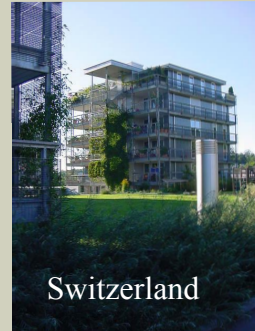
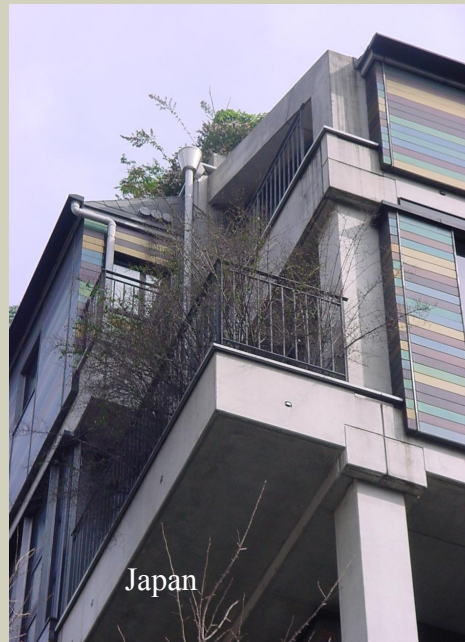


