affordable housing around the world

Avi Friedman, PhD, McGill University, Canada

housing

suite

sanctuary

domus

dwelling

flat

residence

abode

house

habitat

pad

heart

apartment

domicile

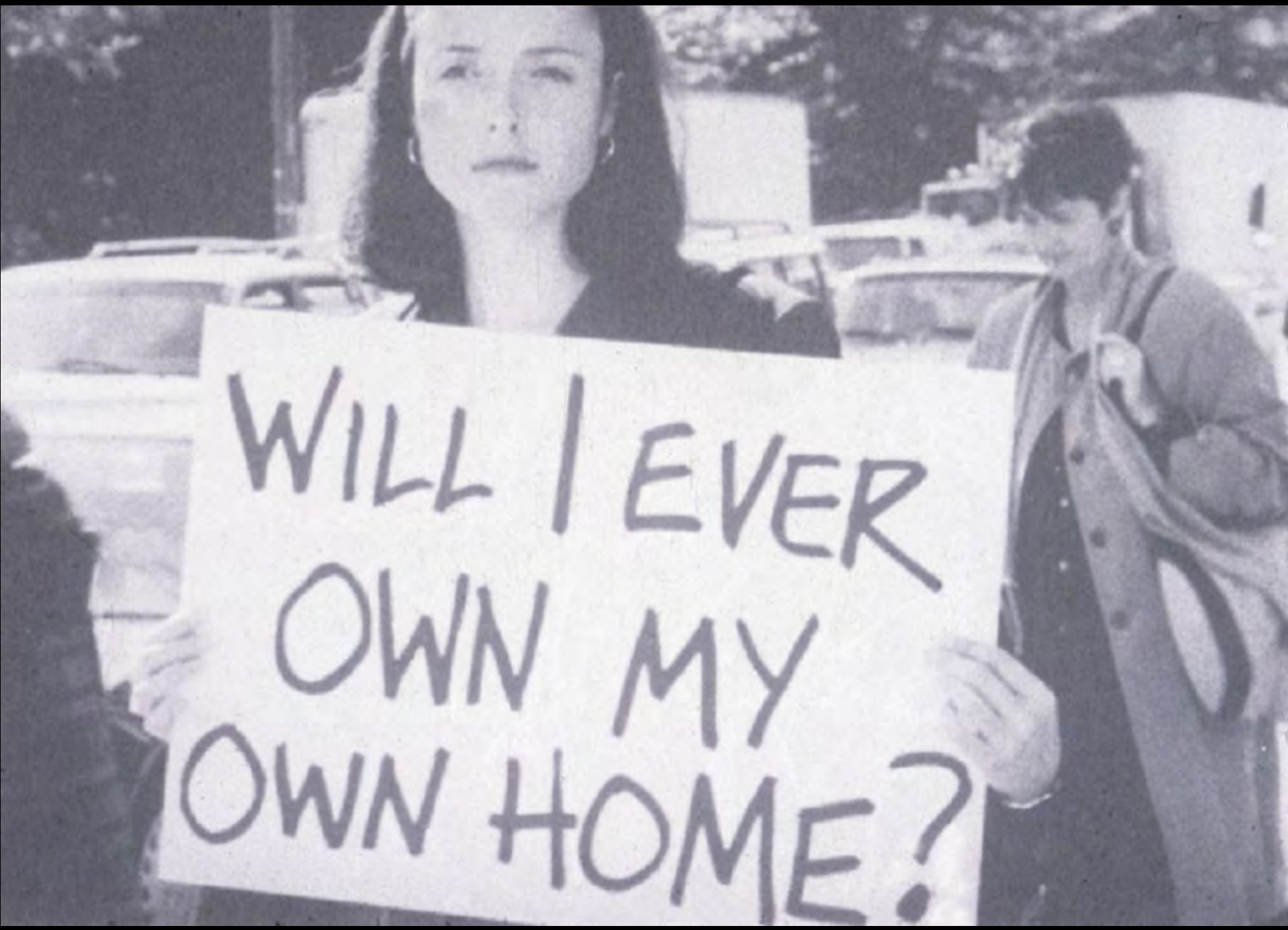
shelter

home

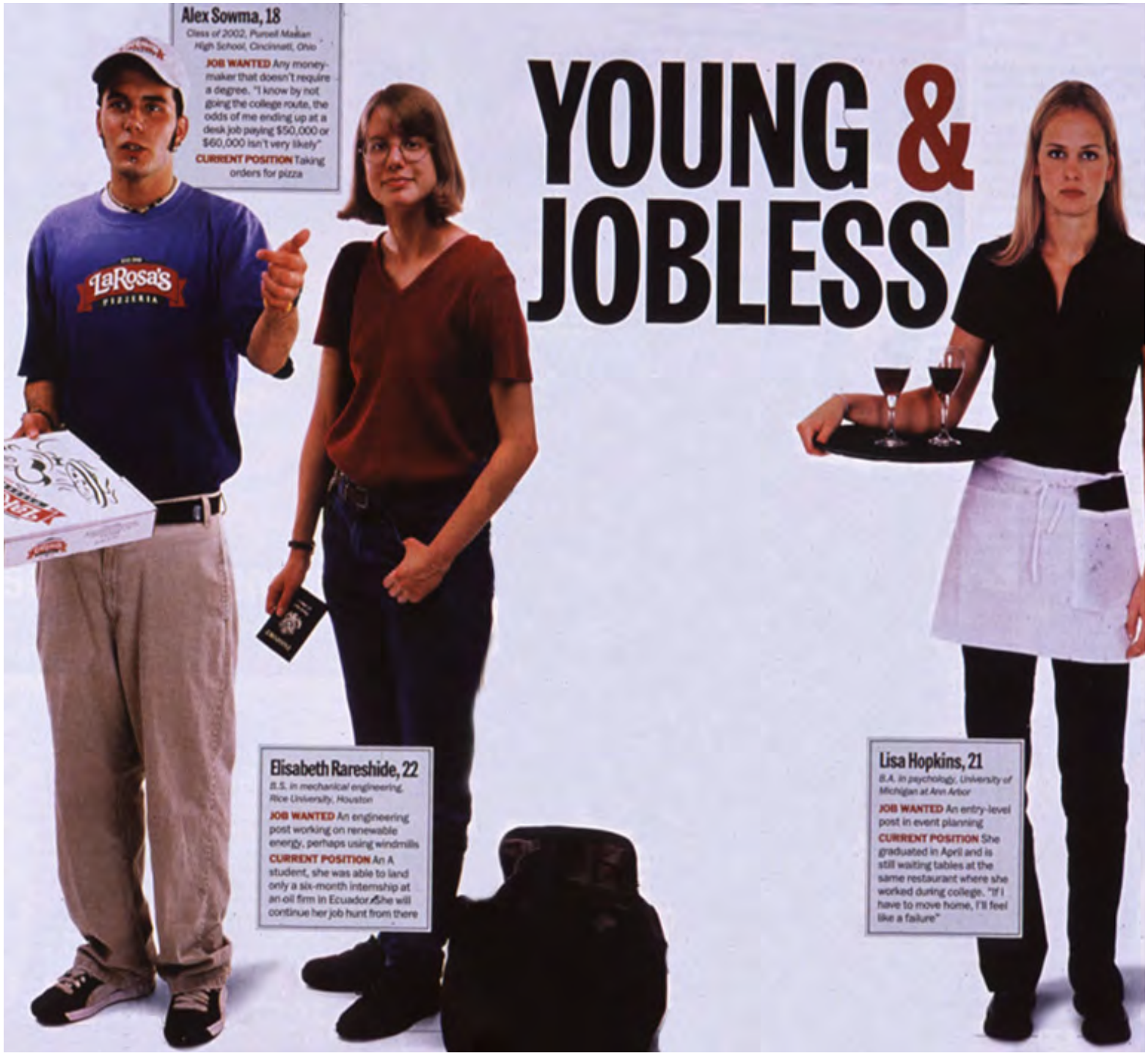
place

casa

77
Charles
&
Miranda
451
45
131
534
15
C
46
370
6
582
18
3


WILL I EVER
OWN MY
OWN HOME?

YOUNG & JOBLESS



Alex Sowma, 18
Class of 2002, Purcell Marian High School, Cincinnati, Ohio

JOB WANTED Any money-maker that doesn't require a degree. "I know by not going the college route, the odds of me ending up at a desk job paying $50,000 or $60,000 isn't very likely"

CURRENT POSITION Taking orders for pizza

Elisabeth Rareshide, 22
B.S. in mechanical engineering, Rice University, Houston

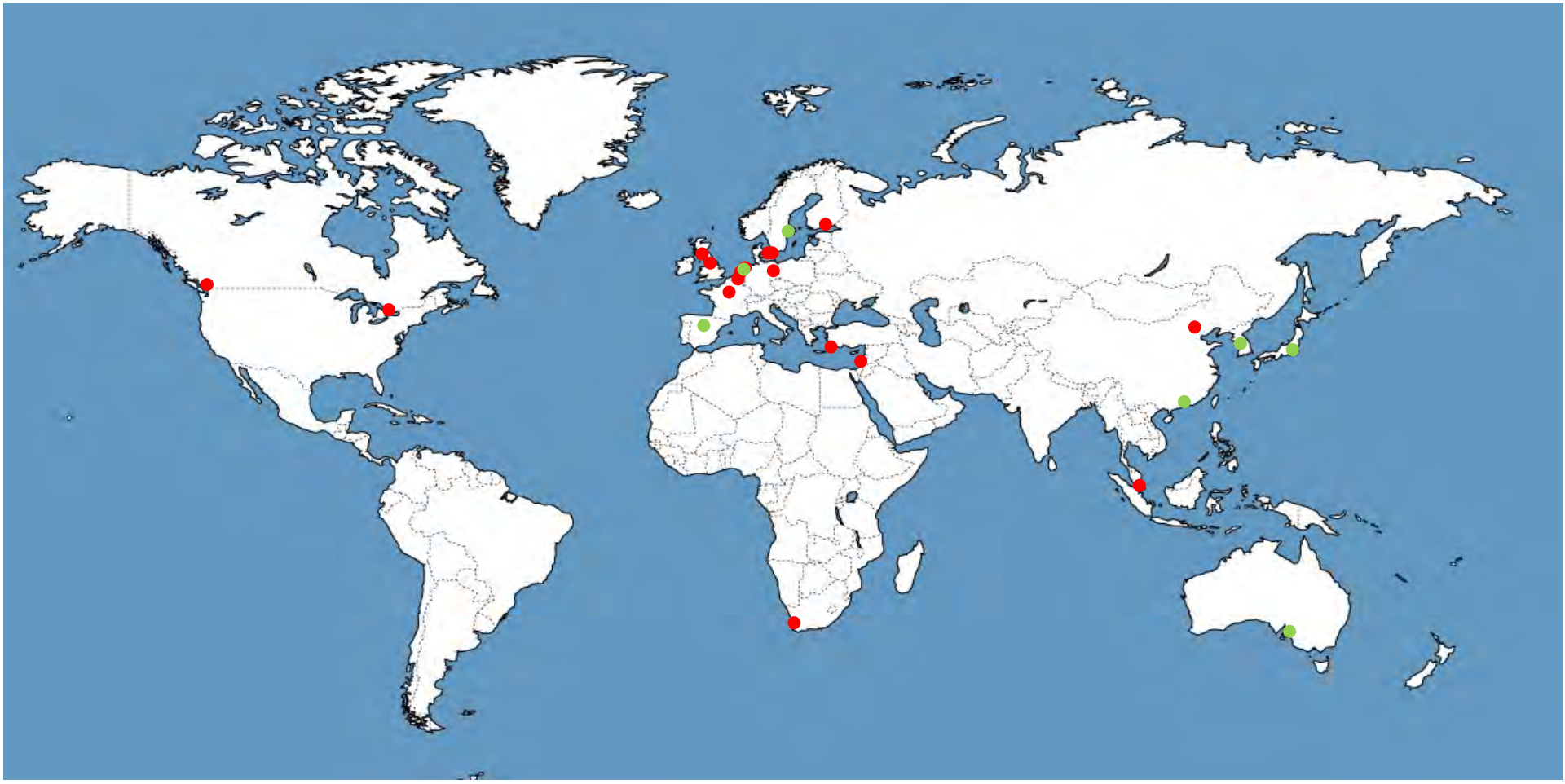
JOB WANTED An engineering post working on renewable energy, perhaps using windmills

CURRENT POSITION An A student, she was able to land only a six-month internship at an oil firm in Ecuador. She will continue her job hunt from there

Lisa Hopkins, 21
B.A. in psychology, University of Michigan at Ann Arbor

JOB WANTED An entry-level post in event planning

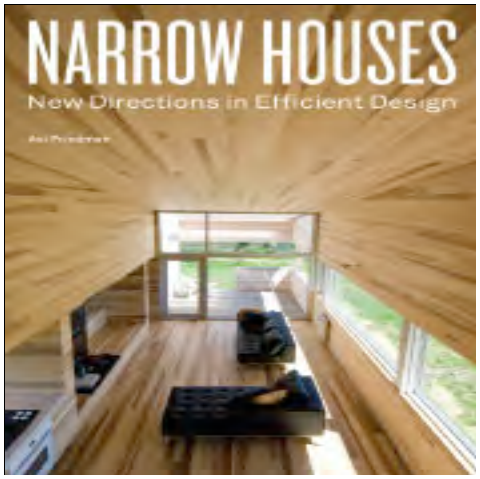
CURRENT POSITION She graduated in April and is still waiting tables at the same restaurant where she worked during college. "If I have to move home, I'll feel like a failure"



- Countries visited
- Received material for books

12

INNOVATIVE HOUSES
Concepts for Sustainable Living
Avi Friedman


NARROW HOUSES
New Directions in Efficient Design

FUNDAMENTALS
OF SUSTAINABLE
DWELLINGS
AVI FRIEDMAN

Inspired Homes
Architecture for Changing Times
Avi Friedman

planning

form

construction

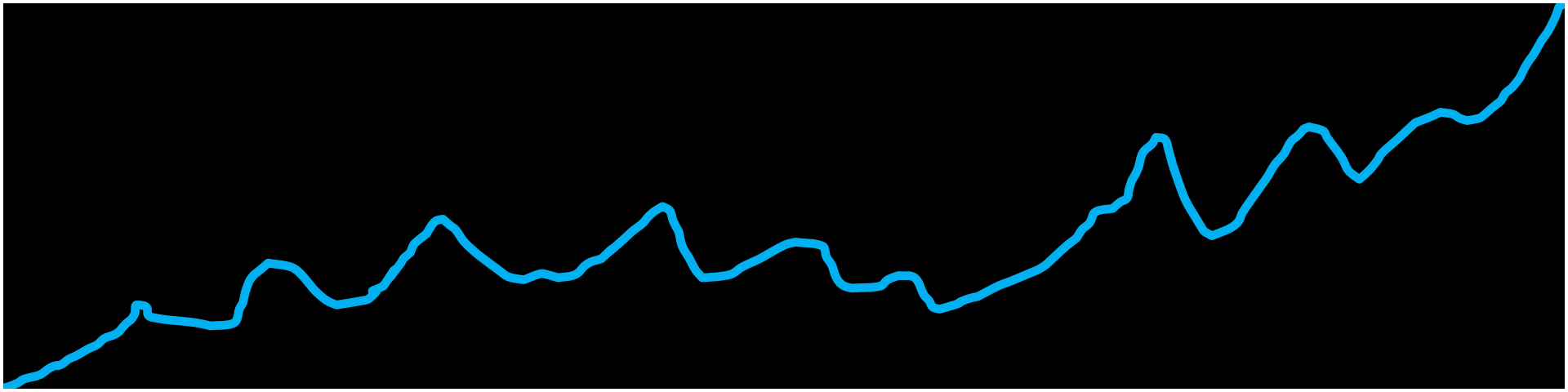
finishes

food

car

energy

health



P
Autodate

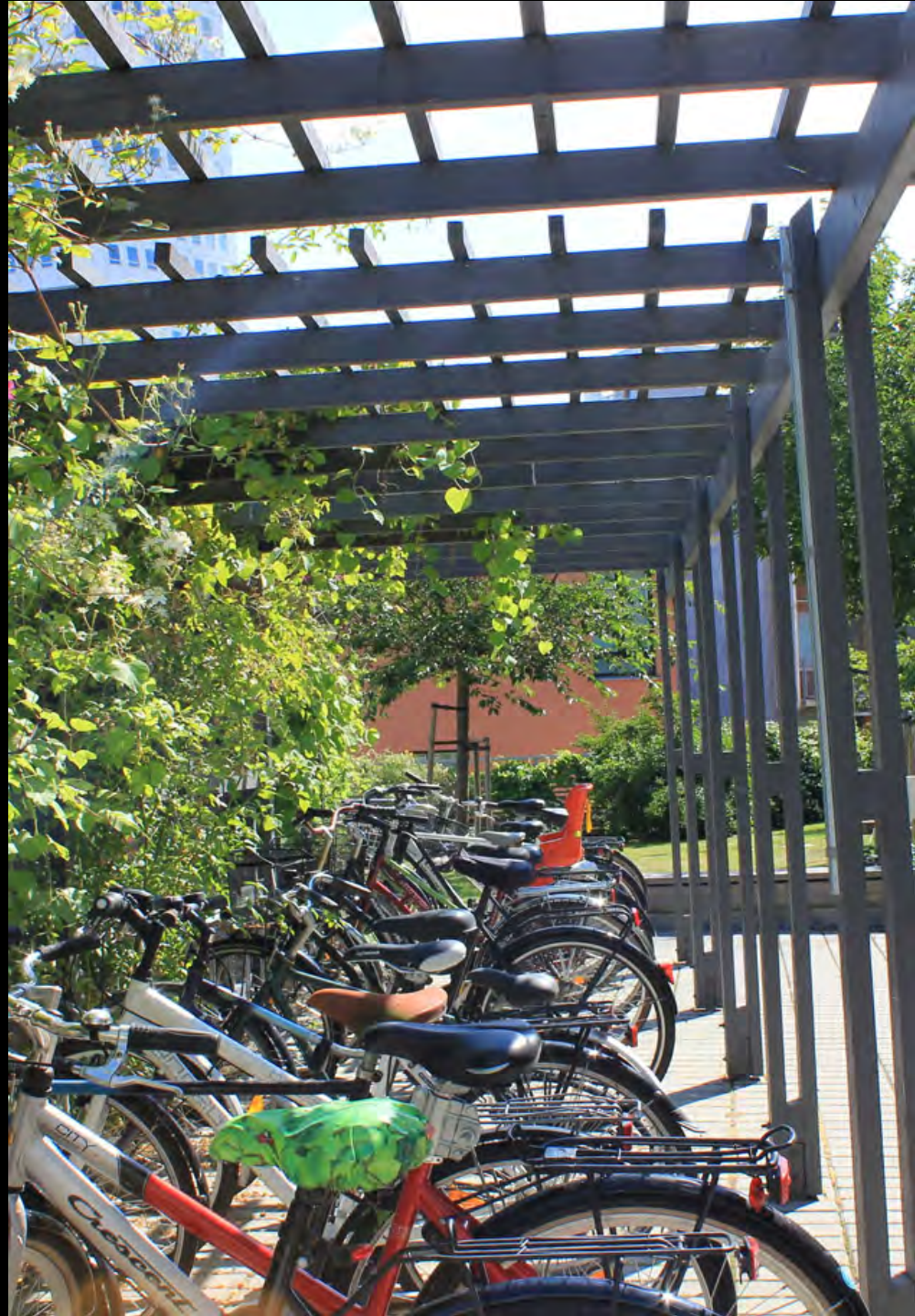
affordable housing 2.0

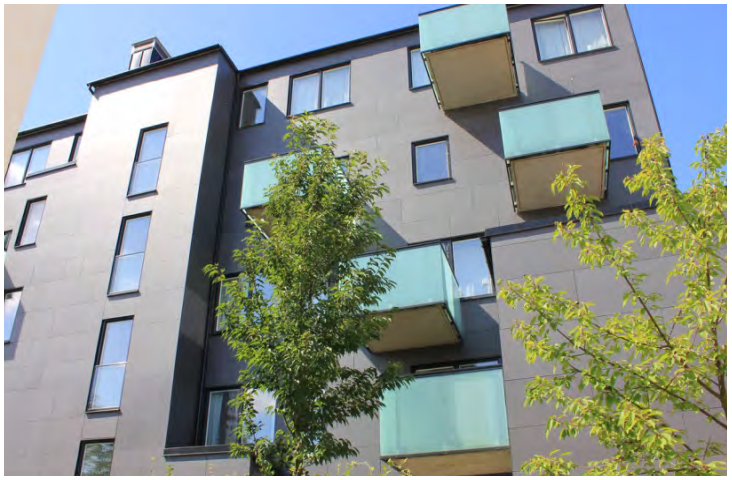
urban planning

Västra Hamnen

(Western Harbour)

