”
Its been done before. People surveyed from around the world provided data for the most wanted painting in each country as an average but in dwellings we dream of all desires being fulfilled not of the average.

The most wanted paintings from around the world by market survey to understand “people’s art” and create a painting based on the average results. This amounts to a compromise for everyone.
A site in Rotterdam is selected as a test ground for the adaptive dream homes.

10 dwelling apartment

1 typical Dutch dwelling = 100m²

1 average dwelling = 3 persons
Who wants to live there?
10 people from around the world responded that they want to live in Rotterdam.
1.1 Methodology - Part 1 Analysis
Social media provides an invaluable tool for gathering real dwelling desires.

Search the terms “dream home” to get real-time post of desires for dream homes.
10 “pinners” Dream Home Boards Selected

The study consists of taking real people’s desires and translating them into a catalogue of architectural elements. Each person who wants to live on the site in Rotterdam has a board called ‘Dream Home’ to which they pin images to, these are the images that are analyzed.
Categorization Method
1. Only count what you see
2. Only count space (No objects)
3. Each images is only counted once
4. Only single images are counted
5. Only real images are counted
6. If the image depicts open rooms, the images is counted from the where the pictures was taken.
Client C's Images

- Bathrooms
- Bedrooms
- Dining rooms
- Exteriors
- Kitchens
- Living rooms
- Media & Rec
- Other/Storage
Analyzing the images

Room
- Bathroom
- Number of pins

Space
- Door to exterior
- High Ceiling
- Stairs
- Cantilever
- Courtyard View
- Gable
- Mezzanine
- Open rooms
- Vault
- Outside

Object
- Windows
- Ornament
- Balcony
- Roof/Covered
- Fireplace
- Pool
- Arch
- Skylight
- Column
- Vegetation
- Lawn
- Library
- Shutters
- Water Garden
- Storage
- Waterfall
- Slide
- Screen
- Garden
- Bowling
- Sauna
- Hot Tub
- Wine Cellar
- Bar
- Lawn
- Pool Table
- Zen Garden

Material
- Wood
- Paint
- Stone
- Plaster
- Glass
- Steel
- Tile
- Concrete
- Shingles
- Brick
- Wallpaper
- Mirror
- Gold
- Stainless Steel
- Carpet

Environment
- Forest
- Lake
- City
- Ocean
- Mountains
- Plains

Bath Tub
High Ceilings
Vault
Large Window
View
Forest

2 sinks
Wood
001_Bathroom
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2 Residents’ Profile
Client D’s Profile

City: Liège, Belgium
Gender: Female
Age: 33 (August 20, 1980)
Language: French
Occupation: Blogger
Salary: "@
Education: Master’s Degree, History, Université de Liège (2007)
Marital Status: Single
Children: 2 daughters
Family members: "
Pets: "

Dream Home Analysis

Space Definition

Types of Elements

Type of View
The Dream Home's Phantom Image

The stated desires are overlaid to create impressions of the qualities of the rooms desired.
Residents’ Dream Homes
Client D’s Dream House - Master Bedroom

Cathedral Ceilings (58%)
Skylight (27%)
Open to Office (12%)
Doors to Exterior (8%)

Windows (38%)
High Ceiling (15%)
Client D’s Dream House - Living Room

Cathedral Ceiling (21%)
Open to Dining (21%)
City View (13%)
Large Windows (54%)
High Ceiling (33%)
Doors to Exterior (13%)
Fireplace (13%)
Client D’s Dream House - Dining Room

- Cathedral Ceilings (50%)
- Open to Kitchen (36%)
- Stairs (9%)
- Large Windows (59%)
- Doors to Exterior (18%)
Client D’s Dream House - Kitchen

- Windows (57%)
- High Ceiling (57%)
- Arch (14%)
Client D’s Dream House - Bathroom

Bath tub (66%)
Garret (33%)
Client D’s Dream House - Office
Client D’s Dream House - Circulation

- Bathroom & Office
- Stairs (75%)
- Door to Exterior (50%)
- Cathedral Ceilings (50%)
Client D’s Dream House - Exterior

- Courtyard (100%)
- Doors to Exterior (100%)
- Vegetation (50%)
Client D’s Dream House - Additional Space

- Garret (58%)
- Windows (38%)
- Storage (8%)
- Stairs (8%)
Client D’s Dream House

1. Master Bedroom
   - Cathedral Ceilings (58%)
   - Large Windows (38%)
   - Skylight (27%)
   - High Ceiling (15%)
   - Open to Office (12%)
   - Doors to Exterior (8%)

2. Living Room
   - Large Windows (54%)
   - High Ceiling (33%)
   - Cathedral Ceiling (21%)
   - Open to Dining (21%)
   - Open to Kitchen (21%)
   - Doors to Exterior (13%)
   - Fireplace (13%)
   - City View (13%)
   - Stairs (8%)