OPEN BUILDING IS FOR REAL



PREPARING STUDENTS FOR REAL



Open Building is for real in all kinds of architecture

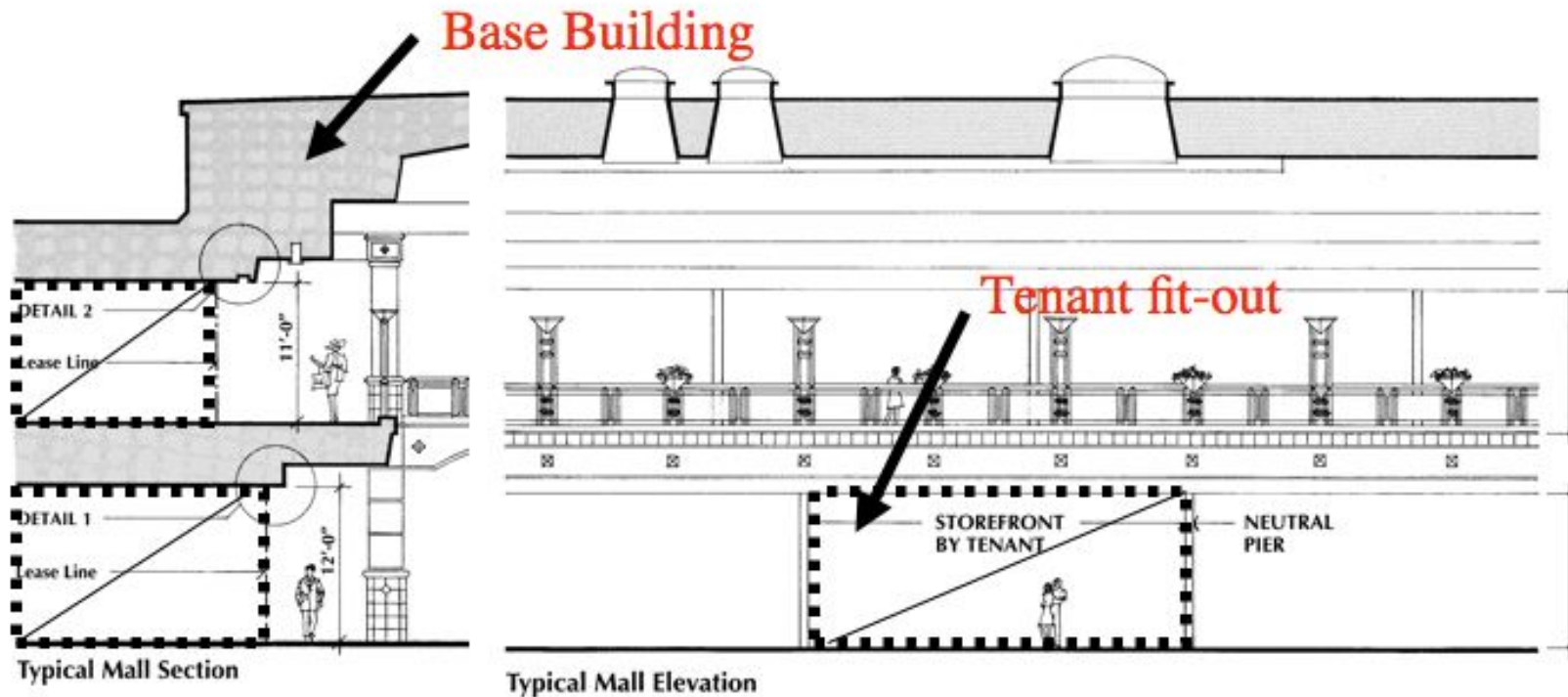


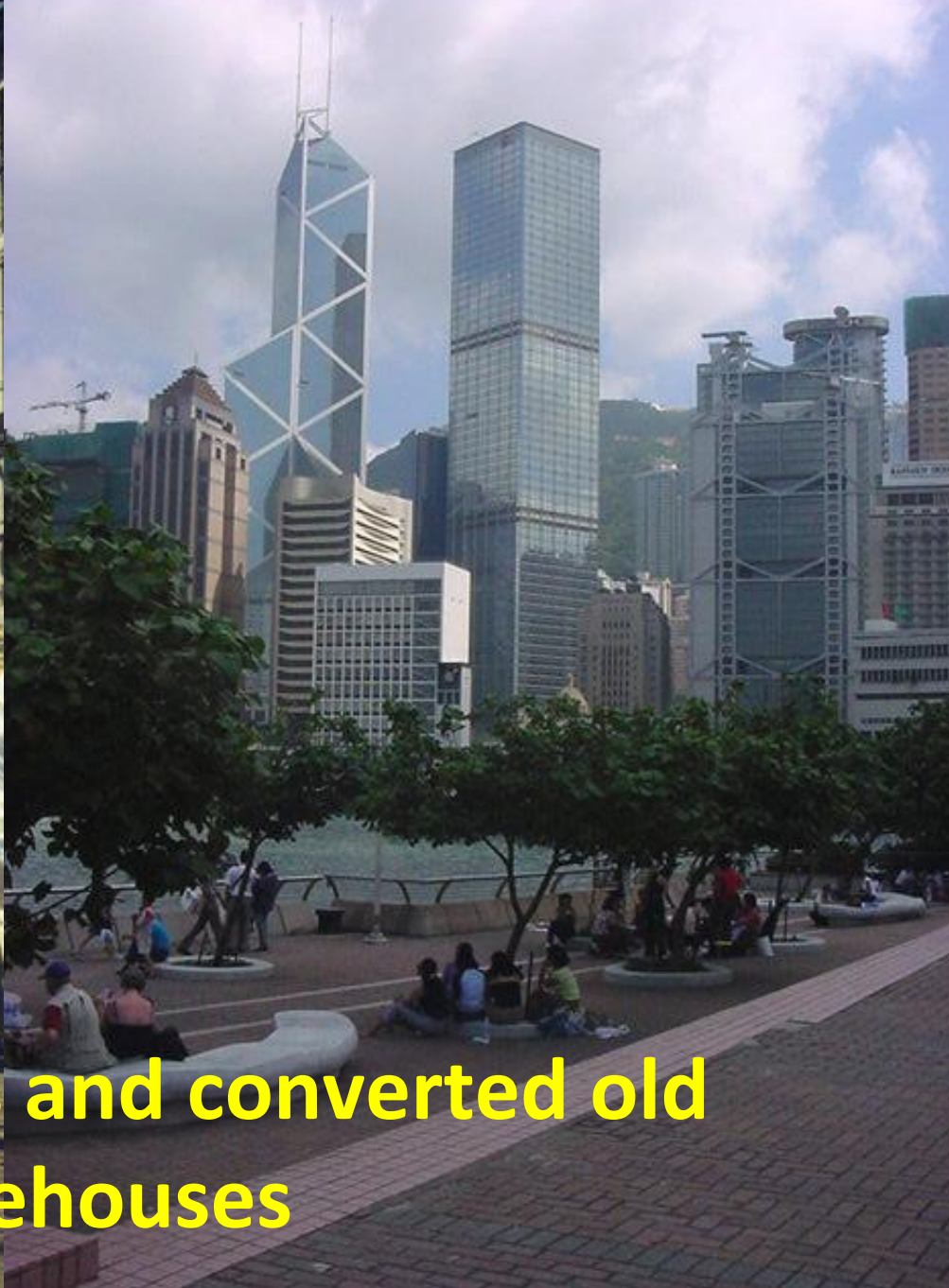


Shopping Centers are a good example

...everywhere...

Shopping centers are handled in very conventional ways...