21 Architects, 19 Developers
Malmo, Sweden, 2001
74 Acres (30 Hectares)/site
30,000 Residents
1,100 Apartments





shared

design

mix

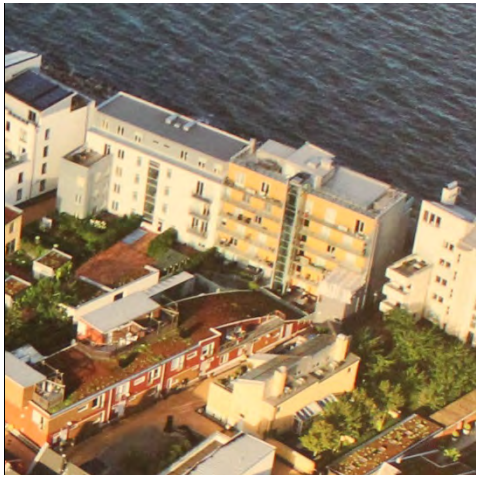
play

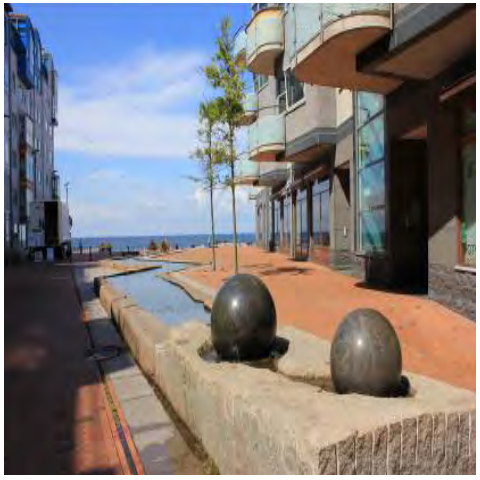
climate

diversity

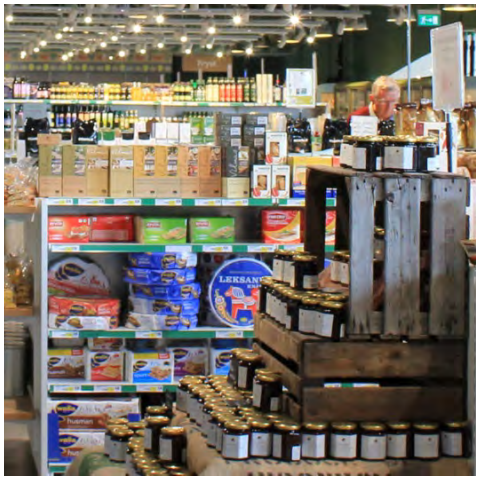
art

ecology





real



place

people

village

comfort

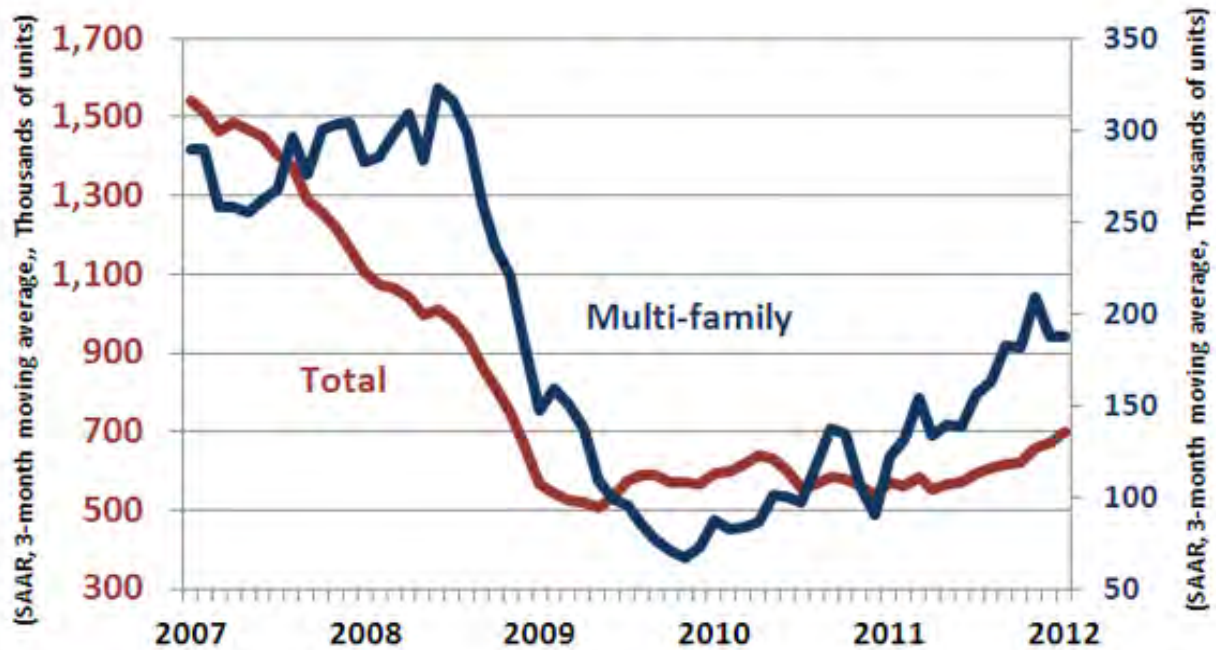
life

affordability is about

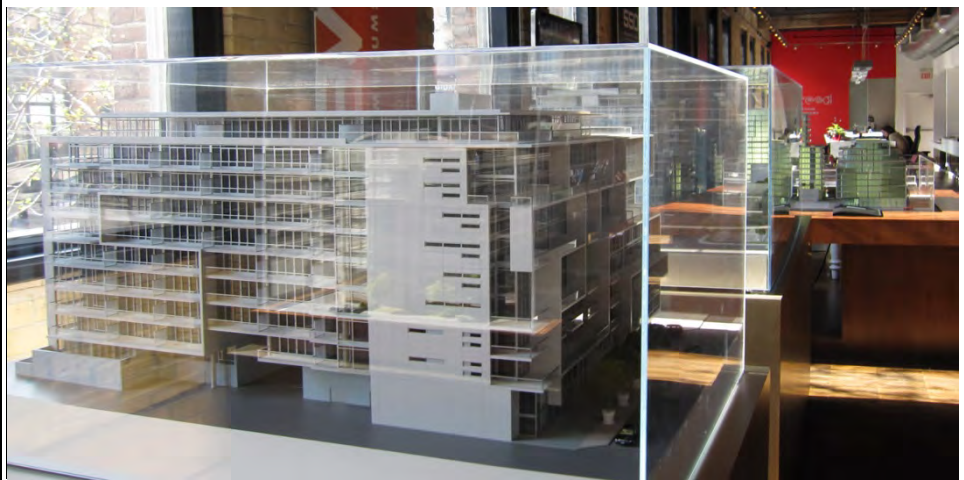
smart, compact planning

apartment living

New Privately Owned Housing Units Started

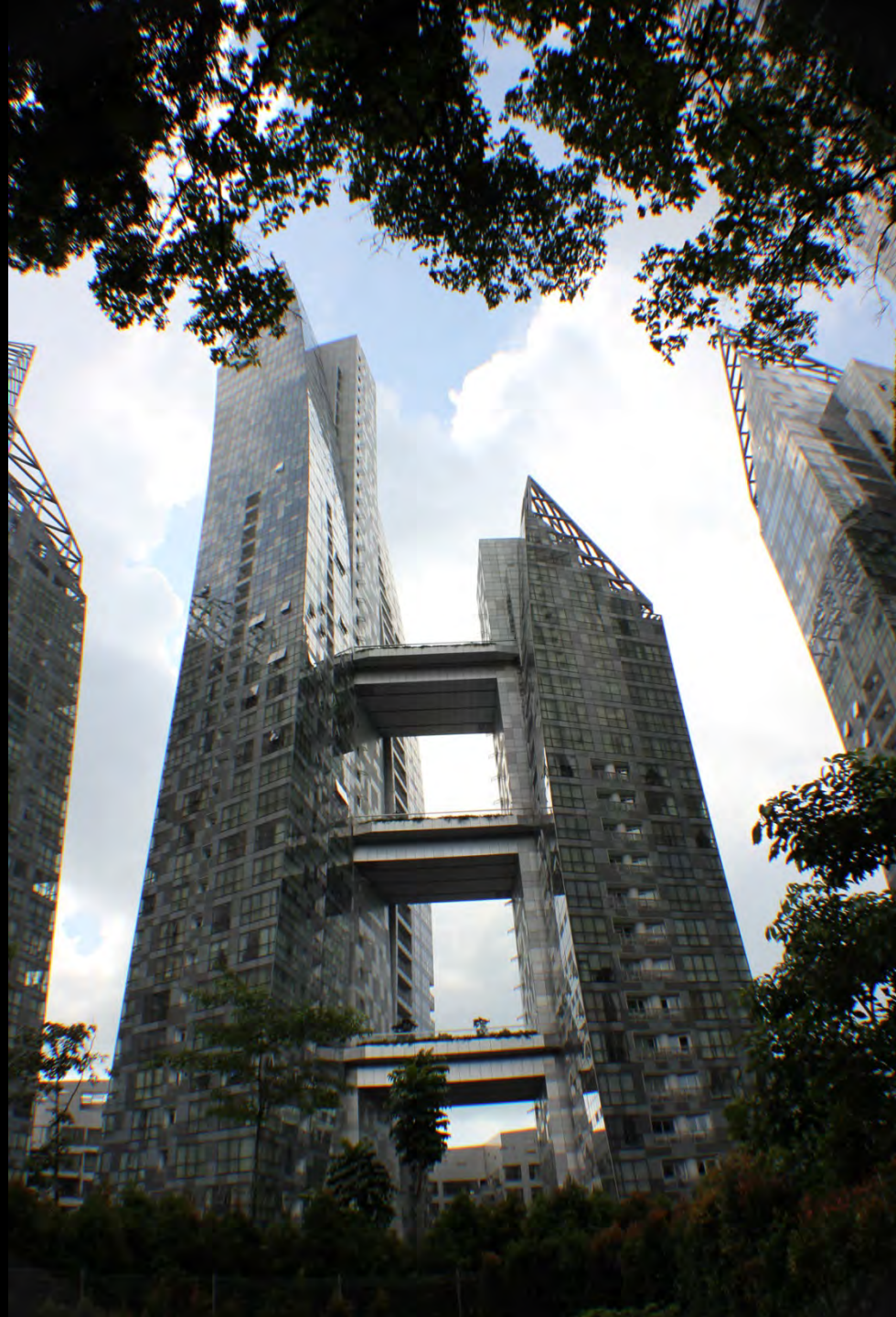


Source: U.S. Census Bureau, New Residential Construction,
Note: Multi-Family=Structures with 5 units or more



REFLEXIONS

Daniel Libeskind, Architect
Singapore, 2010
1129 Units
99–year Leasehold

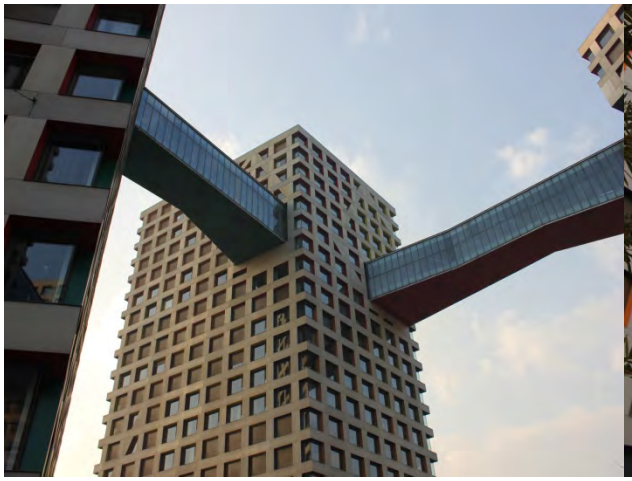


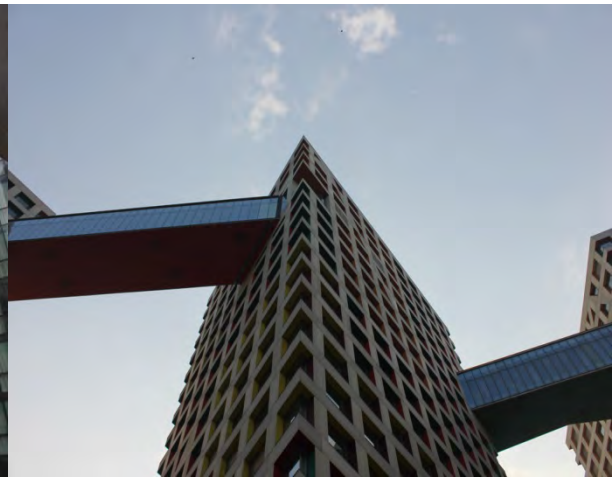
NOT AFFORDABLE

Bravo
Park

Linked Hybrid

Steven Holl, Architect
Bejing, China, 2006
15.3 Acre (6.18 Hectare)/site
2,260,000 sq. ft.
(210,000 m^2)/built area
644 units





[redacted]

NOT AFFORDABLE

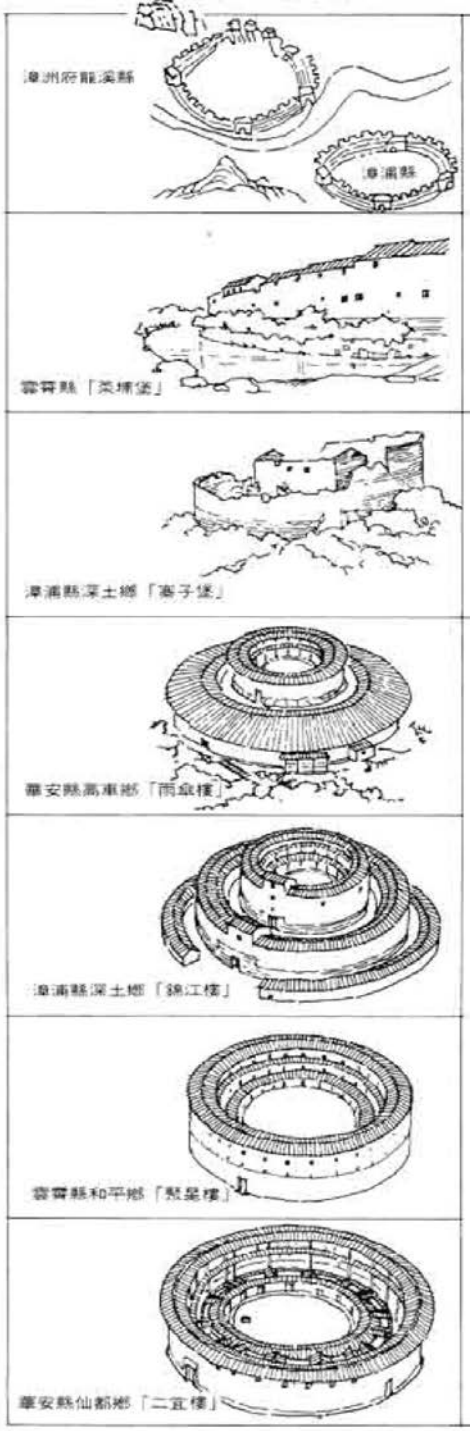
Wanhuilon

Affordable Housing

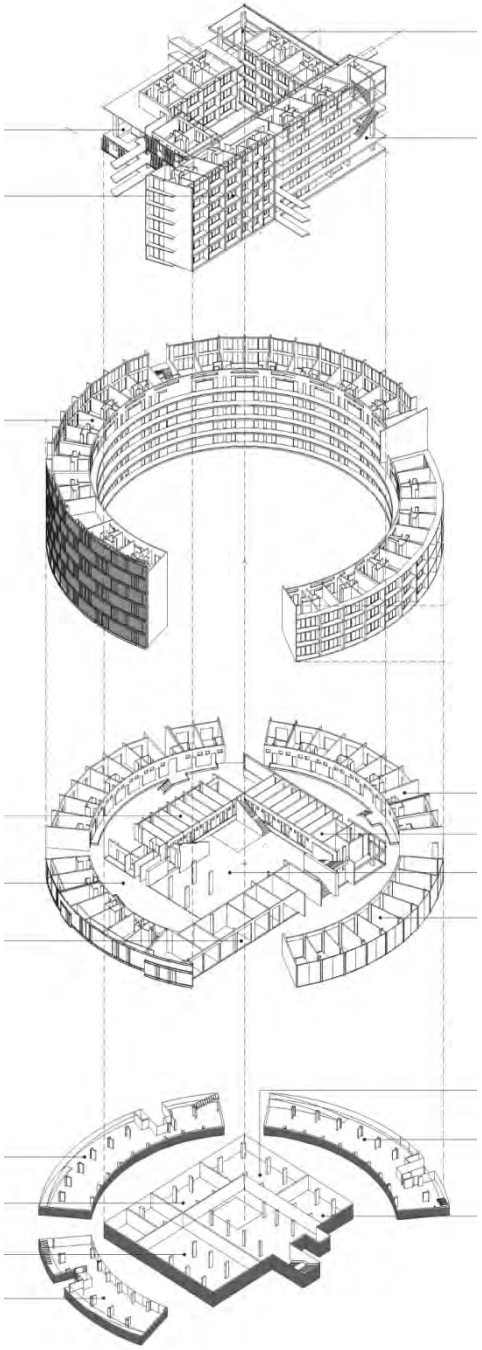
URBANUS INC.
Guandong, China, 2008

297 rental units

147,600 sq. ft.
(13,711 m^2)/site

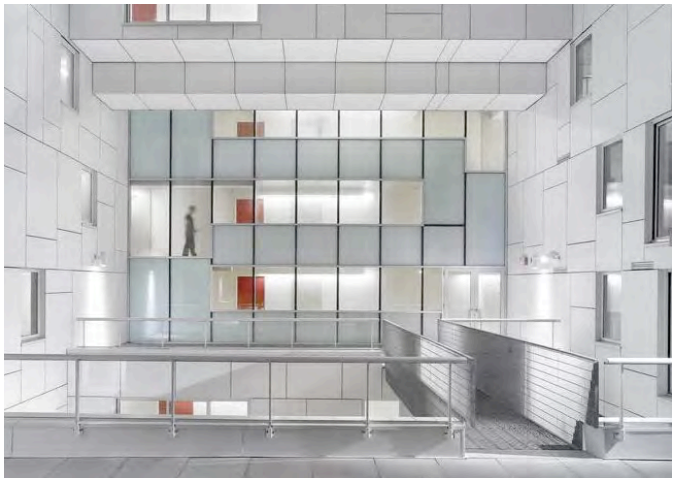

漳州府龍溪縣
漳浦縣
雲霄縣「茶埔堡」
漳浦縣深土鄉「寨子堡」
華安縣高車鄉「雨傘樓」
漳浦縣深土鄉「錦江樓」
雲霄縣和平鄉「繁星樓」
華安縣仙都鄉「二宜樓」

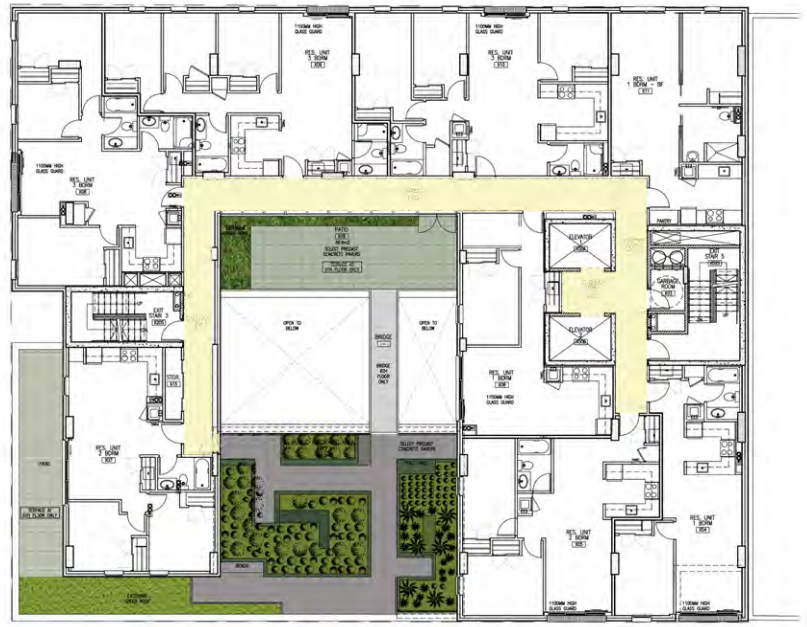
tulou



60 Richmond Housing Co-operative

Teeple Architects Inc.
Toronto, Canada, 2010
59 Replacement units
26 Affordable units