3. Dining Room
   - Large Windows (59%)
   - Cathedral Ceilings (50%)
   - Open to Kitchen (36%)
   - Open to Living Room (36%)
   - Doors to Exterior (18%)
   - Stairs (9%)

4. Kitchen
5. Bathroom
6. Office
7. Circulation
8. Exterior
   - Courtyard (100%)
   - Doors to Exterior (100%)
   - Vegetation (50%)

9. Bedrooms
   - Garret (58%)
   - Windows (38%)
   - Stairs (8%)
   - Storage (5%)
Client D’s Dream House Material

Materials

- Paint 53%
- Wood 28%
- Tile 6%
- Plaster 4%
- Brick 3%
- Concrete 3%
- Wallpaper 1%
- Glass 1%
- Carpet 1%

Carpet 1%
5
Methodology - Part 2 Design
How can 10 dream homes fit onto the site in Rotterdam?
The Dream Homes in Rotterdam

City
- Taller than existing building
- Housing density is too low
- Structure costs are high
- Low accessibility
- Lack of infrastructure
- Low energetic efficiency
- High maintenance costs
- Large shadows cast on city
- Social separation

Desires
- View not 100% satisfied
The Dream Homes - Safety
The Dream Home Tower

City
- Taller than existing building
- Housing density is too low
- Structure costs are high
- Low energetic efficiency
- High maintenance costs
- Large shadows cast on city
- Social separation

Desires
- Views & light not 100% satisfied
- Accessibility is difficult
- Appearance compromised by structure

City vs. Desires

City

Desires

7
The Compact Dream Homes
The Dream Home Tower

City vs. Desires

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<th>City</th>
<th>Desires</th>
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City Desires

- Room size desires are compromised
- Ceilings height not achieved
- Ceiling space not customized
- Exterior appearance not individual
- Exterior space desires are not fulfilled
- Doors to exterior are inadequate
- Size of windows is inadequate
- Views are limited
6

The Adaptive Dream Home
Éleonoré Goffin’s Adaptive House

The First Storey / Bedrooms
Collapsible based on CargoShell Container design

The Living Space
Retractable based on expandable room flat floor system.

The Garden
Unfolds based on Ily travelling container

The Roof
Pivots based on Tracking Solar Panels or automated Skylights

Expandable Kitchen
by Kristin Laas & Norman Ebelt
The Steps of Éleonore’s Adaptive House - The Roof

Energy
Solar panels ensure the independence of the pitched roof system.

Climate
For summer deployment, a honeycomb material provides isolation & water protection. The pitched roof increases the total volume of the dwelling and height, allowing hot summer air to rise out of the living spaces.

Structure
Ultra lightweight, telescopic structure of aluminium alloy (aircraft industry) to resist wind & rain loads. Keep self weight to minimum.
Closed Self-Supporting Awning
NASA - Thermal insulation blankets
Sketch of rolling structure & telescoping mechanism
The Steps of Éleonore’s Adaptive House - The First Storey Bedrooms

**Energy**
Use of spring and kinetic energy from the downward force of the other dream homes to trigger a collapse of the shell.

**Climate**
These are bedrooms so they need to be climate isolated for summer & winter, meaning the roof and wall need thermal barrier.

**Structure**
A traditional steel structure is possible with the loads of the floor supported by load bearing walls on the ground floor.

**Collapsible Container**
Spring loaded shell could deploy 2 additional bedrooms when needed.

**Kinetic Energy**
The force from the dream home above could trigger a spring causing the collapse.
Elevation showing storage built into the floor & walls
Patent for collapsible container showing hinge detail (1980)

EcoActive Myco Foam Insulated Sheathing (Mushroom Insulation)
The Steps of Éléonore's Adaptive House - The Living Space

**Energy**
Electricity would power the transformation of the slide-outs. The floors contain the power distribution system.

**Climate**
The living spaces need to function all year long and will require thermal barrier and vapour barrier. The benefit of collapsing the dining room is reducing the total volume to heat in winter for example which could offset the deployment costs.

**Structure**
A traditional steel structure is possible. Light weight construction is preferred to keep self-weight low and the floor requires to support the cantilevering for the expansion.
Plan sketch of storage space for expandable living space
Elevation of expandable room flat floor system
The Steps of Éleonoré’s Adaptive House - The Garden

Energy
Either a winch powered by hand or could be electric piston system to deploy the garden.

Climate
Sun placement would require the garden to orient itself for best exposure. The floor/wall of the garden could feature a green wall install to add thermal mass when closed.

Structure
A traditional steel structure is possible with the loads of the floor supported by tension cables.
The Unfolding Container
Unfolds with winch and cable
Sketch plan of garden storage when the garden is folded

- Courtyard + Outdoor Storage
- Green Wall
Green Wall
Madrid, Spain
The Adaptive Dream Home Tower
The Adaptive Dream Home Tower