Office buildings and converted old warehouses

HOSPITALS, too, are moving in this direction



INO Project / Bern

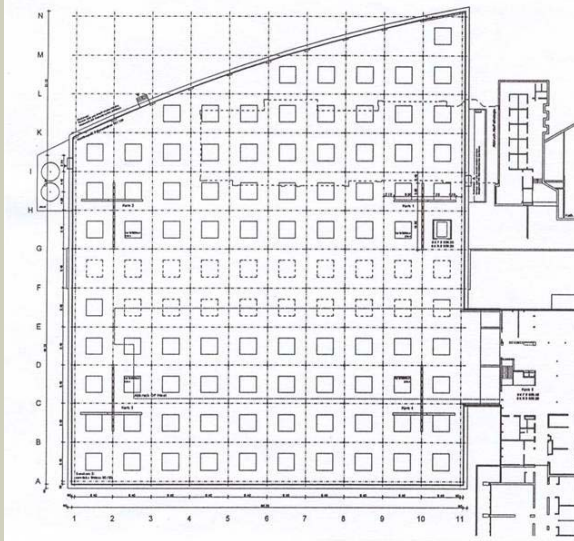
The Primary System



The interior at one of the light wells

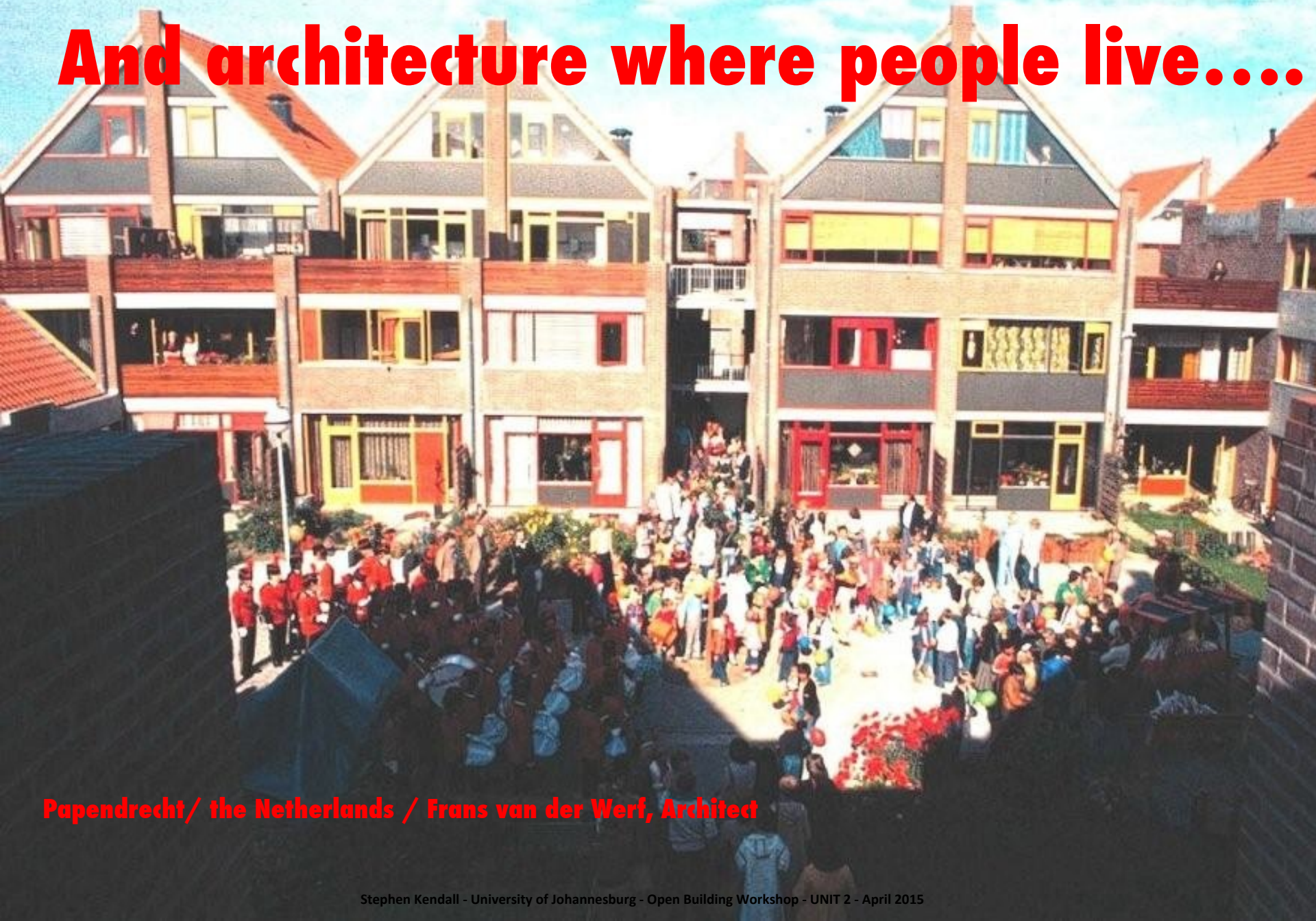


A laboratory



The Primary System Skin

And architecture where people live....