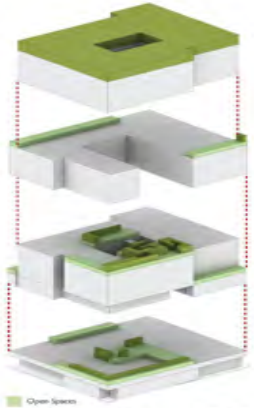


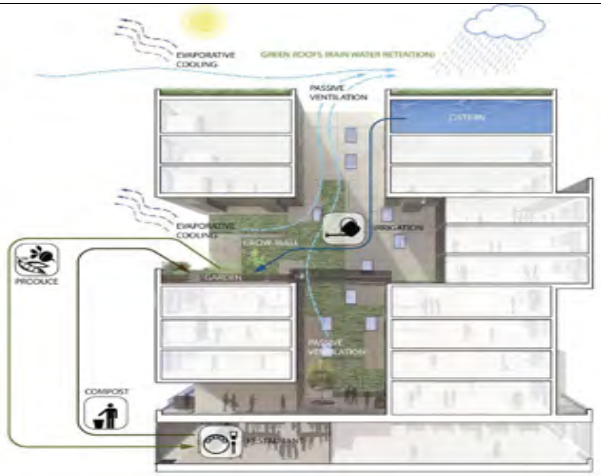
1:200 Sixth Floor Plan

Residential Corridor

Outdoor Amenity Space

N



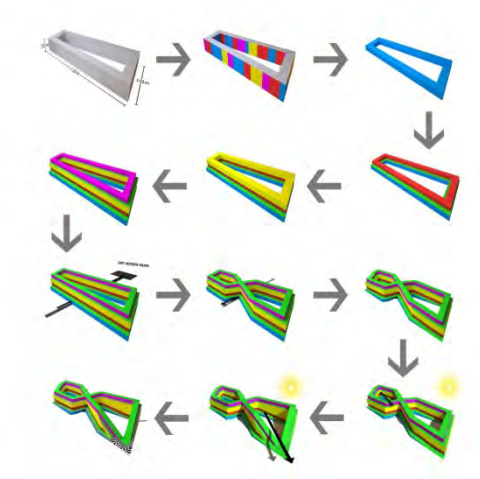


Ørestad

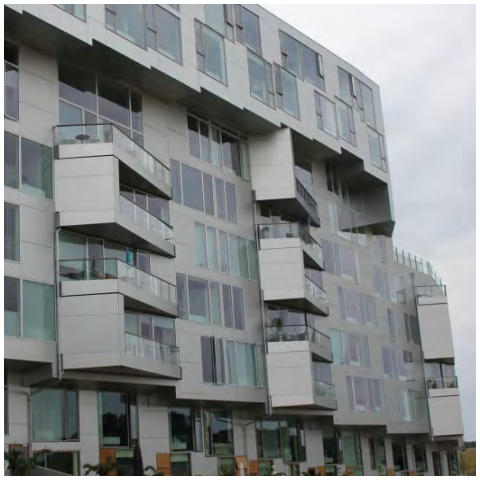
APRT(Finland) and KHR Arkitekter(Denmark)
Copenhagen, Denmark
20,000 inhabitants

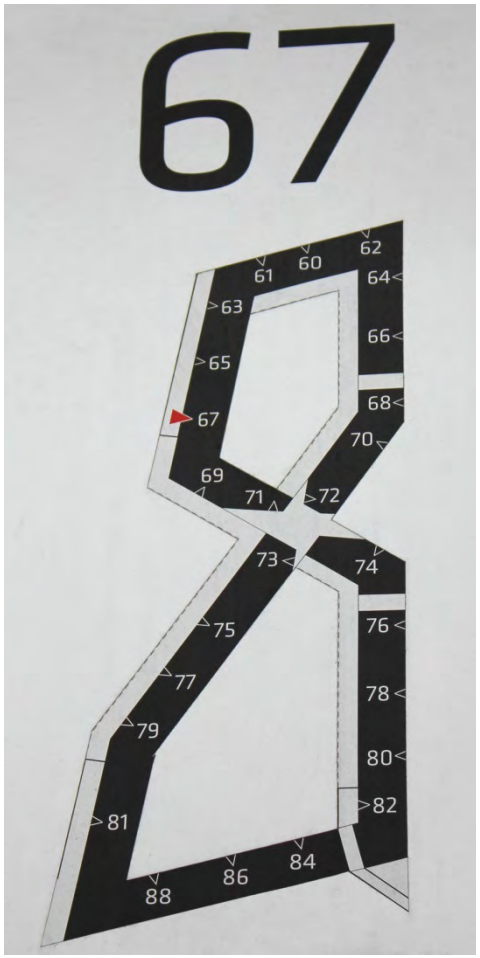
8HOUSE

BIG–Bjarke Ingels, Architects
Copenhagen, Denmark 2010
476 units



three-dimensional neighborhood




67
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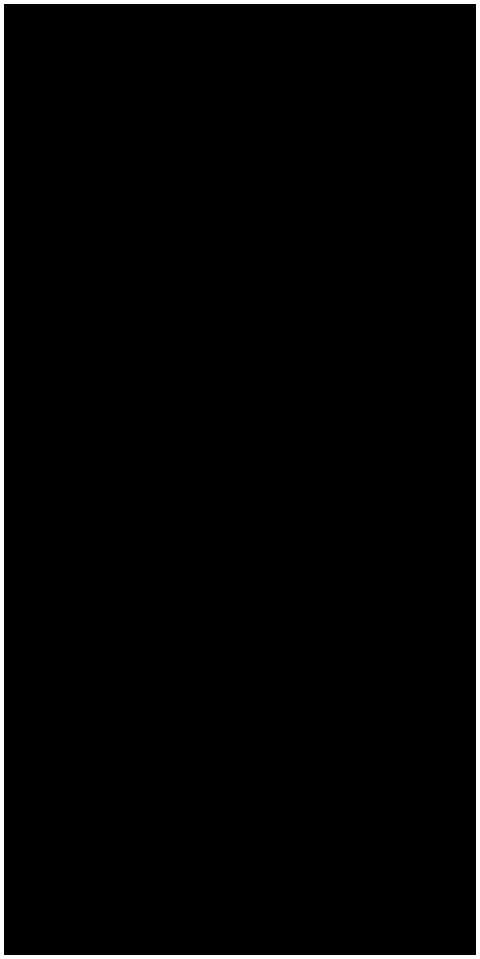
84.st.T2

The Mountain

BIG+JDS, Architects
Copenhagen, Denmark 2010
80 units



55
Bjerget

affordability is about

innovative apartments

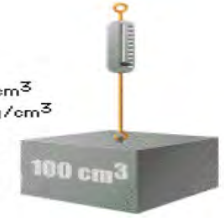
construction

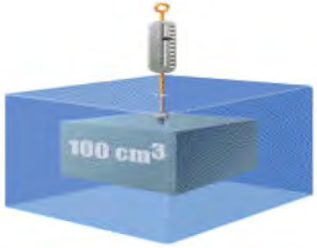
Water House

Ijburg, Netherlands, 2005
Marlies Rohmer, Architects
65 units

1

Volume of aluminum = 100 cm^3
Density of aluminum = 2.7 g/cm^3
Mass of aluminum = 270 g
Weight of aluminum = 2.7 N

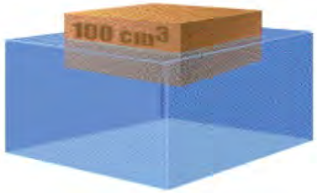




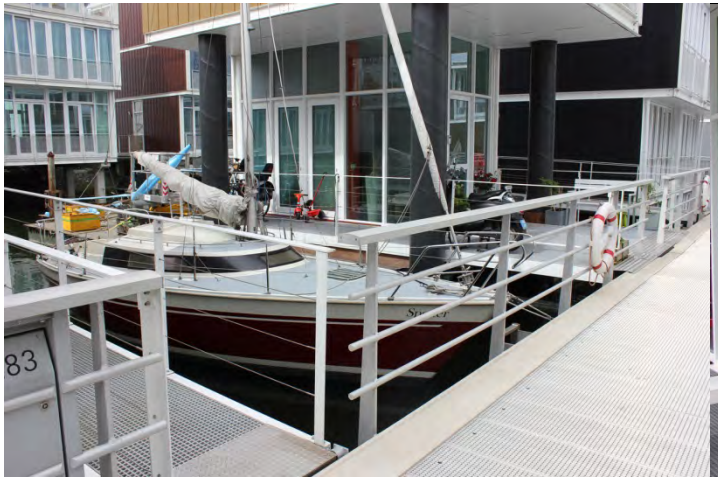
Volume of water displaced = 100 cm^3
Density of water = 1.0 g/cm^3
Mass of water displaced = 100 g
Weight of water displaced = 1.0 N

2

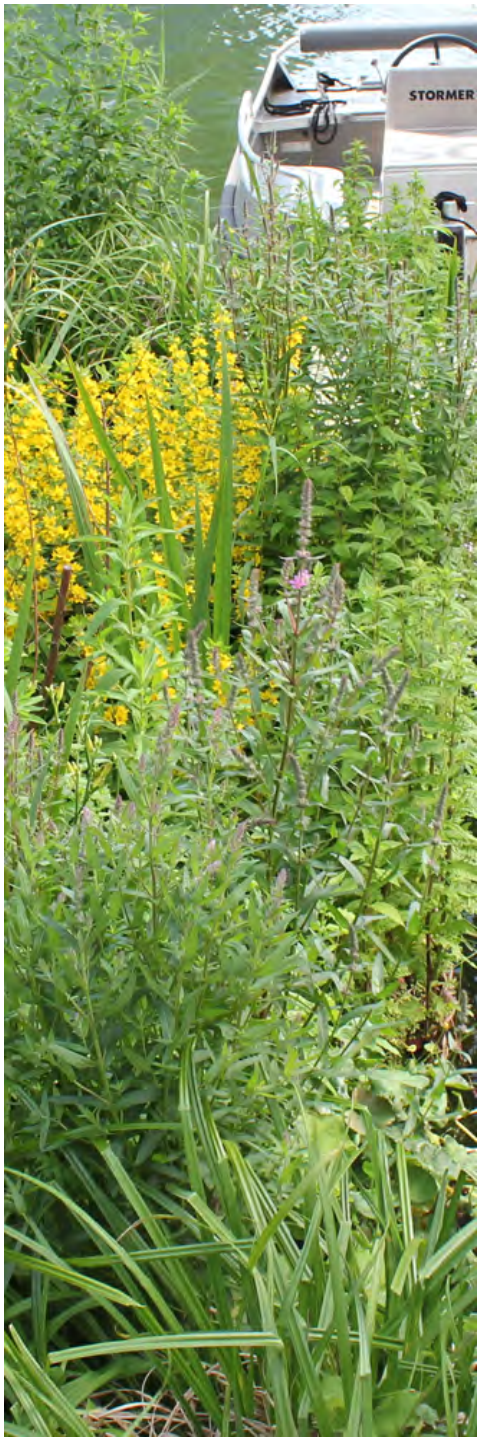
Volume of wood = 100 cm^3
Density of wood = 0.6 g/cm^3
Mass of wood = 60 g
Weight of wood = 0.6 N



Volume of water displaced = 60 cm^3
Density of water = 1.0 g/cm^3
Mass of water displaced = 60 g
Weight of water displaced = 0.6 N


83

18


STORMER

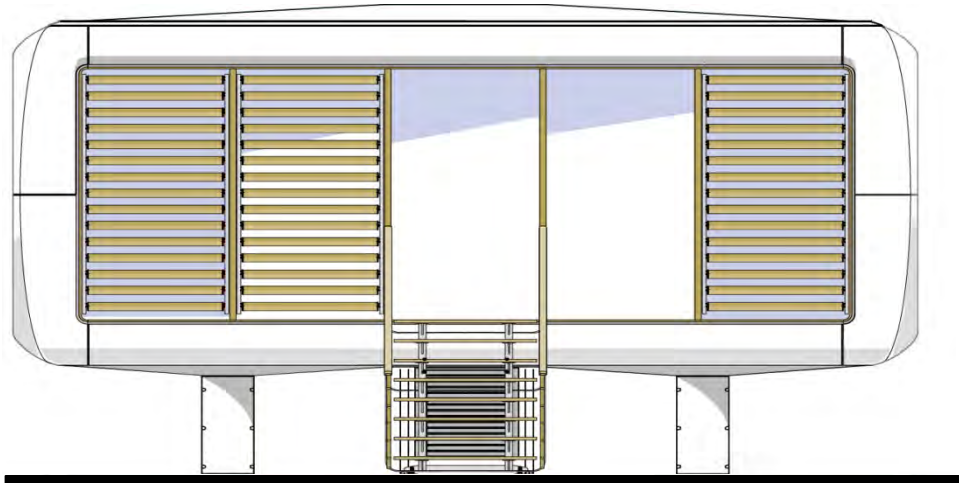
LoftCube

Werner Asslinger, Architect

Roof tops anywhere

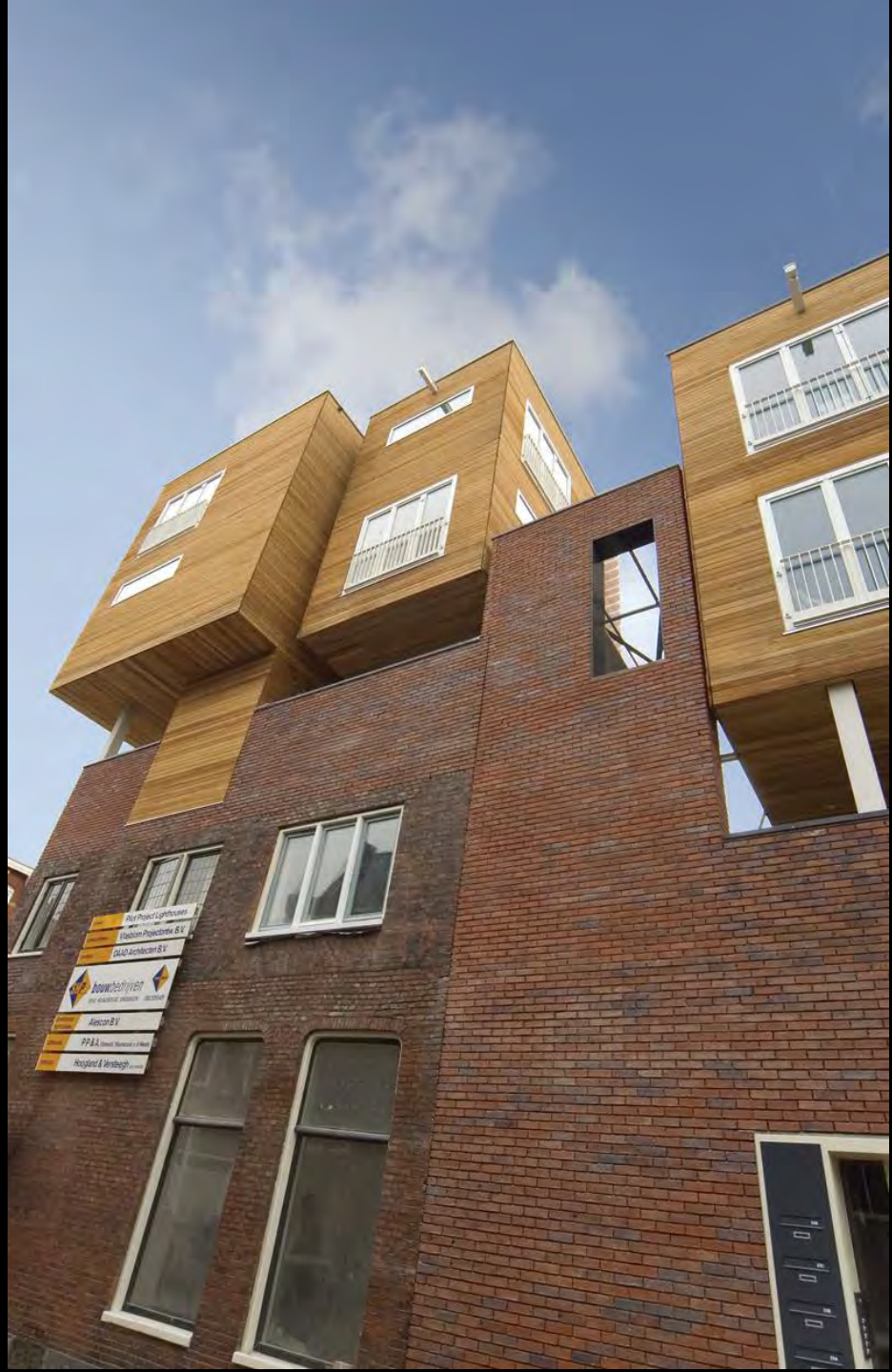
588 sq. ft. (55 m^2)

VERO



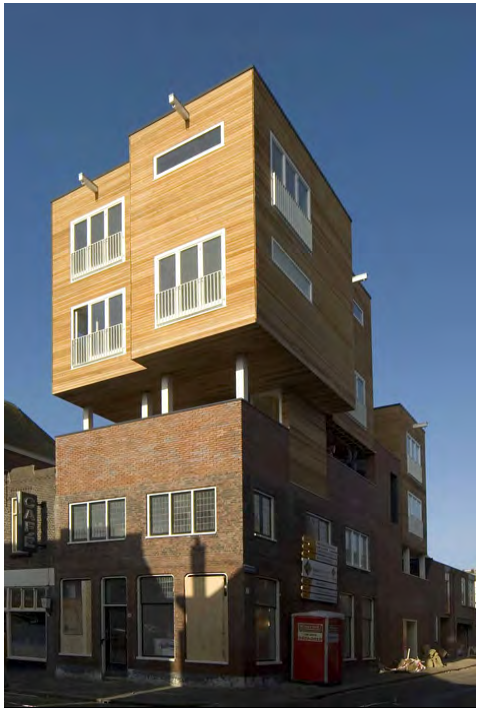
Prefab Lighthouses

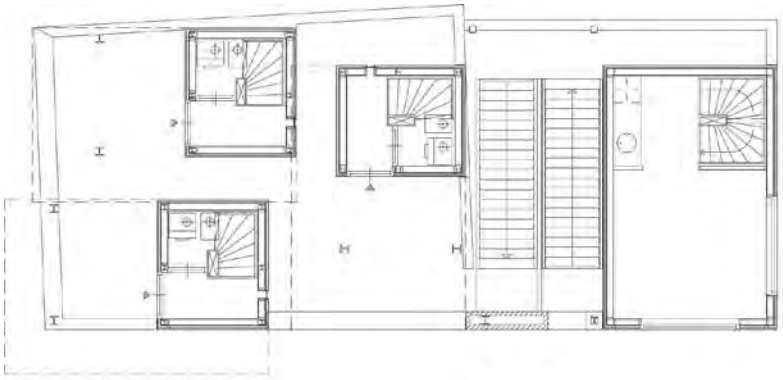
DAAD Architecten
Gorningen, Netherlands, 2005
183 sq. ft. (17 m^2)/Floor