Papendrecht / the Netherlands / Frans van der Werf, Architect

BUT..

Residential architecture is lagging behind other use types in adopting open building. WHY?

After all, people are not all the same, and living standards change. So why shouldn't dwellings conform to the natural variety and changing realities of households?

Papendrecht Molenvliet

The Netherlands

One of the first large
housing projects of this
kind...



Frans van der Werf, architect



Simple, repetitive tunnel form construction of the base building's structure



the wide variety of dwellings ... no two are alike

Subsidized housing project with 124 units +/-

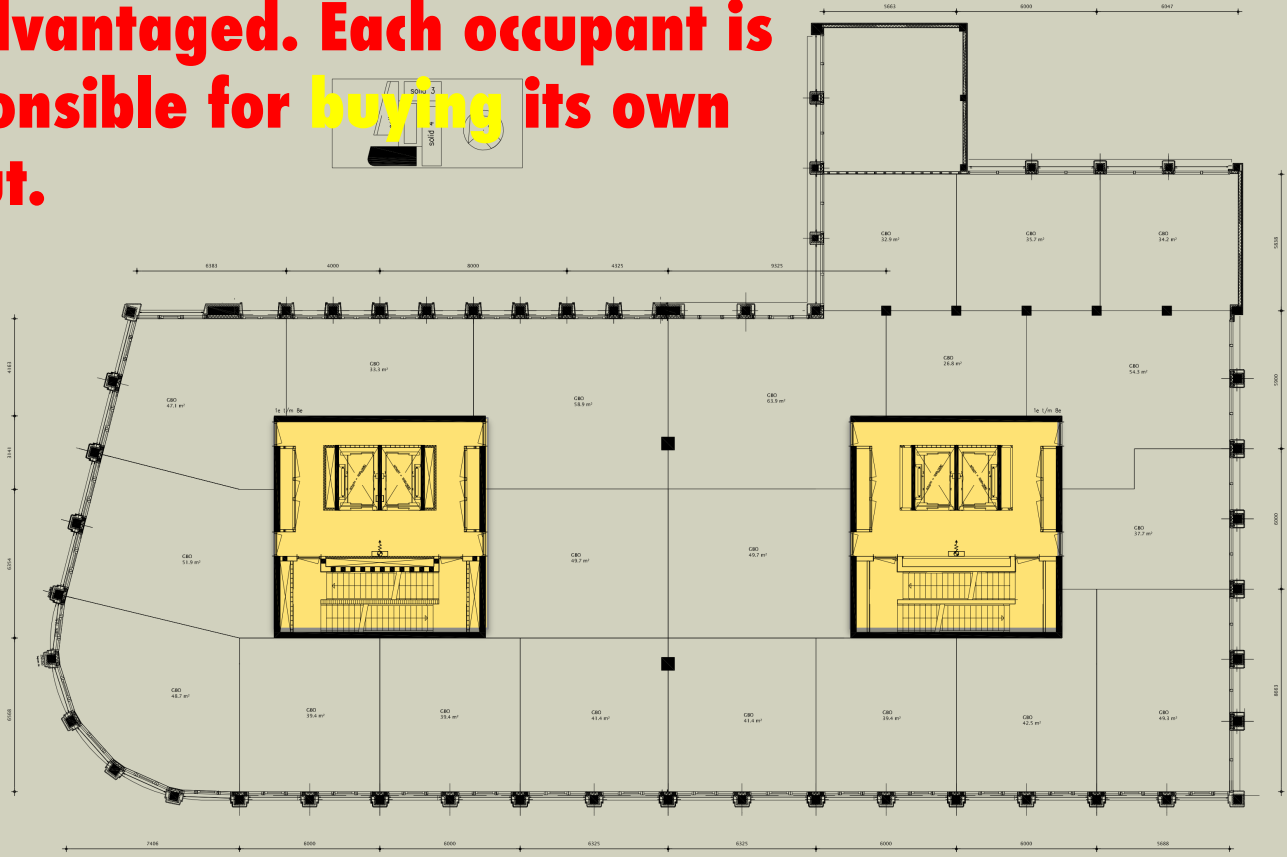


The SOLIDS / Amsterdam / Architect: Baumschlager Eberle

Spaces of varying sizes are leased in an internet lottery. Lower income people are not disadvantaged. Each occupant is responsible for buying its own fit-out.

Straat:	Huisnr.:
Postcode:	Gemeente: AMSTERDAM
Bouw-/Ren-jaar: 2010 / 0	Objectcode: Q.081.005.008
Soort objekt:	Woonlaag: 0
Aantal kamers: 0	<small>Let op: (BVO) Stadgenoot deze plattgrond met zorg tot stand heeft gebracht kan deze verantwoordelijkheid niet aan deze plattgrond geven rechten overlenen. Als u in de ruimte handelingen gaat verrichten of als u deze gaat kopen, dient u vooraf zelf te onderzoeken de plattgrond correct is.</small>
BVO: .00 m²	
GBO: 870.64m²	

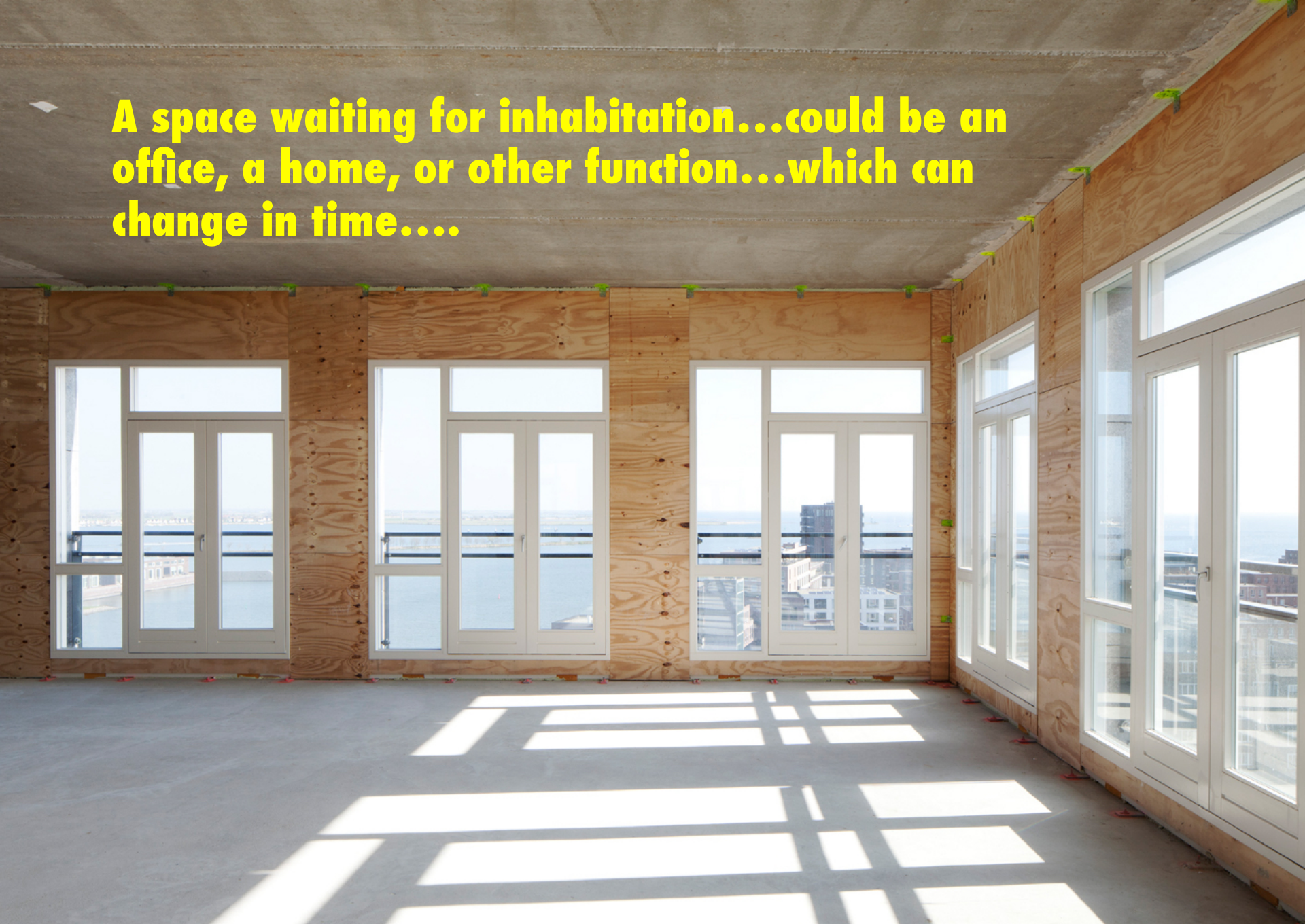
 		
Stadgenoot Bos en Lommerplein 295 1055 RW Amsterdam T 020 511 80 00 W stadgenoot.nl		
Perceel nummer		51374
Afdeling BBT	Eerste tekening	Laatste wijziging
Datum		19-1-2010
Getekend door		