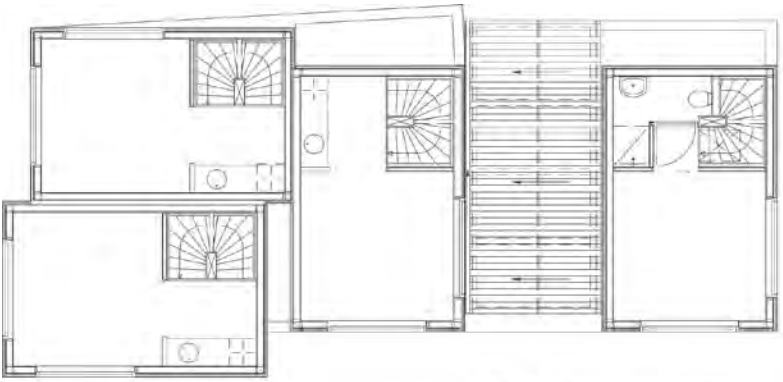


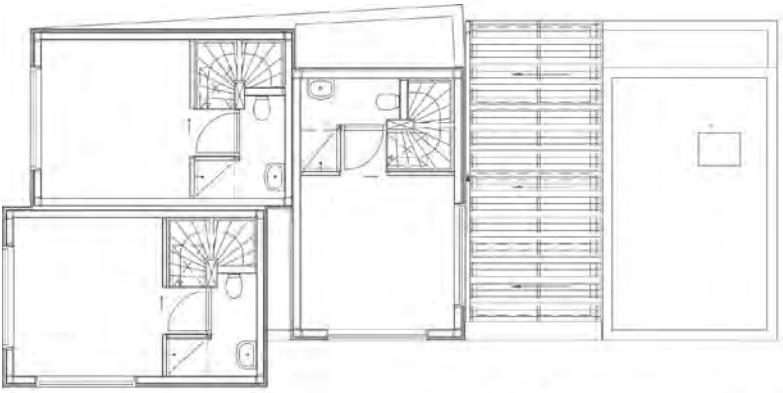
KTC

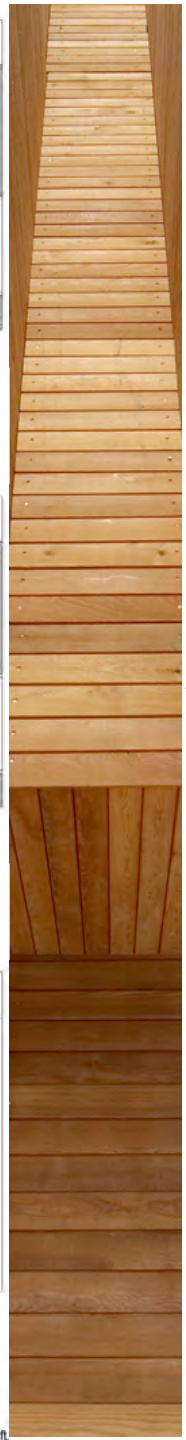
CAFE

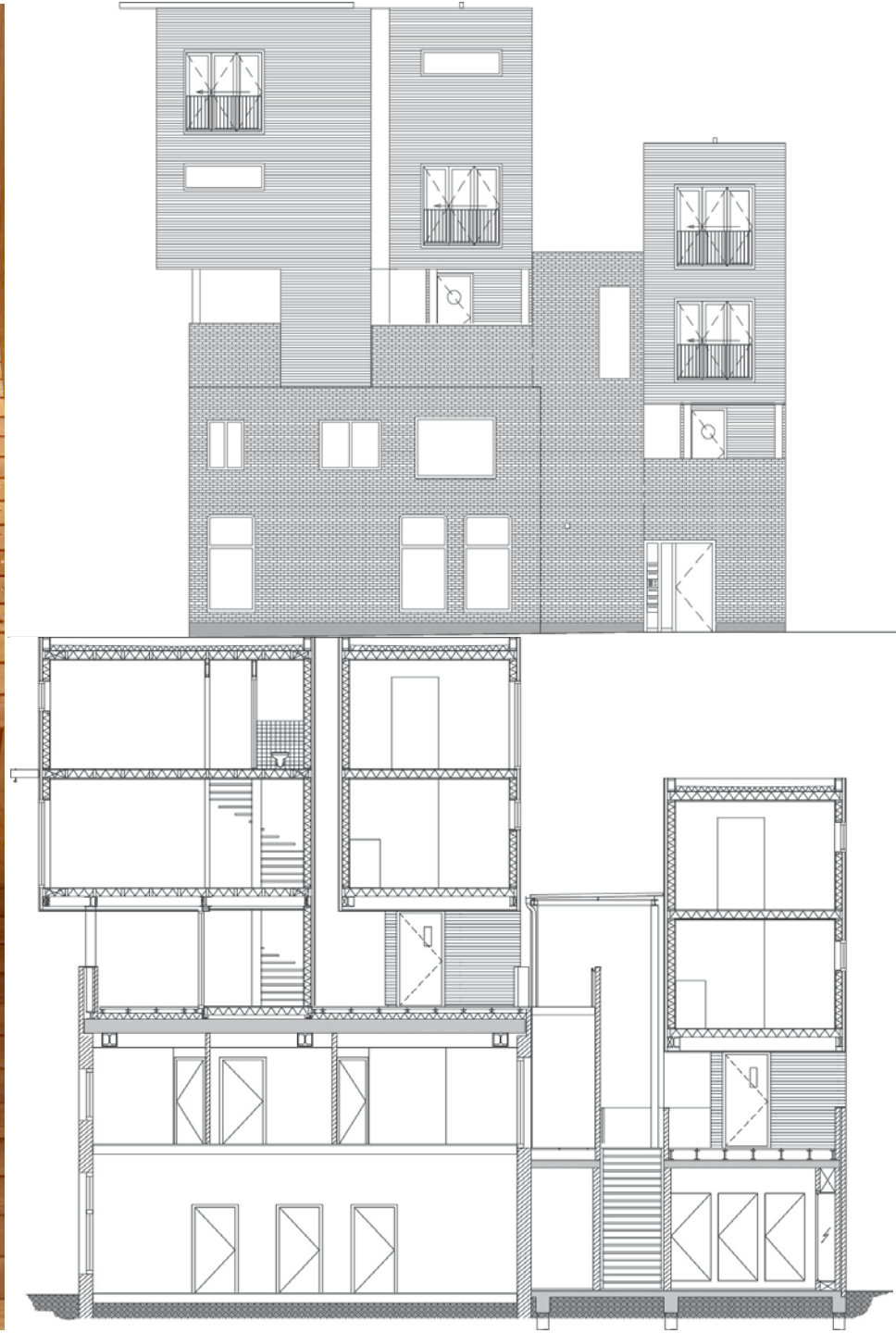






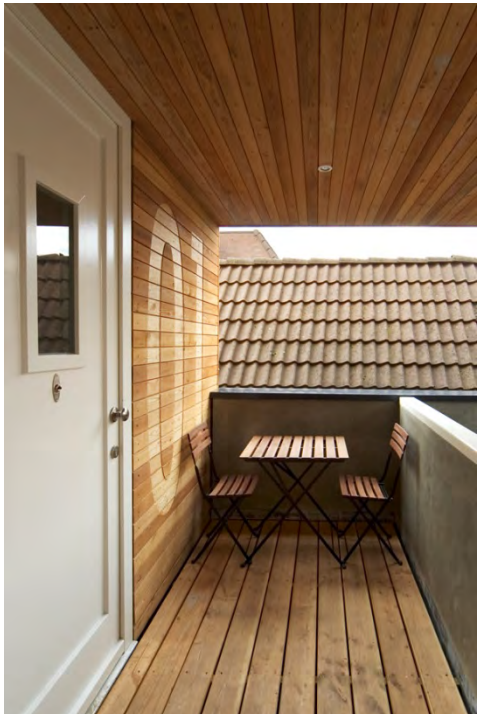
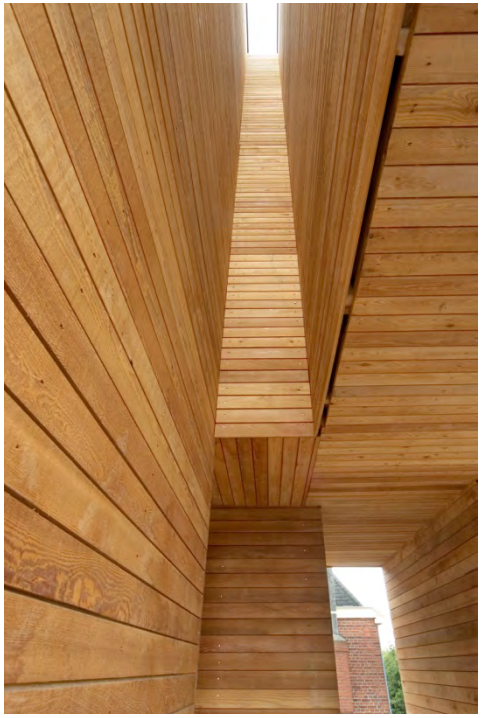


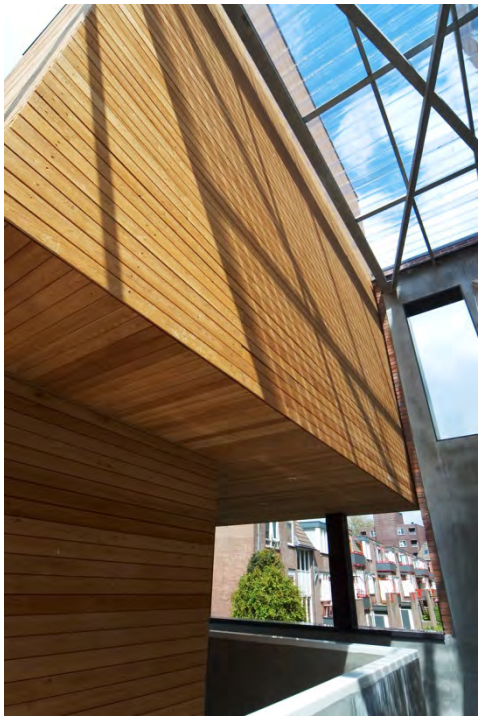


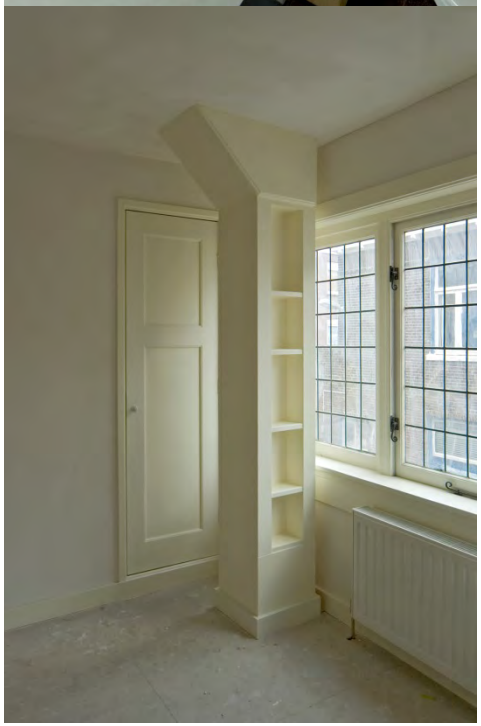


0 1 5 m

0 1 10 20 ft

04


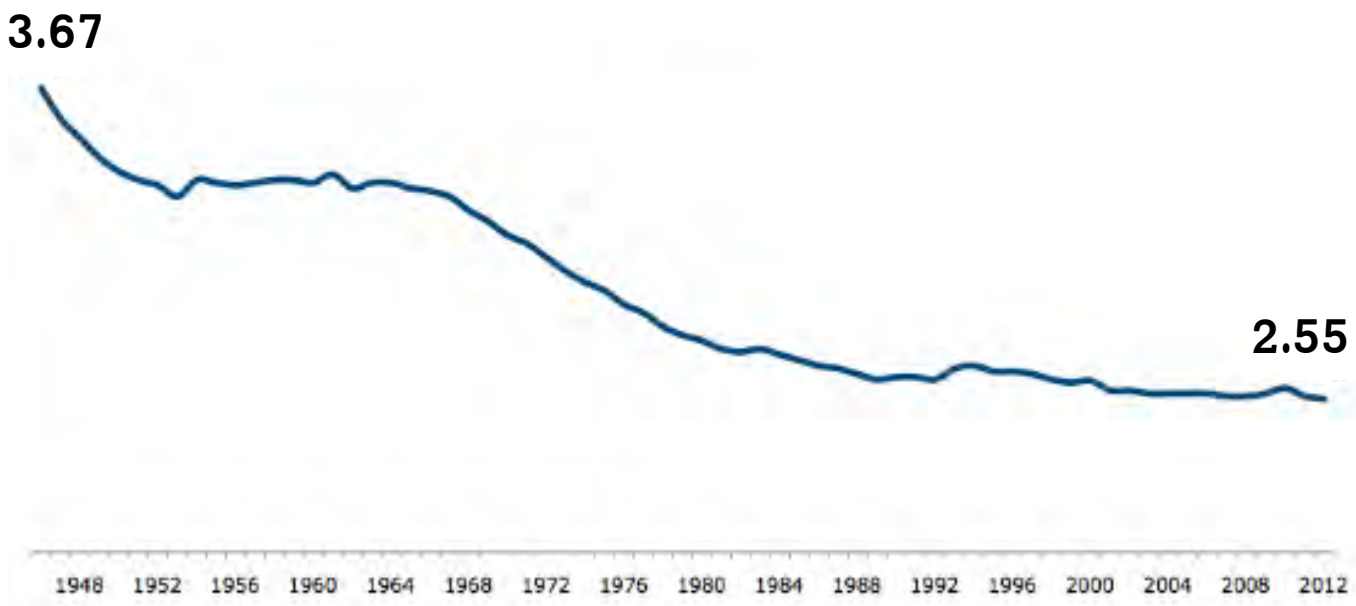


affordability is about

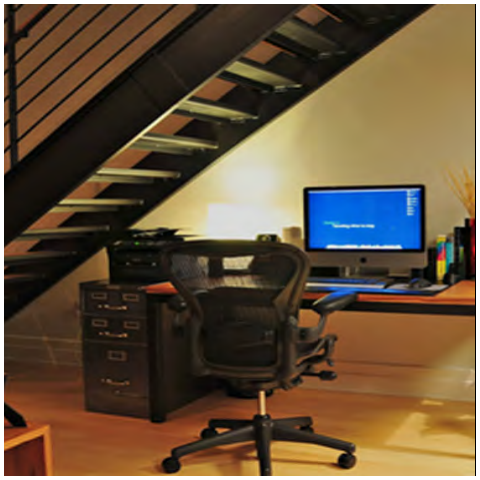
thinking outside the box

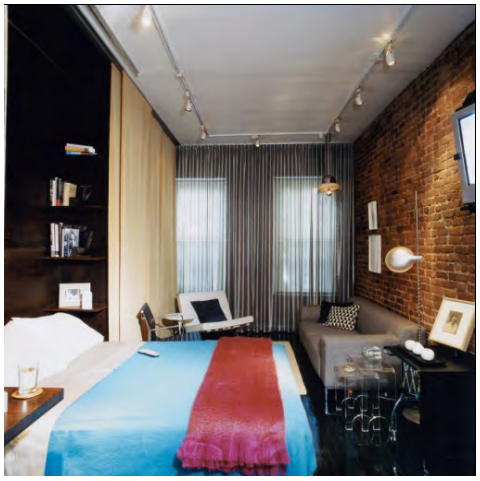
space

Average US Household Size 1948–2012



Source: US Census Bureau





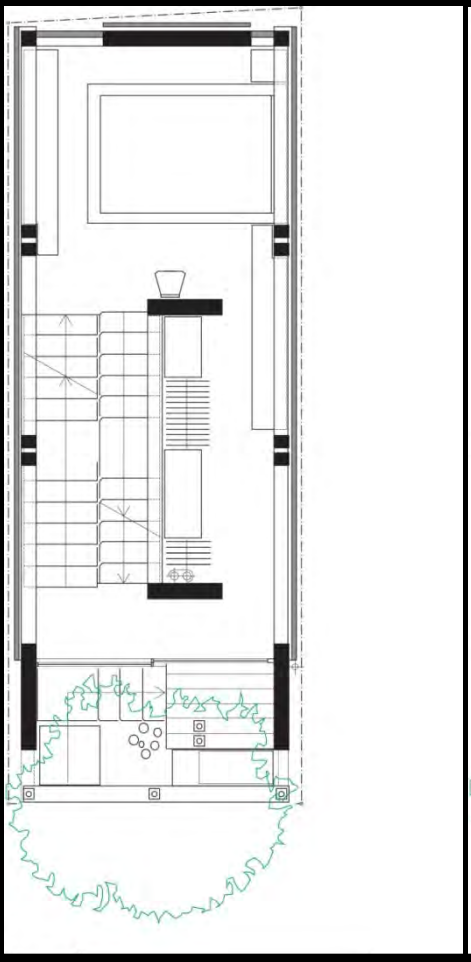
L41 Home

Michael Katz, Architect
Vancouver, BC, Canada
220 sq. ft. (21 m^2)

Layer House

Hiroaki Ohtani, Architect
Kobe, Japan, 2005

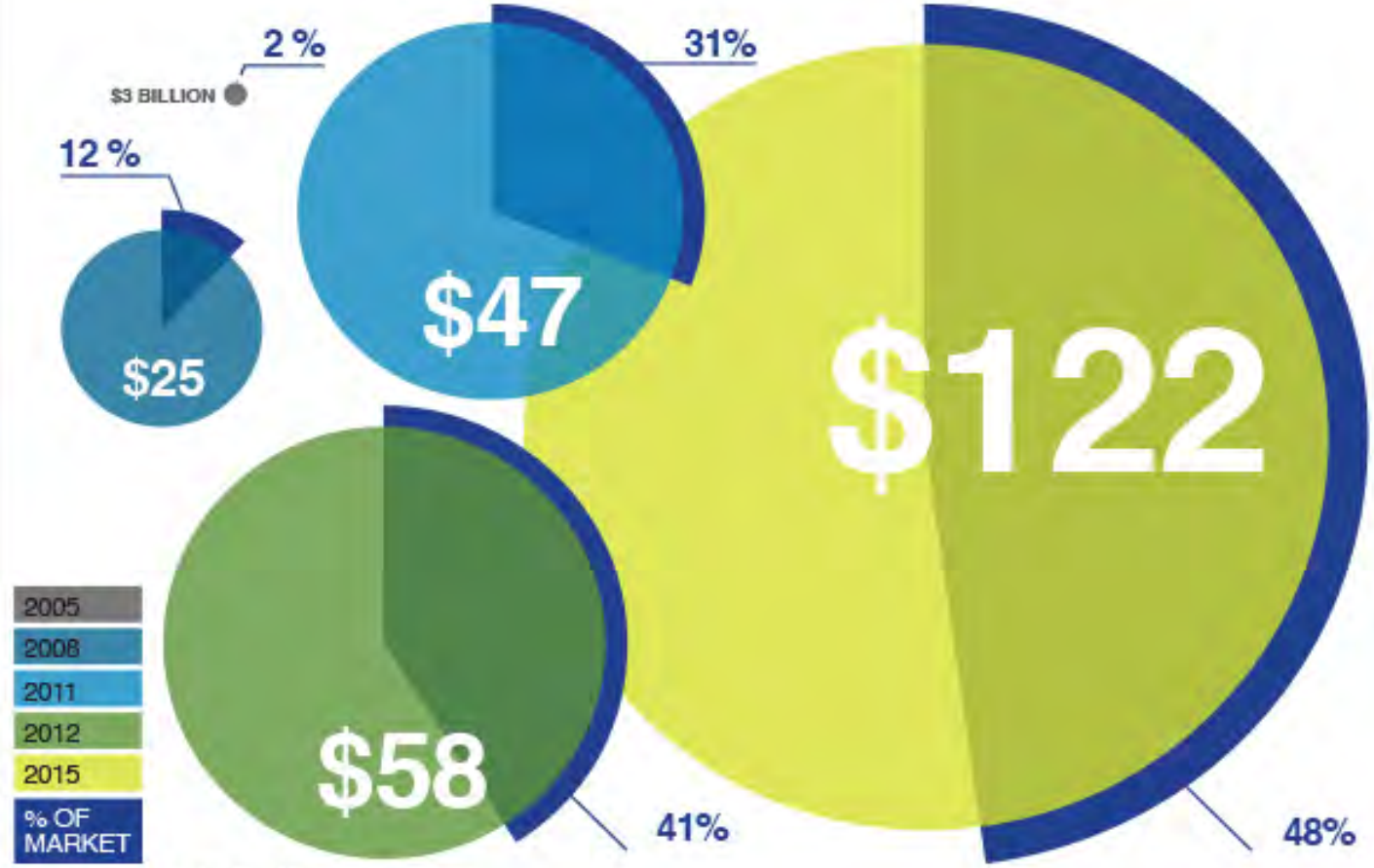
11.5 ft. (3.5 m) wide
822 sq. ft. (76 m^2)