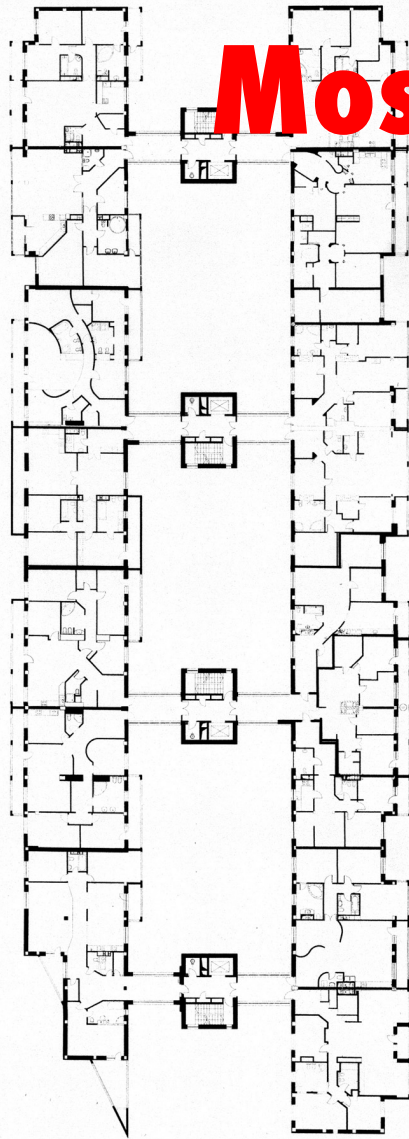
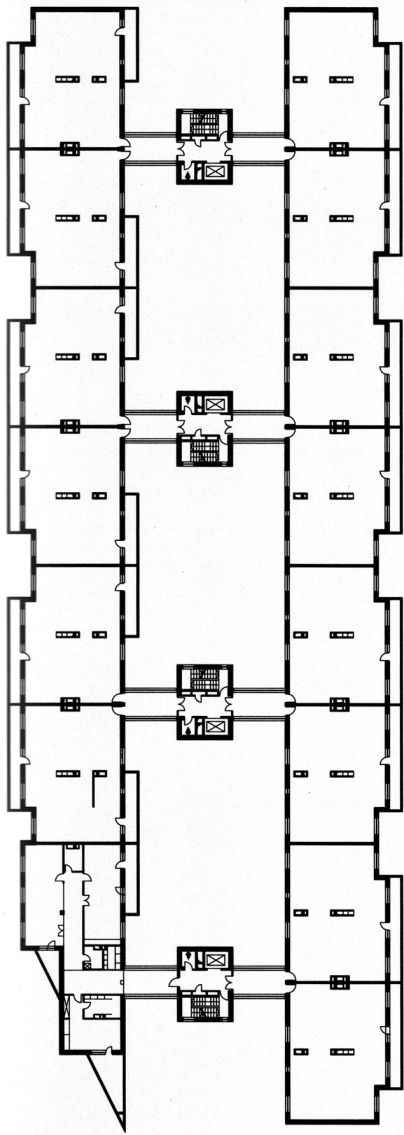
1e & 2e verdieping



A space waiting for inhabitation...could be an office, a home, or other function...which can change in time....



Moscow



The Catamaran Project / Moscow / Reserve Architects

ТПО «Резерв»
Жилой дом в Москве. 2000
план дома
планы квартир

TPO Reserv
Apartment block in Moscow, 2000
plan of the building
plans of the apartments

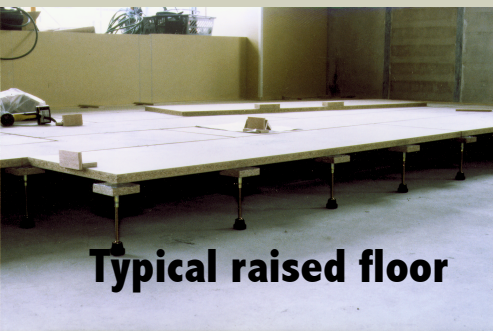
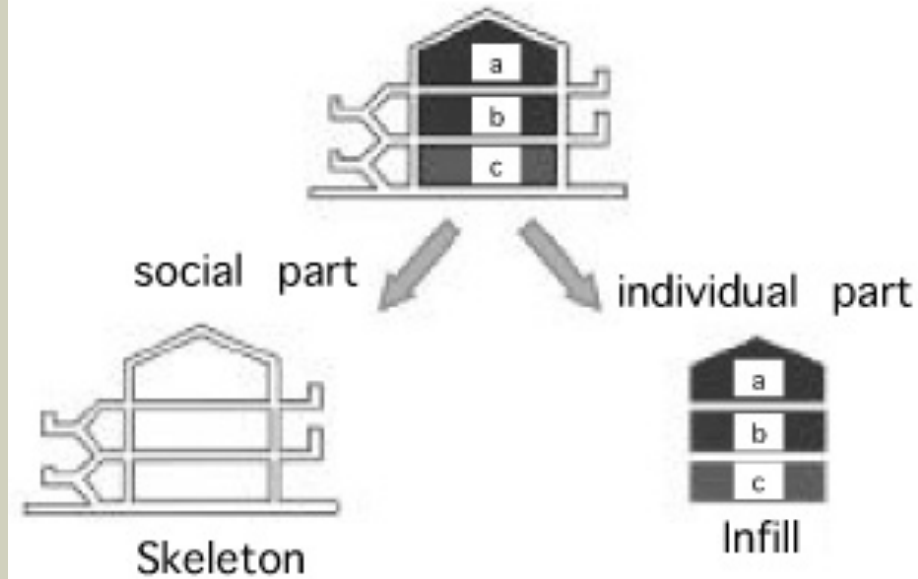
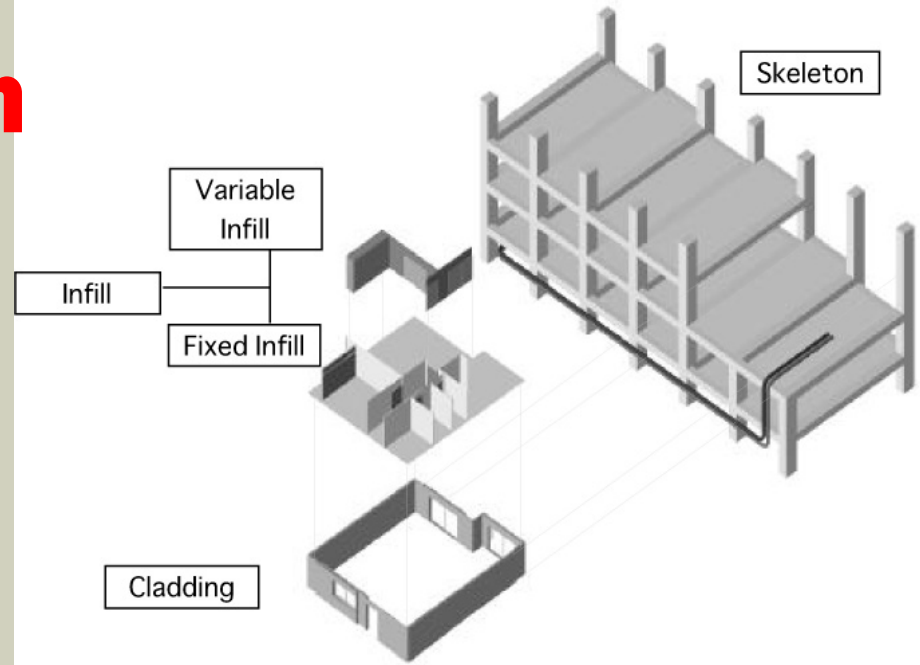




**Base building
pipe shafts and
ventilation
risers in
several places**

The empty shell space

Japan



Flex Court Yoshida, Osaka

**Architect: Kenchiku Kankyo
Kenkyujo + Shu-Koh-Sha
Architecture Studio**

A façade system was developed by one team and used by each architect hired to design a house in the serviced skeleton, designed by still another team...