affordability is about

doing less with less

do–it–yourself

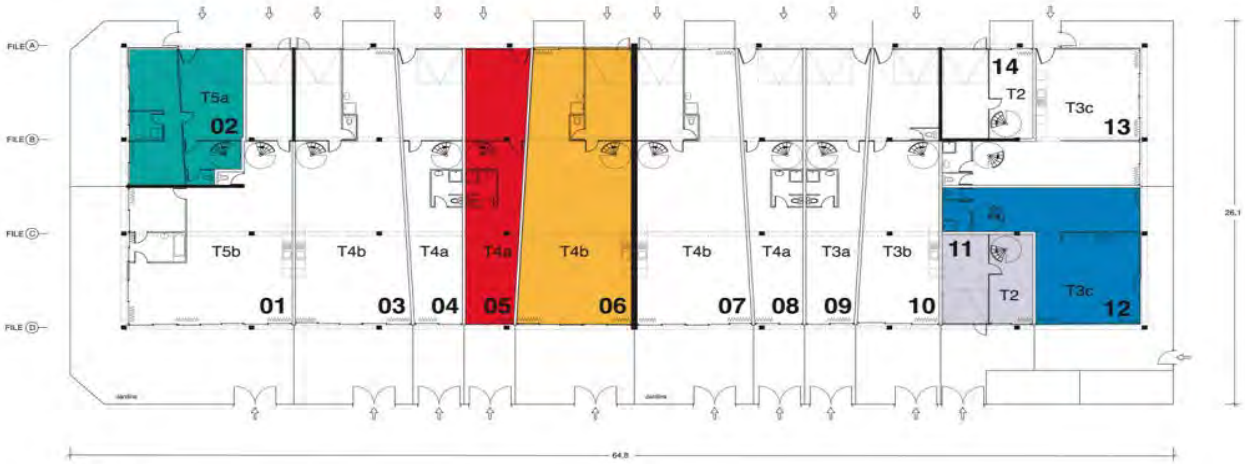


SOURCE: Green Market Size, McGraw-Hill Construction

LOGEMENTS MULHOUSE

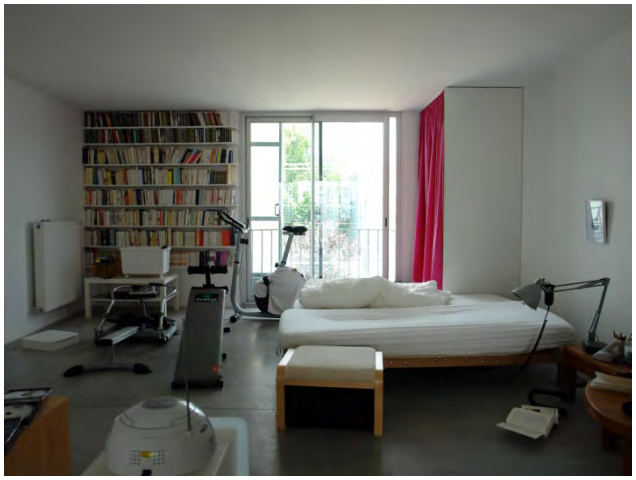
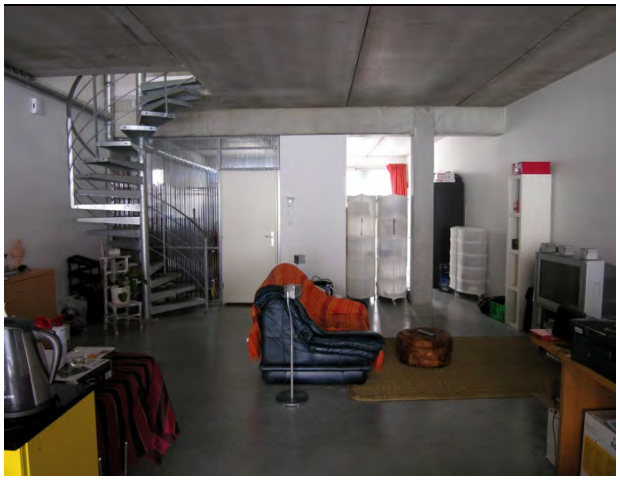
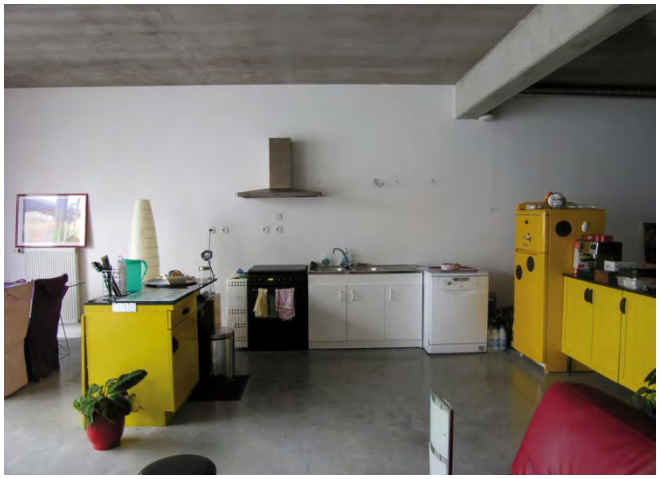
Lacaton & Vassal, 2005
Mulhouse, France
1,600 sq. ft. (160 m^2)
14 rental units

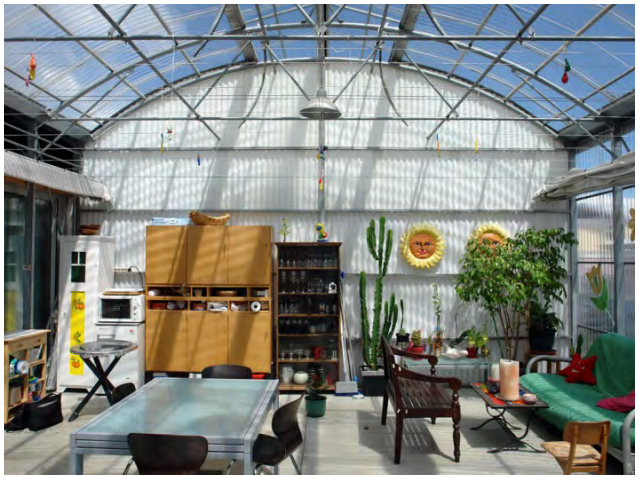
PLAN R+1



PLAN RDC

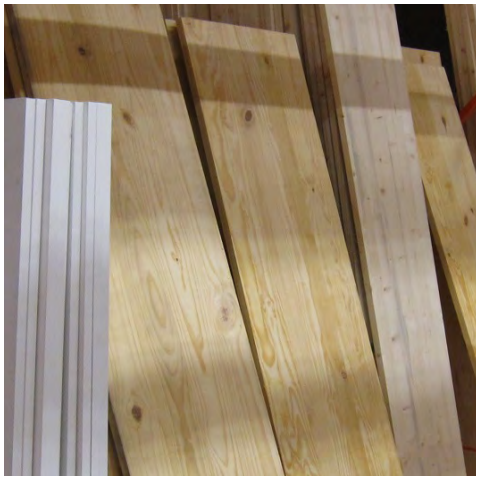
0 1 5 10m

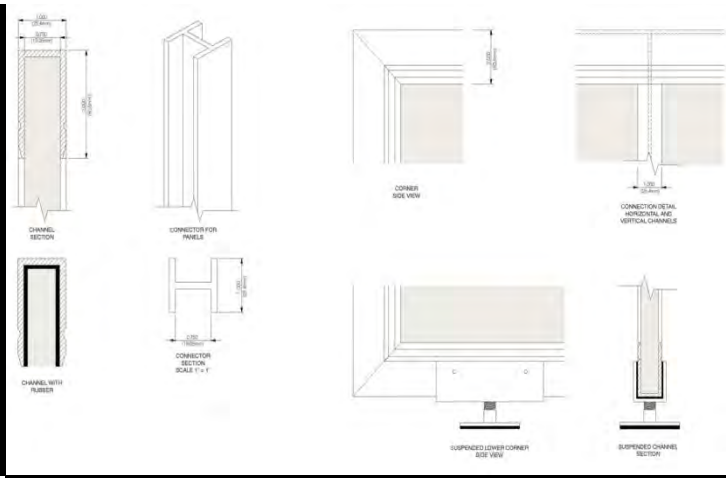




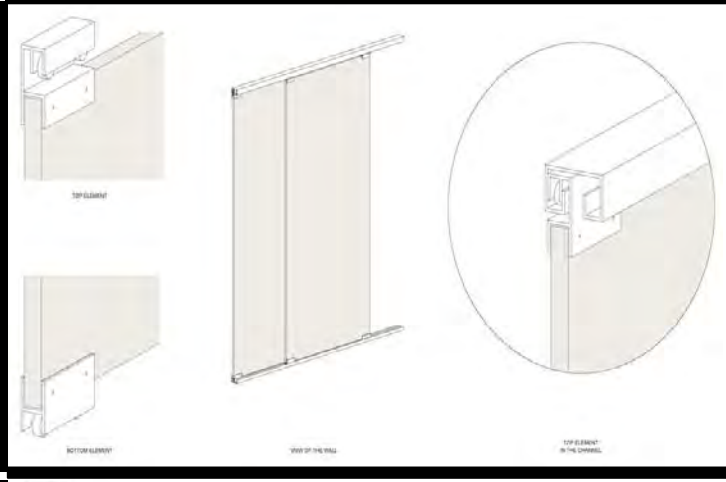


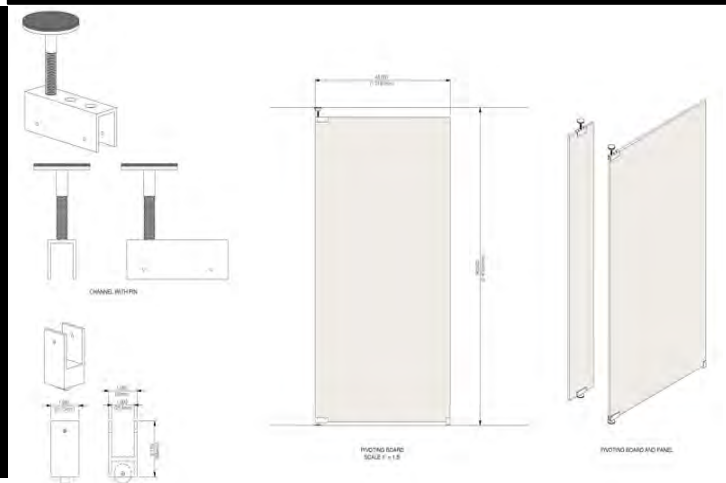
Quick Wall

Avi Friedman, Architect
Montreal, 2010

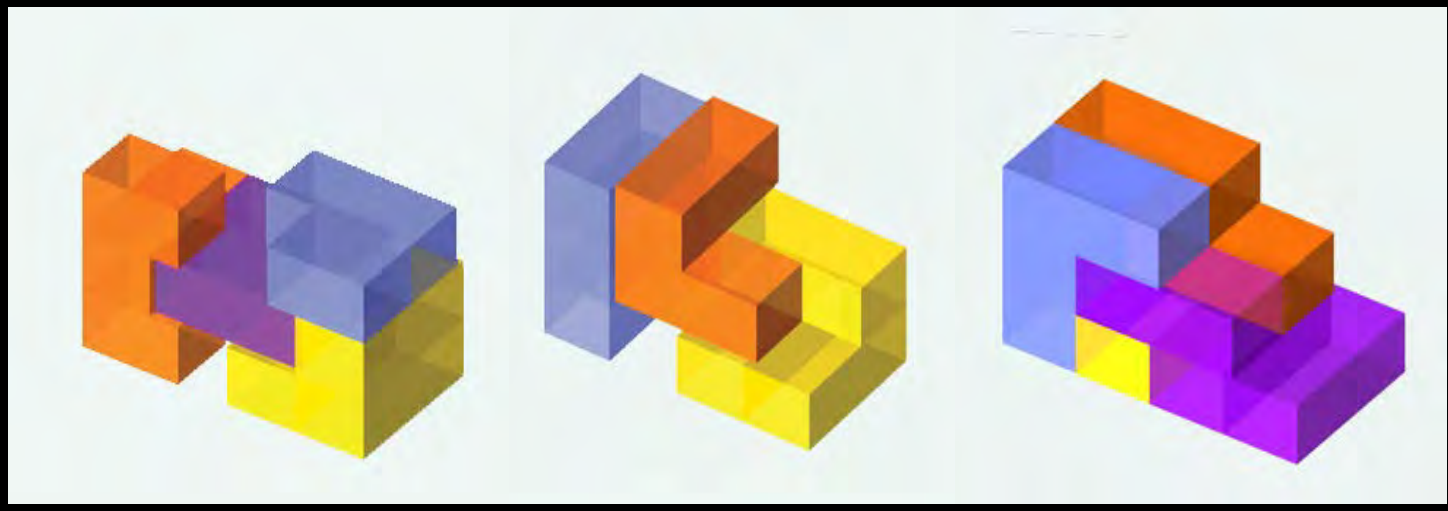



CHANNEL SECTION
CONNECTOR FOR PANELS
CORNER SIDE VIEW
CONNECTION DETAIL HORIZONTAL AND VERTICAL CHANNELS
CHANNEL WITH RUBBER
CONNECTOR SECTION SCALE 1" = 1'
SUSPENDED LOWER CORNER SIDE VIEW
SUSPENDED CHANNEL SECTION


TOP ELEMENT
BOTTOM ELEMENT
VIEW OF THE WALL
TOP ELEMENT IN THE CHANNEL


CHANNEL WITH PIN
PIVOTING BOARD SCALE 1" = 1'-0"
PIVOTING BOARD AND PANEL

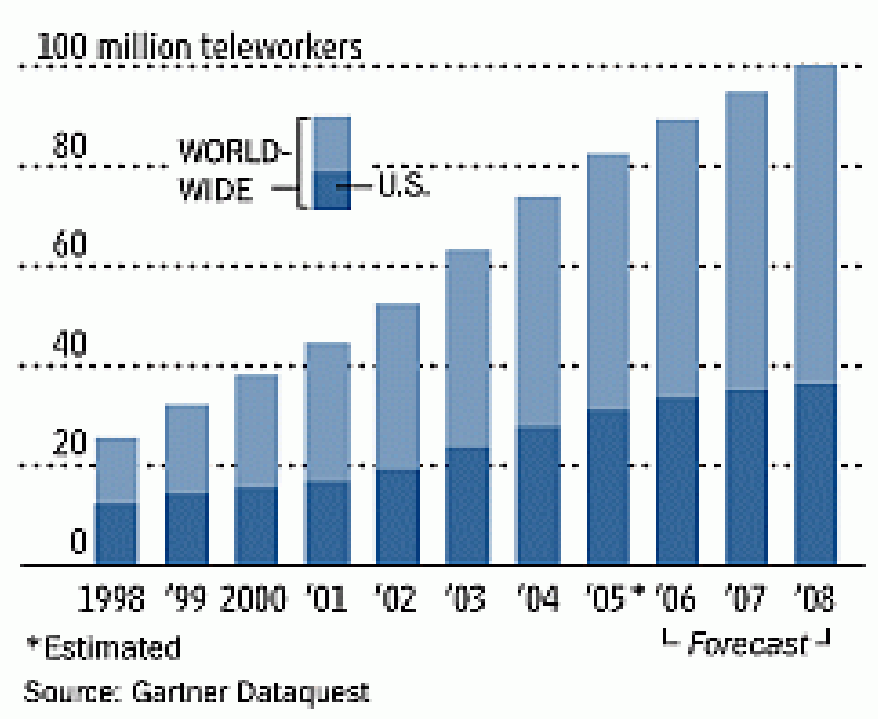
affordability is about

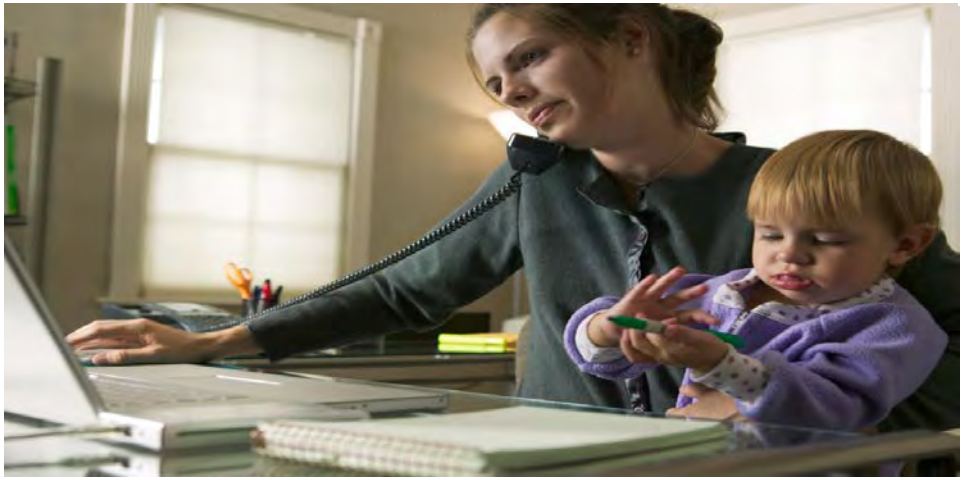


giving choices

work

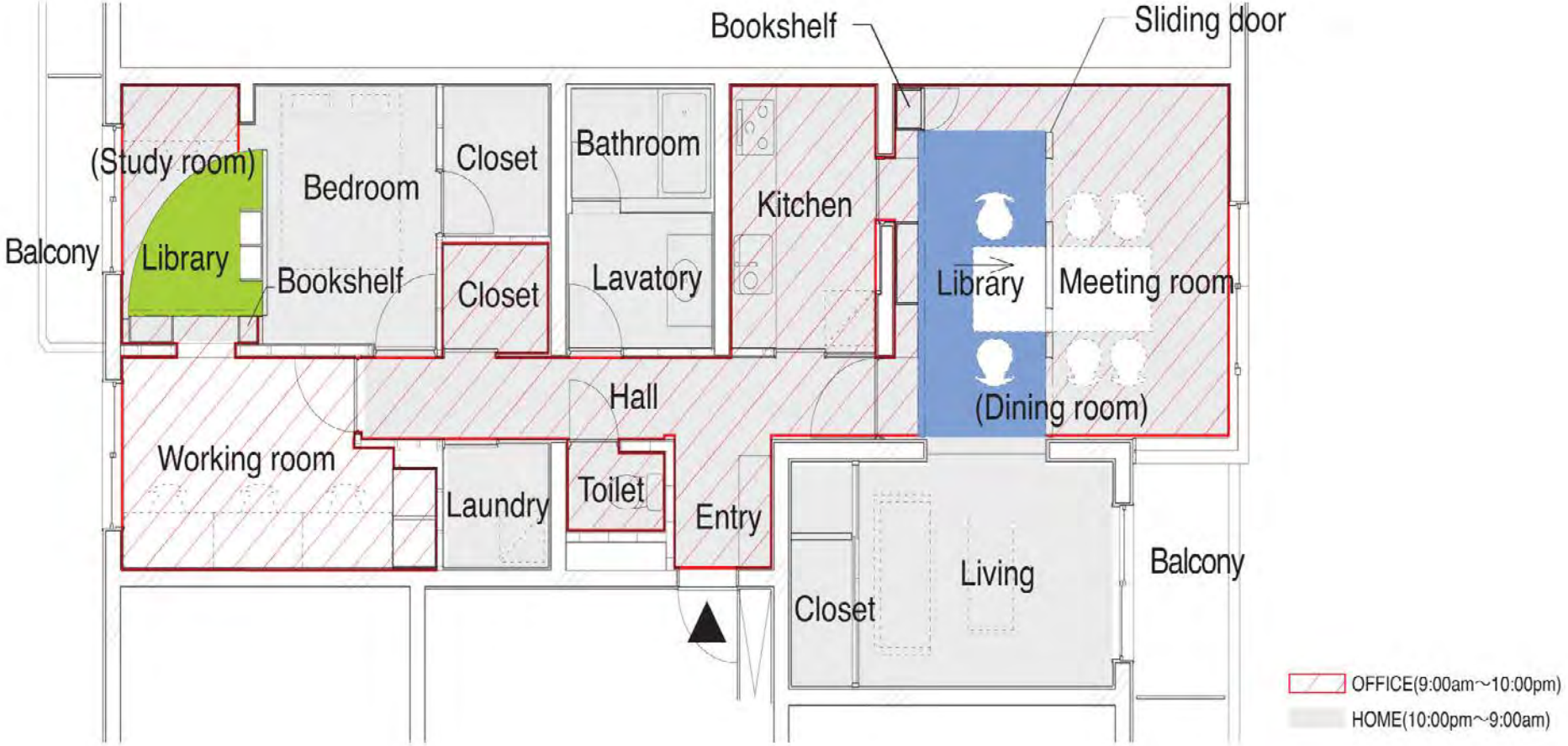
Employees telecommuting more than eight hours per month

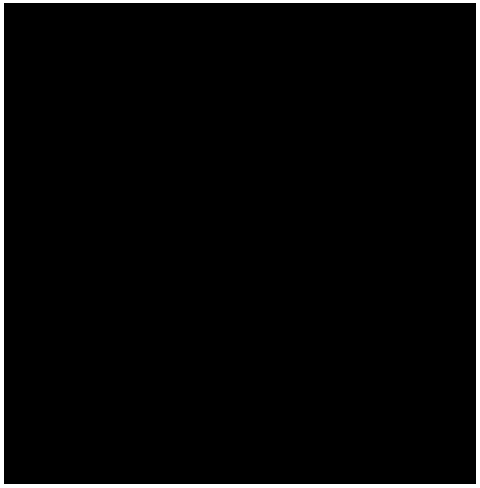


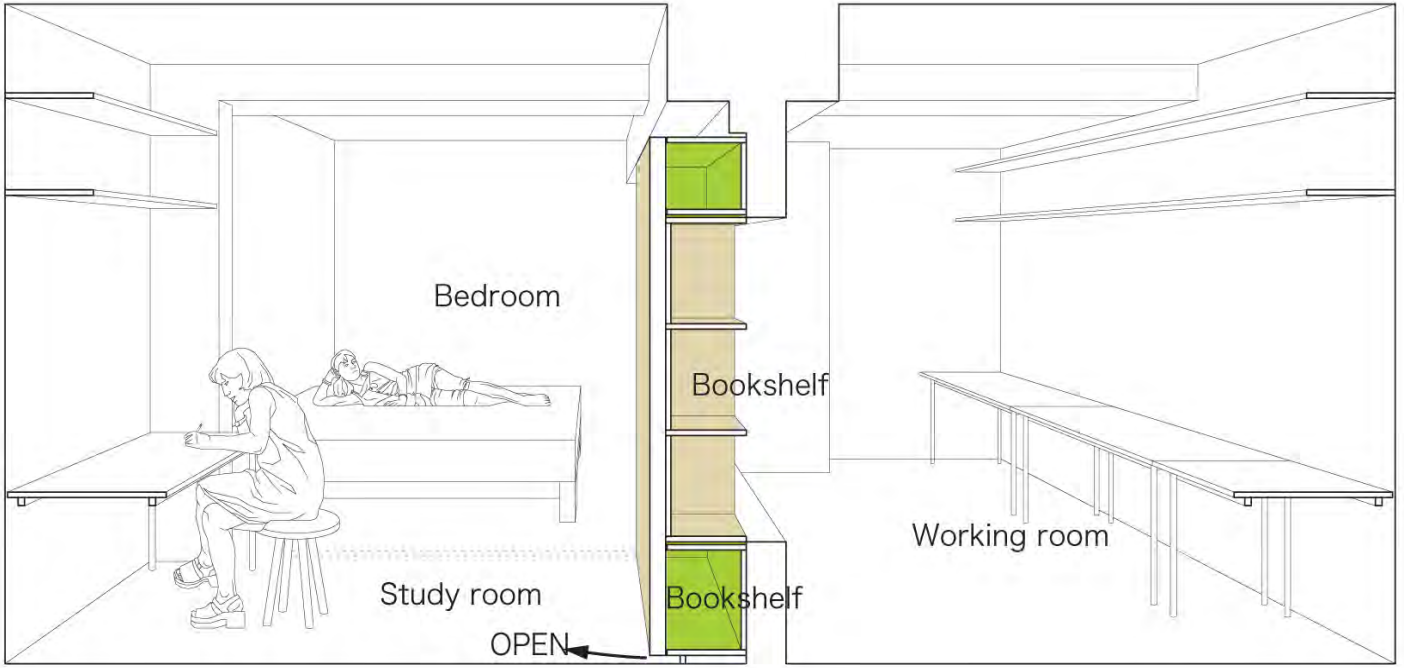


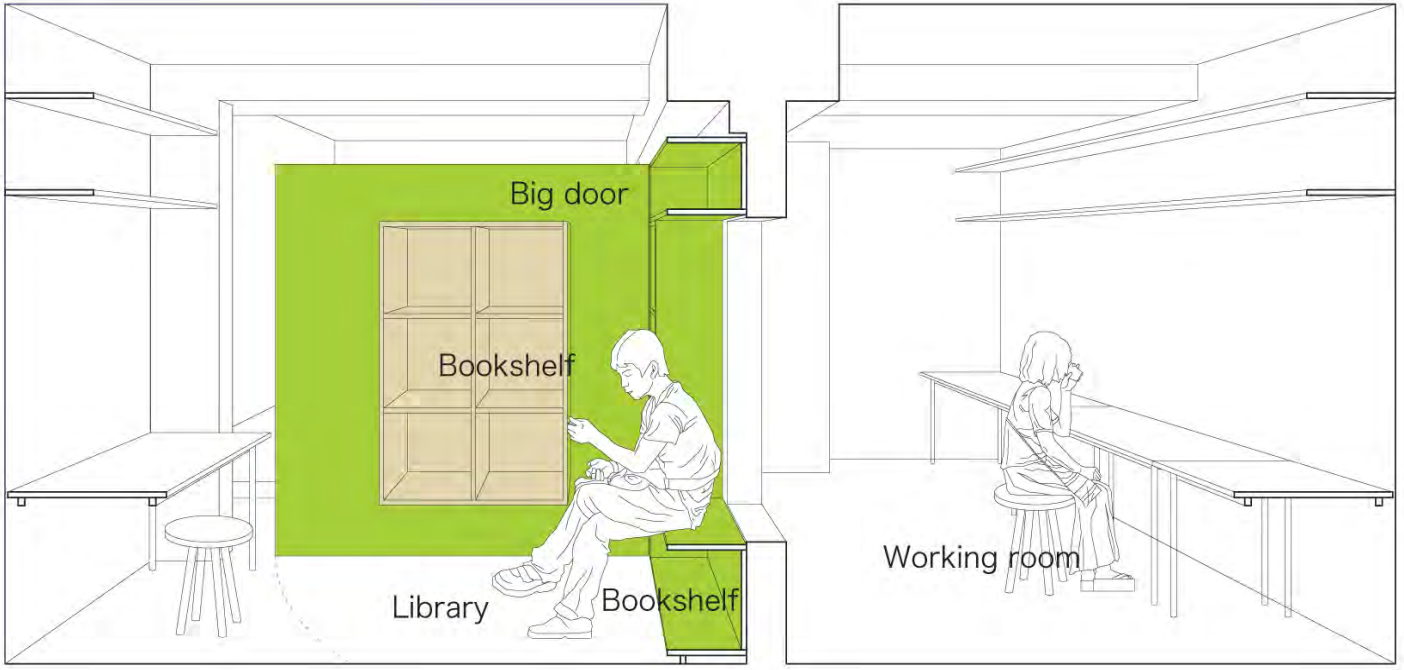
Switch

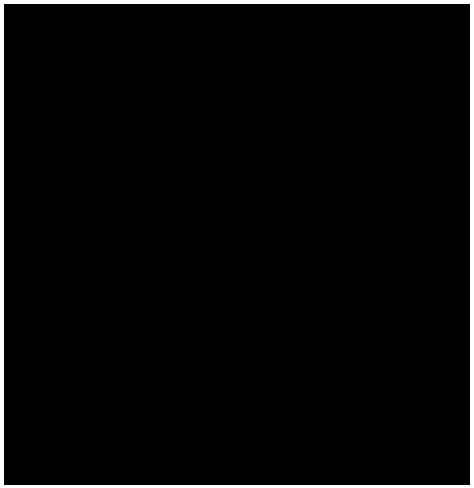
Yuko Shibata Office, 2008
Tokyo, Japan
775 sq. ft. (72 m^2)

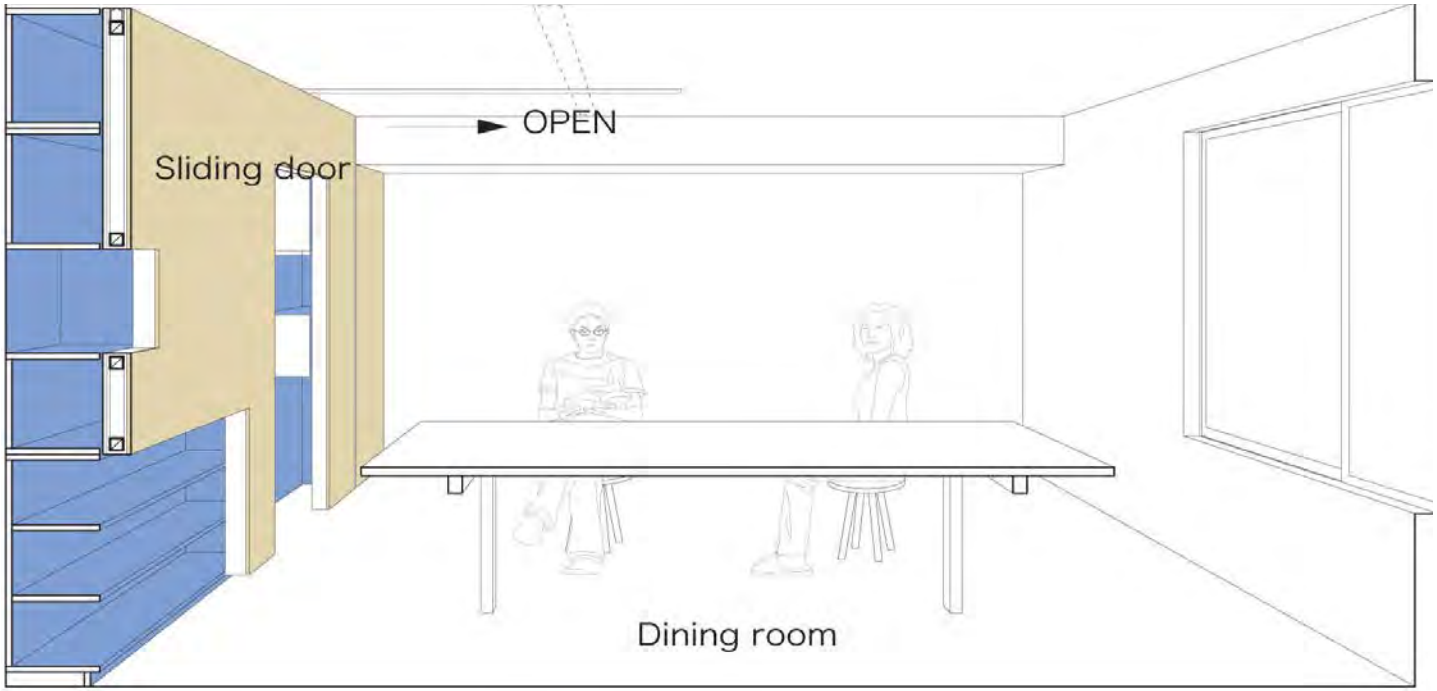

Bookshelf
Sliding door
(Study room)
Bedroom
Closet
Bathroom
Kitchen
Balcony
Library
Bookshelf
Closet
Lavatory
Library
Meeting room
Hall
(Dining room)
Working room
Laundry
Toilet
Entry
Living
Balcony
Closet
OFFICE(9:00am~10:00pm)
HOME(10:00pm~9:00am)

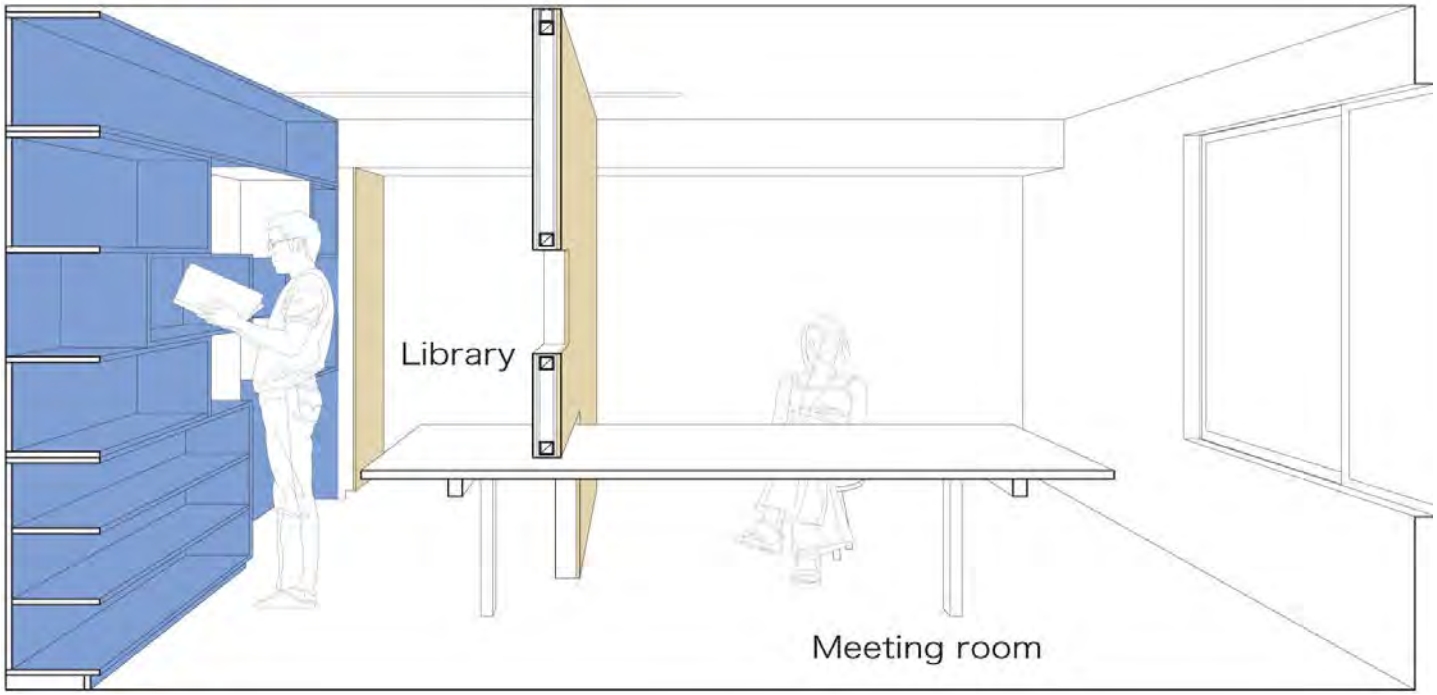


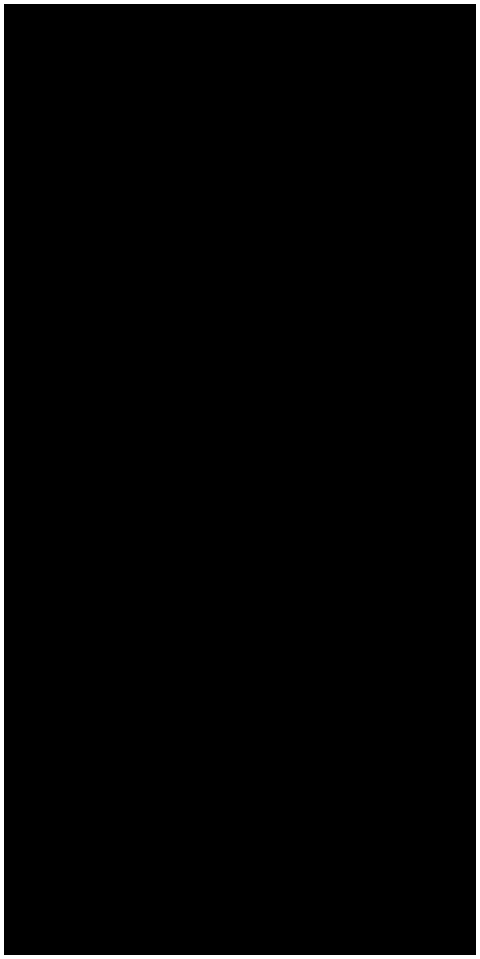

Bedroom
Bookshelf
Working room
Study room
Bookshelf
OPEN


Big door
Bookshelf
Working room
Library
Bookshelf




OPEN
Sliding door
Dining room


Library
Meeting room

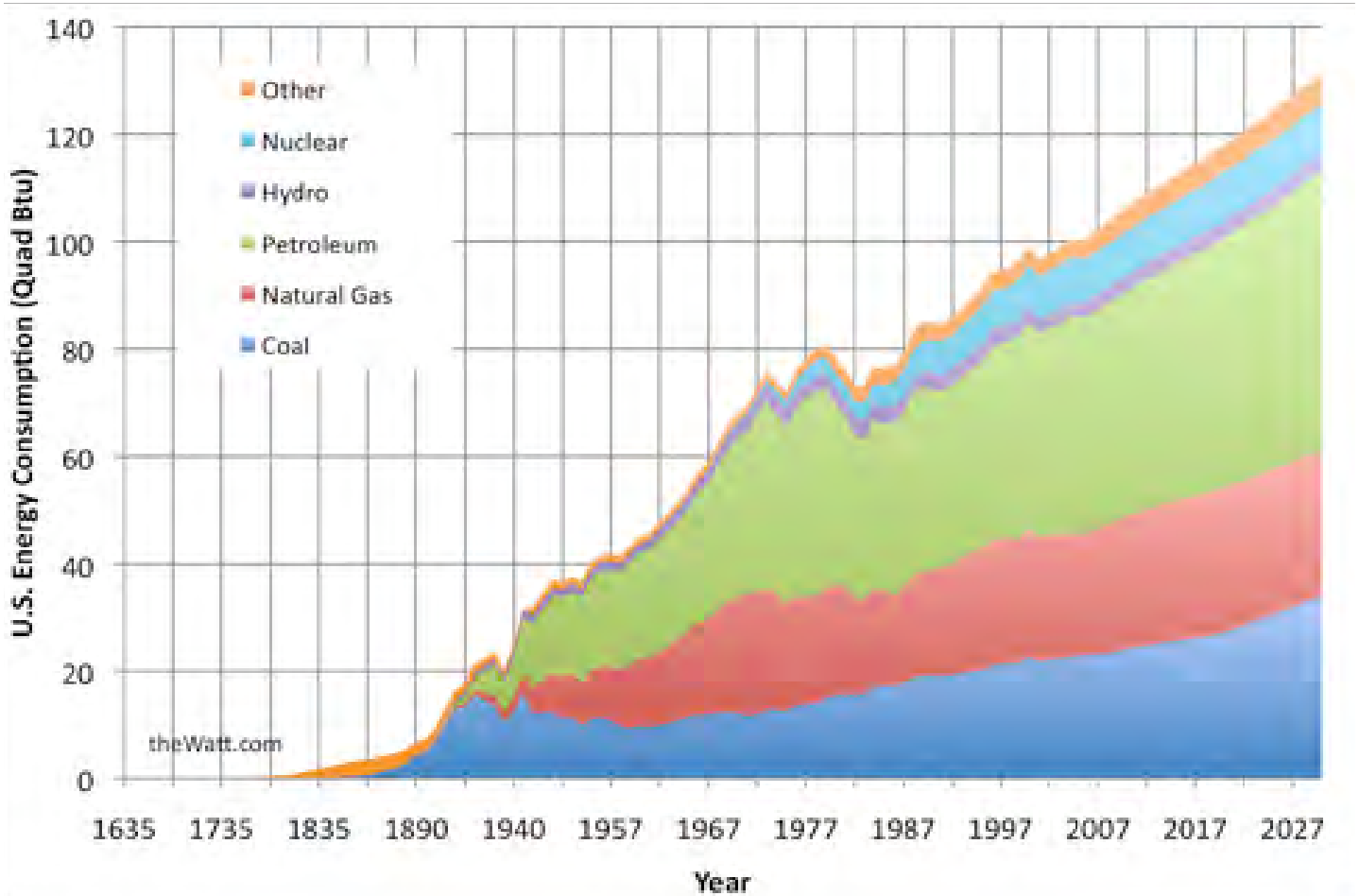


covering the real
Freedom
From
The Known

affordability is about

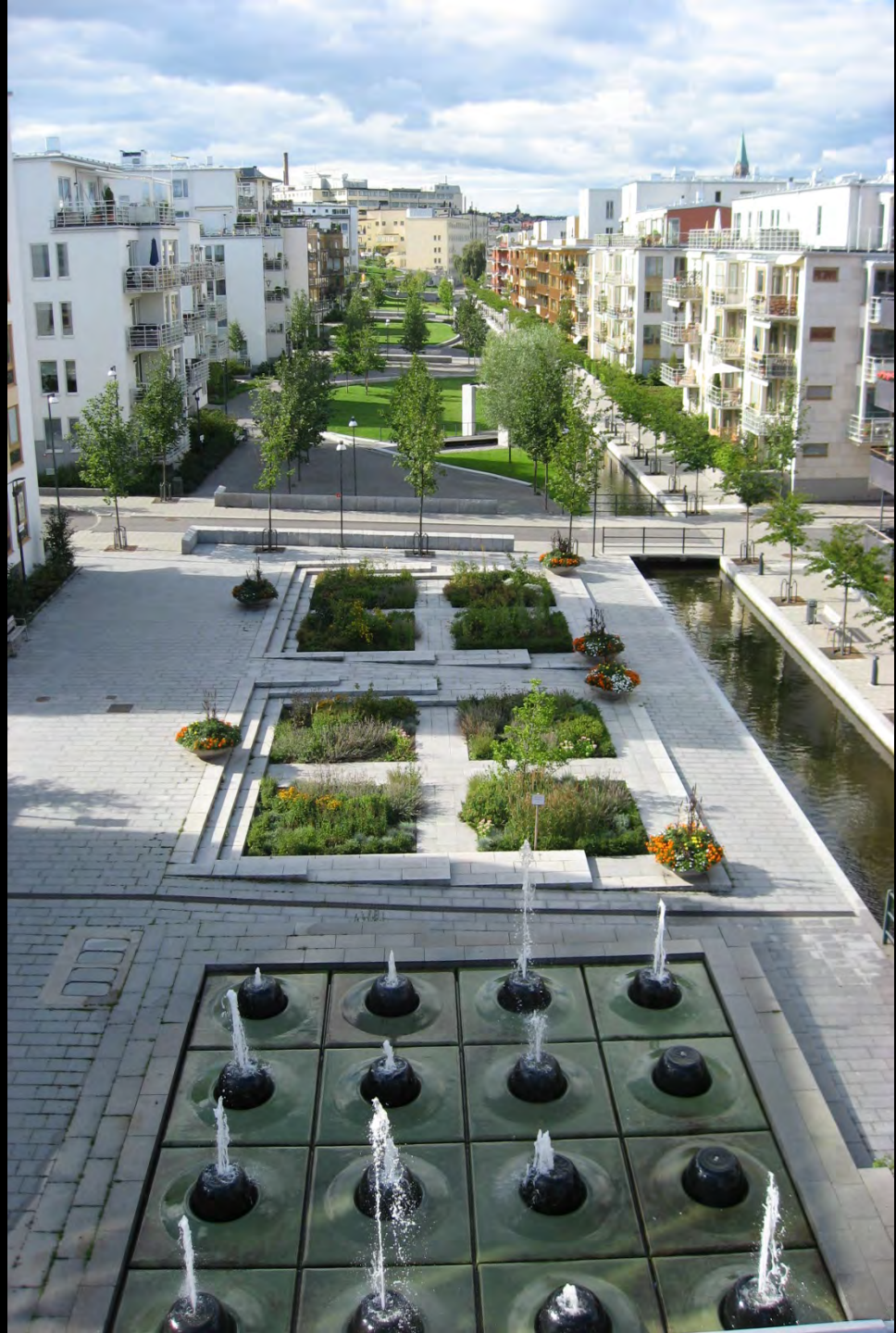
working at home

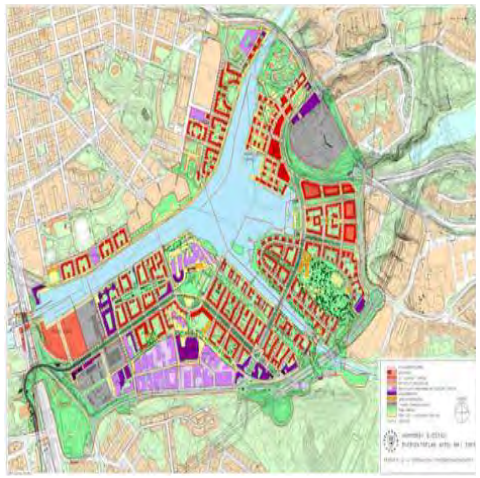
energy


Other
Nuclear
Hydro
Petroleum
Natural Gas
Coal
U.S. Energy Consumption (Quad Btu)
140
120
100
80
60
40
20
0
theWatt.com
1635
1735
1835
1890
1940
1957
1967
1977
1987
1997
2007
2017
2027
Year

Hammerby Sjöstad

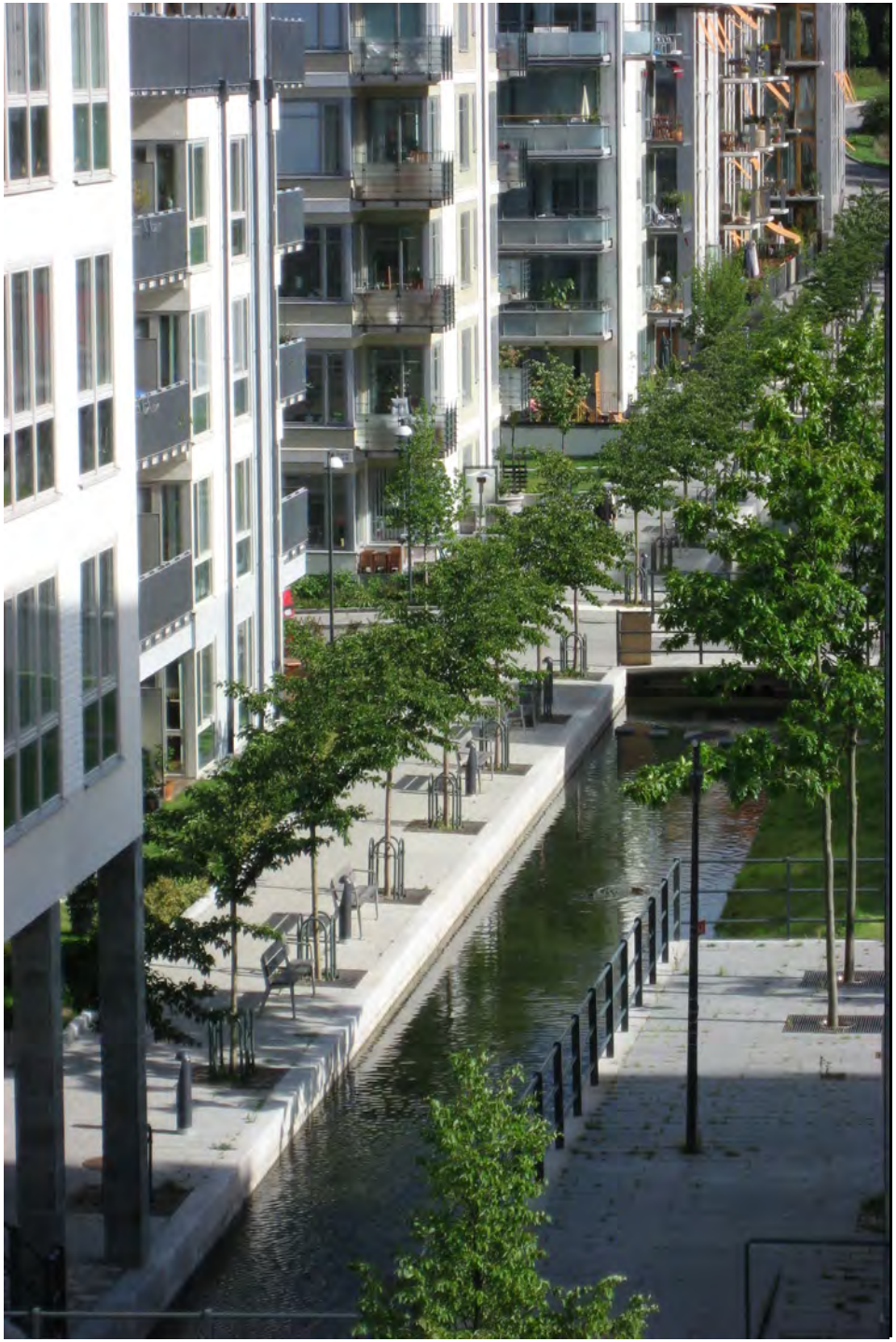
Stockholm, Sweden
11,000 dwelling units

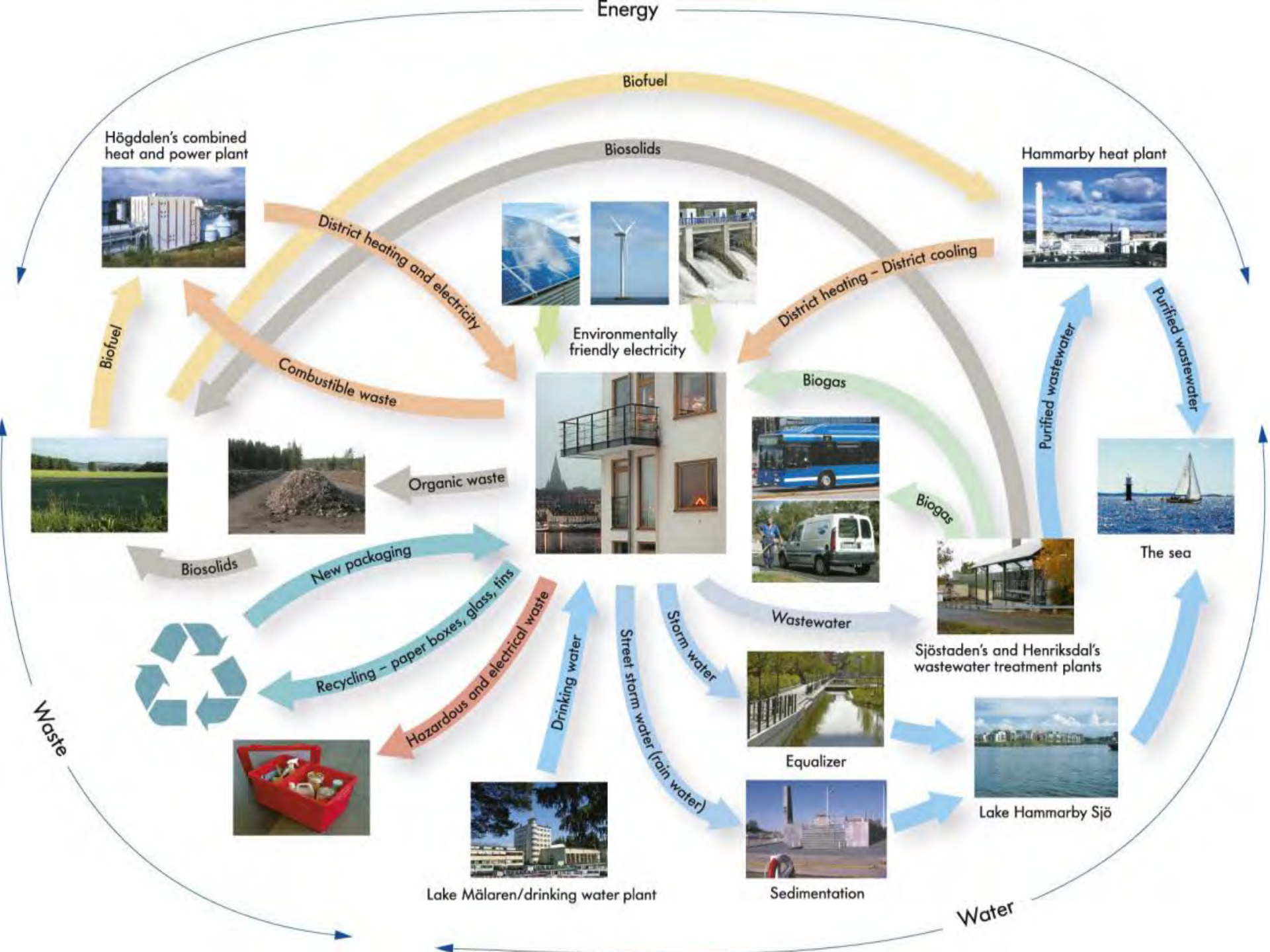


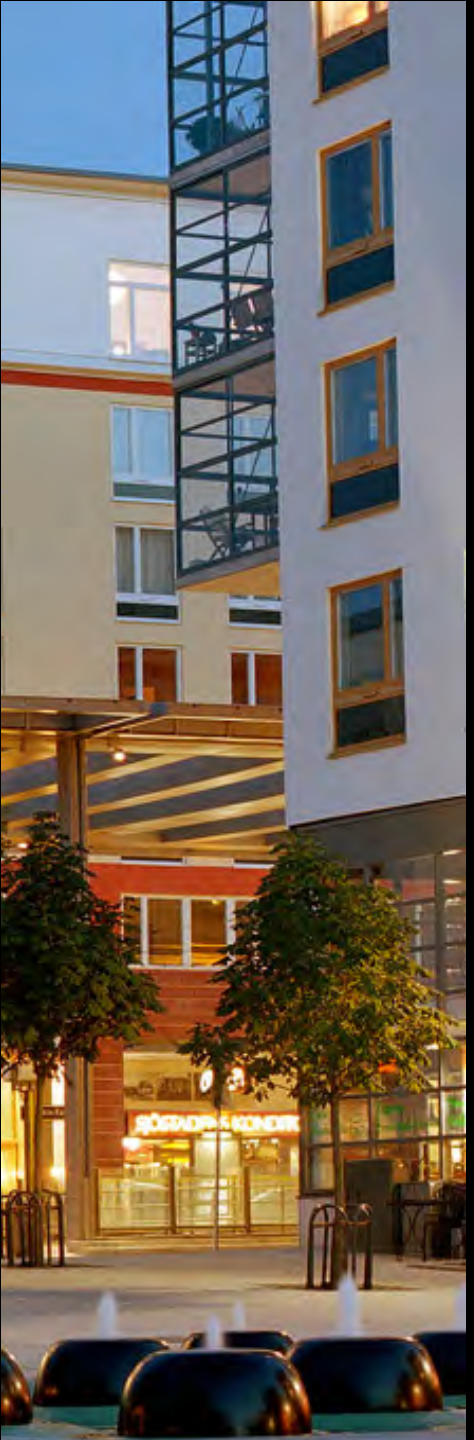


Source: City of Stockholm

Fortum
TANKA MED EL




Energy
Biofuel
Biosolids
Högdalen's combined heat and power plant
Hammarby heat plant
District heating and electricity
District heating – District cooling
Environmentally friendly electricity
Biofuel
Combustible waste
Biogas
Purified wastewater
Purified wastewater
Organic waste
Biogas
The sea
Biosolids
New packaging
Recycling – paper boxes, glass, tins
Hazardous and electrical waste
Drinking water
Street storm water (rain water)
Storm water
Wastewater
Sjöstaden's and Henriksdal's wastewater treatment plants
Equalizer
Lake Hammarby Sjö
Lake Mälaren/drinking water plant
Sedimentation
Waste
Water



district heating:
34% from purified waste water
47% from household waste
16% from biofuel

district cooling:

cooling is a waste product from the production of district heating.

materials:

no toxic materials on facade and roofing

ZONEILAND
(Sun Island)

Almere, Netherlands
Rem Koolhaas, Architect
180,000 Residents

single solar energy system
520 panels = 1.5 football fields
9,750 gigajoules of renewable energy
reduce CO_2 emission by 50%
energy–efficient build homes

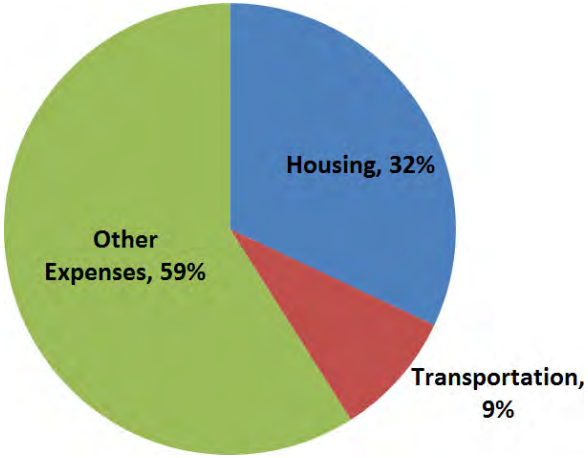
14 en 16

affordability is about

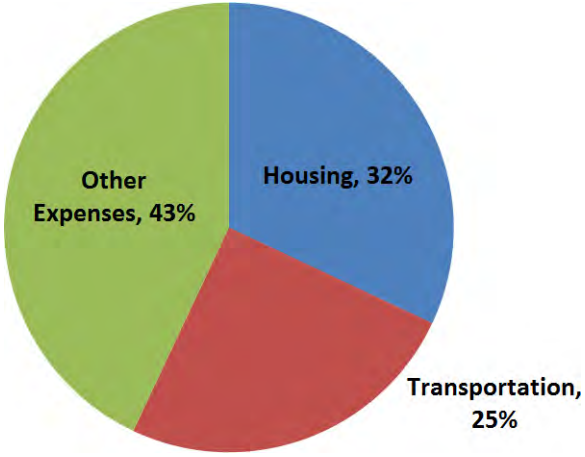
reducing energy consumption

going places

Housing Expenditure by Neighbourhood Type



Transit Rich Neighbourhood



Auto Dependent Neighbourhood

Source: Poticha and Wood 2009

public transit

biking

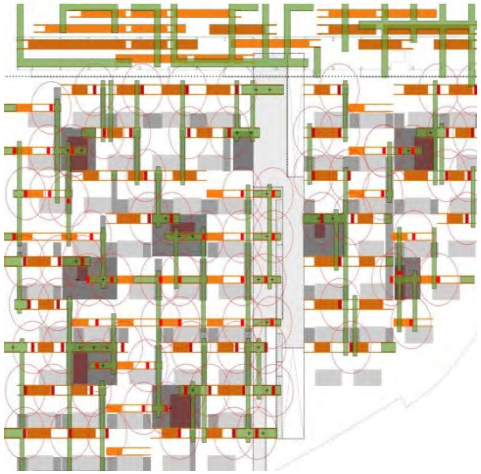
shared streets

car sharing

information

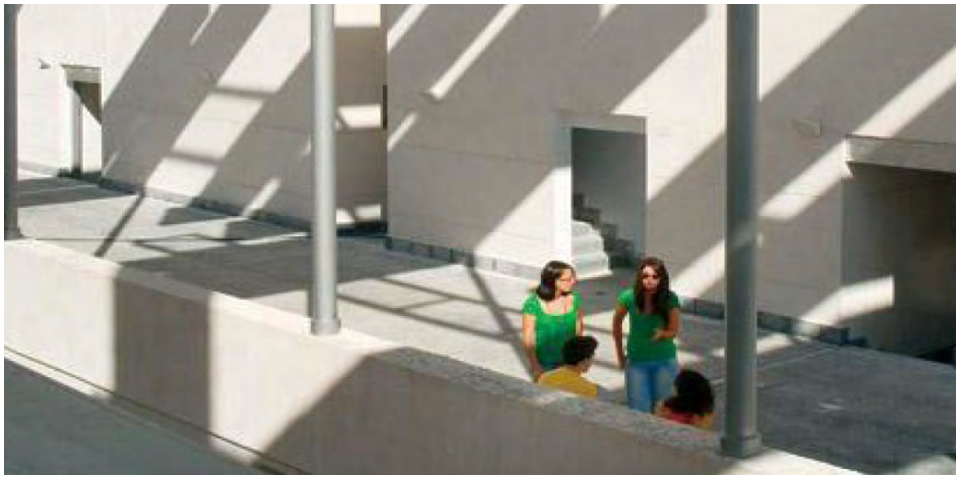
Carabancheal Social Housing

Morphosis Architects
Madrid, Spain, 2006
141 Units
600–900 sq. ft. (60–90 m^2)



car free

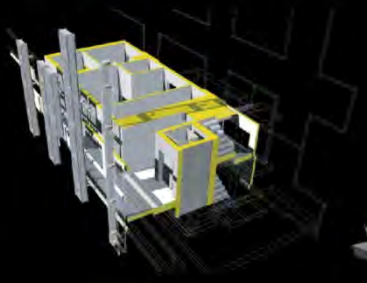
social

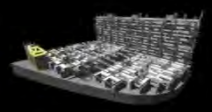


green

Two-bedroom apartment

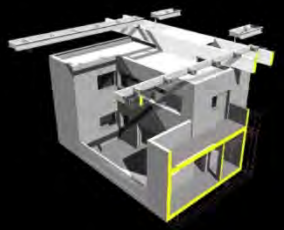
Level 01

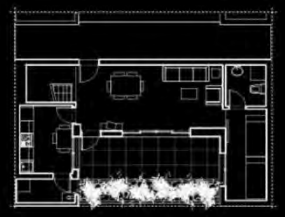




Four-bedroom apartment

Level 01





Level 02

affordability is about

driving less

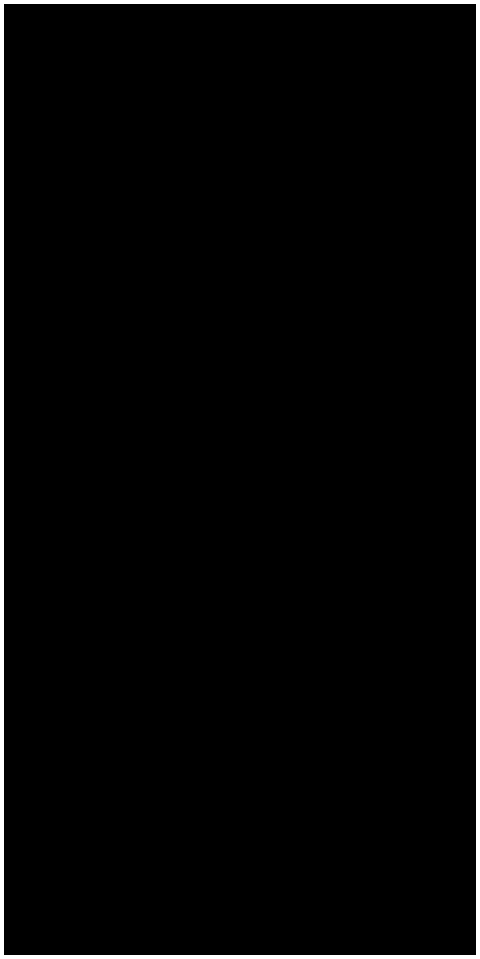
food

Consumer Price Index for All Urban Consumers: Food

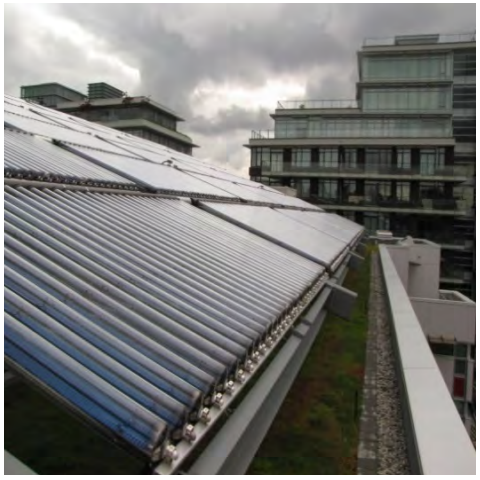
Source: U.S. Department of Labor: Bureau of Labor Statistics

False Creek

G.B.L. Architects, 2009
Vancouver, BC, Canada
6 Floors

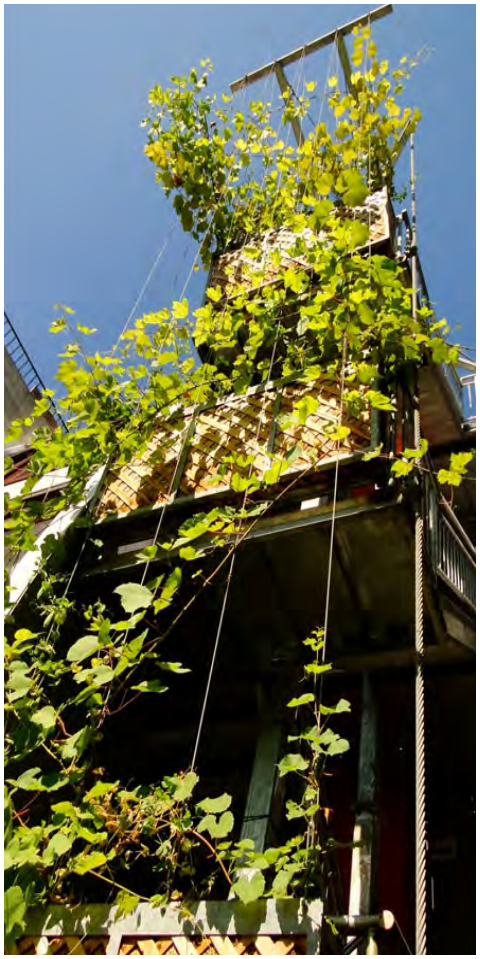


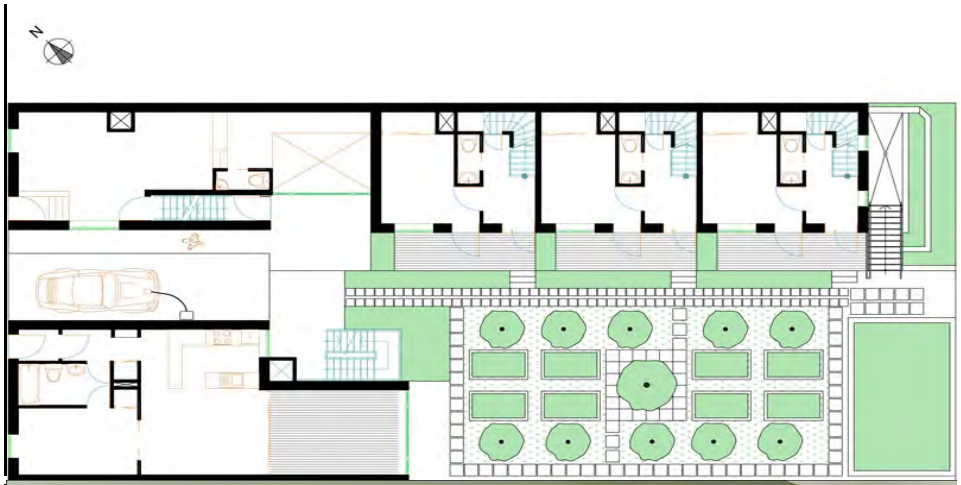
VANCOUVER 2010

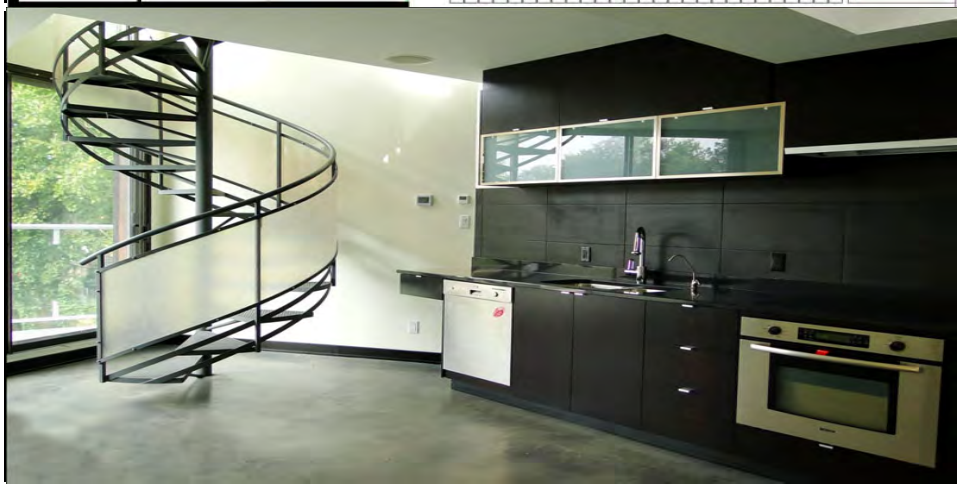


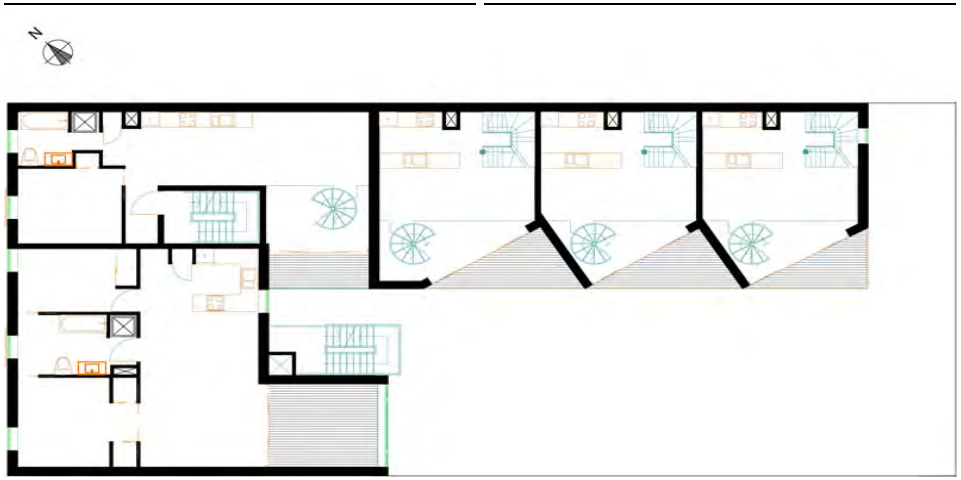
Productive House

Produktif Studio Design,2008
Montreal, Canada
9 units









green roof

green house

green yard

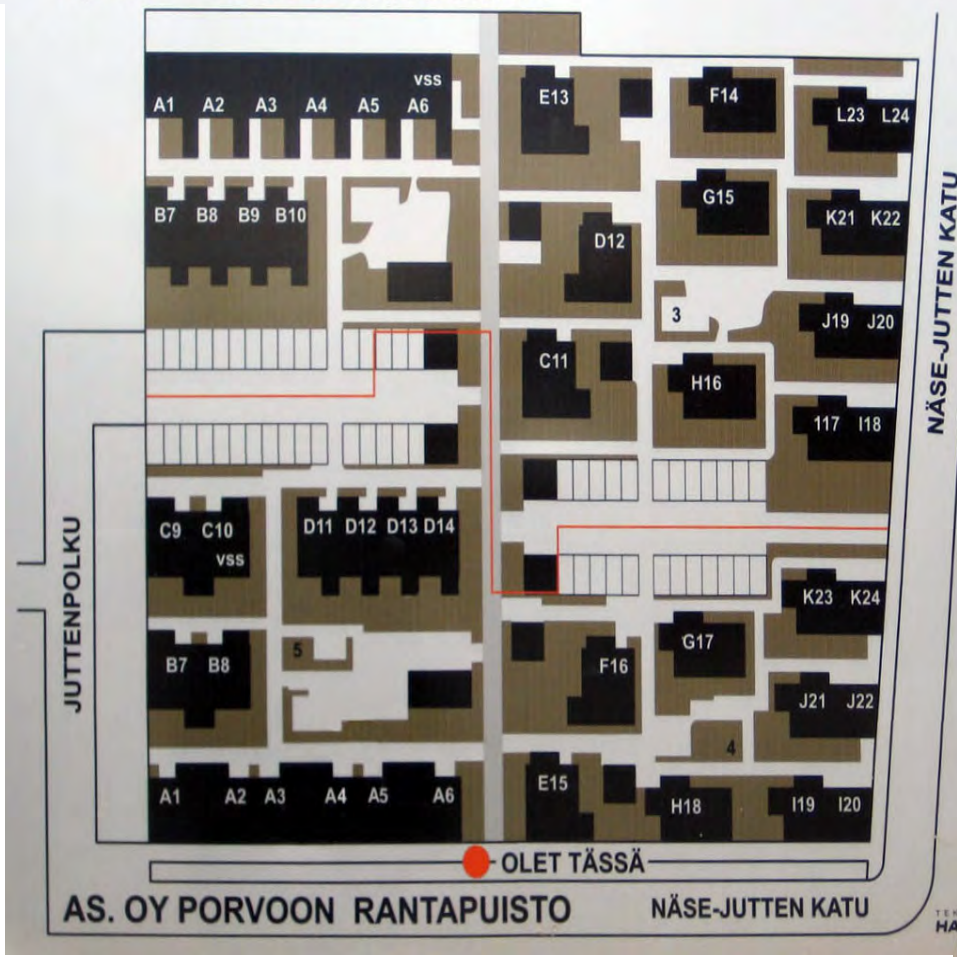
affordability is about

growing your own food

well-being

Wooden Town on the Porvoo River

Tuomo Siitonen Architects
Porvoo, Finland, 2005
11 Acres (4.5 Hectares)/site
430 sq. ft. (40 m^2)/floor


A1 A2 A3 A4 A5 A6
vss
E13
F14
L23 L24
B7 B8 B9 B10
G15
K21 K22
D12
3
J19 J20
C11
H16
117 I18
NÄSE-JUTTEN KATU
JUTTENPOLKU
C9 C10
vss
D11 D12 D13 D14
K23 K24
G17
B7 B8
5
F16
J21 J22
4
A1 A2 A3 A4 A5 A6
E15
H18
I19 I20
OLET TÄSSÄ
AS. OY PORVOON RANTAPUISTO
NÄSE-JUTTEN KATU

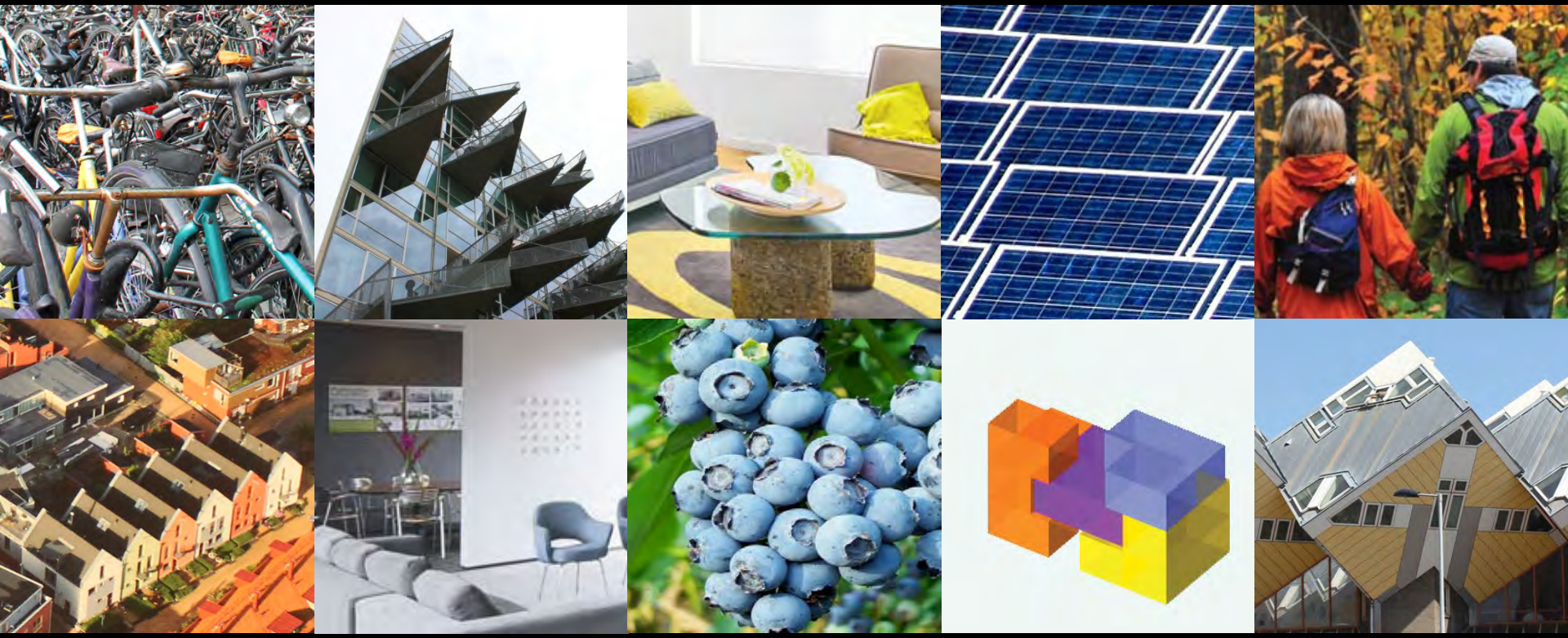
BIOJÄTE
MOLOK
PAPERI
MOLOK
SEKAJÄTE
MOLOK

affordability is about

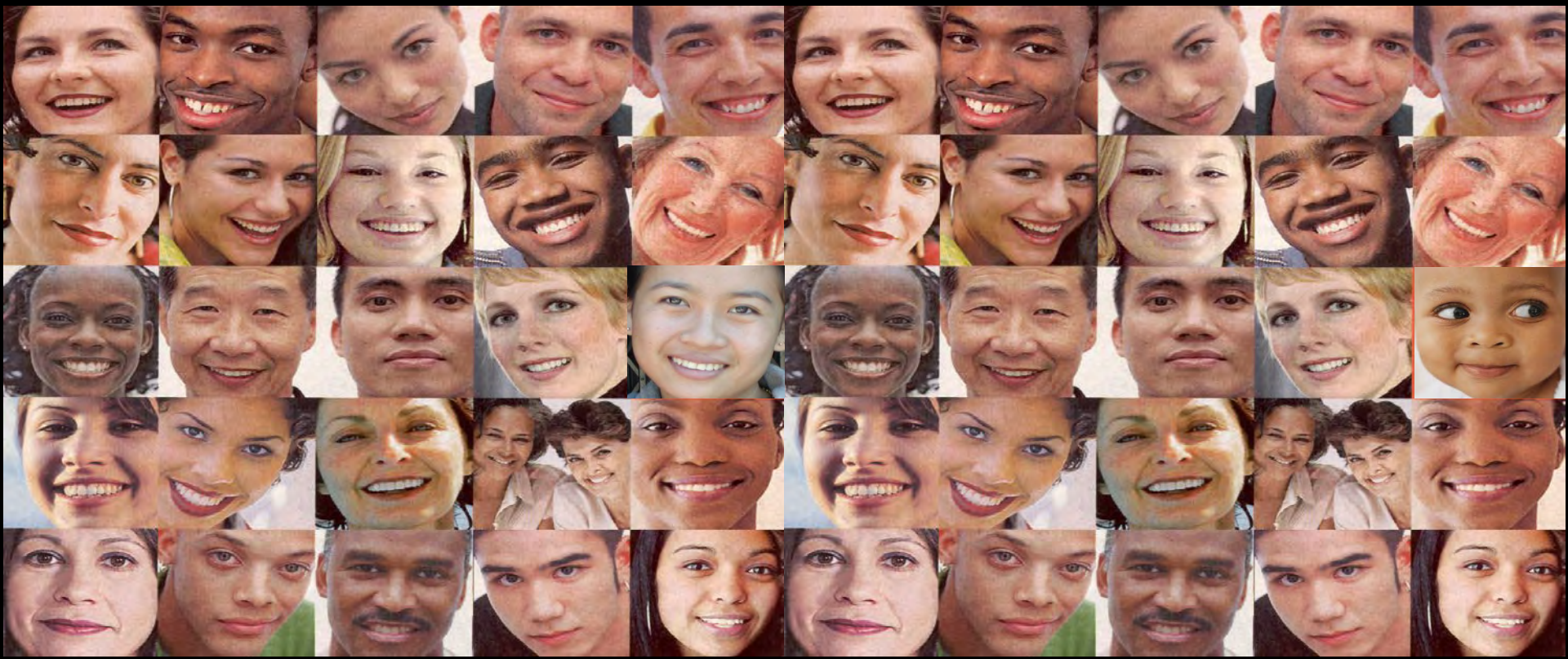
healthy living

OPPORTUNITIES

affordability is about



affordability is about



thank you all

and

a happy birthday Housing Washington