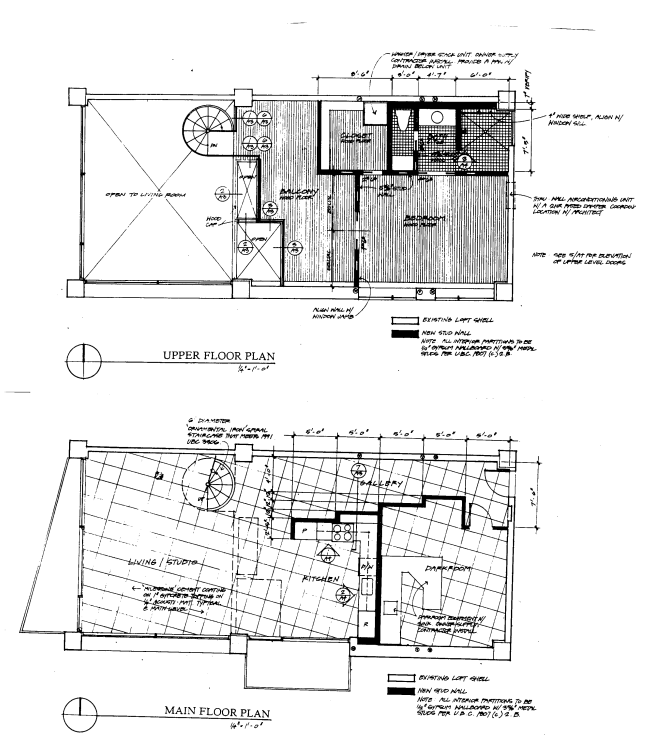
Japan

Next 21 / Osaka, Japan / Yositika Utida and the Next 21 Design Team

USA



Banner Building / Seattle, USA / Copeland and Weinstein, Architects

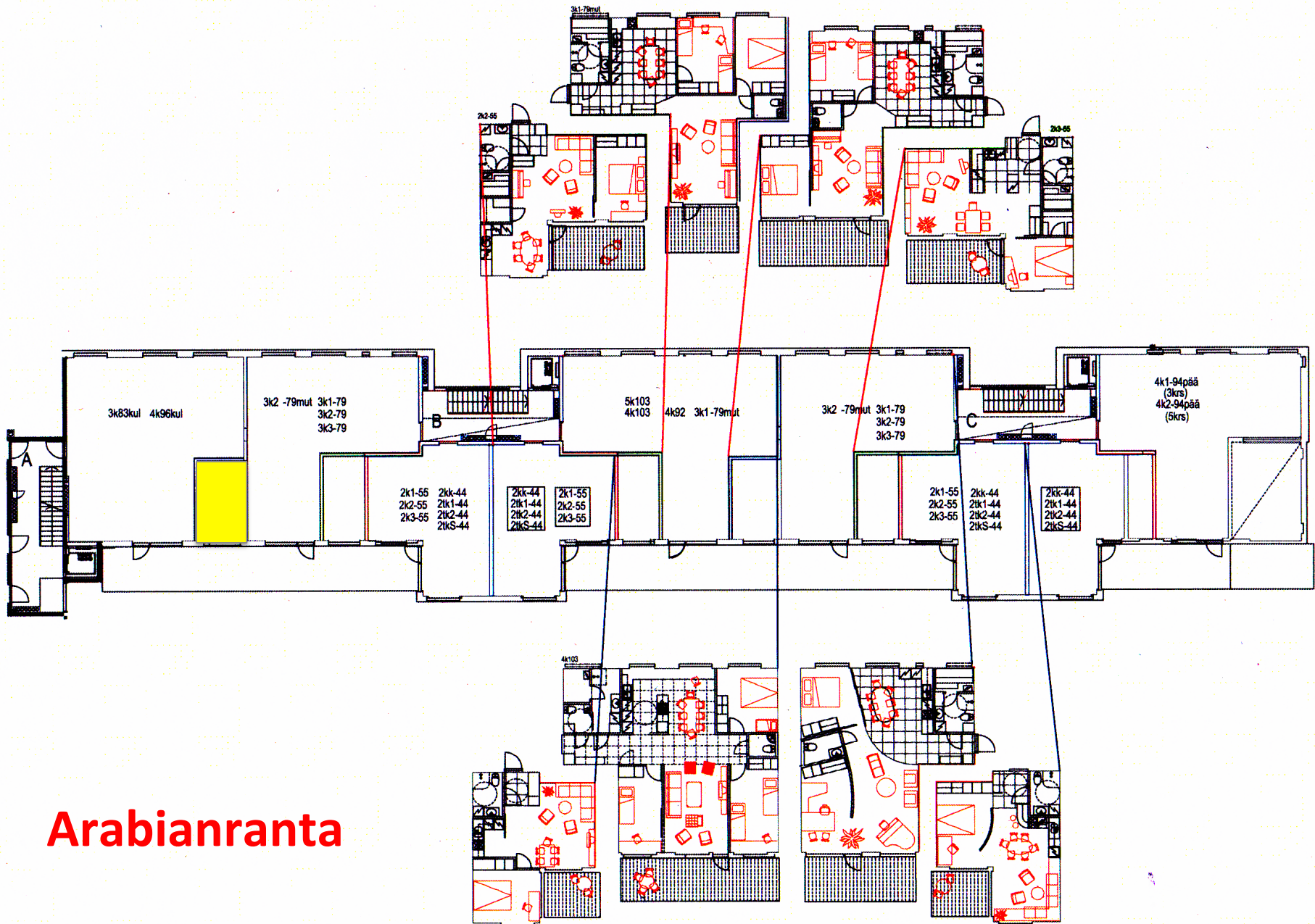


Each family buys an empty space and decides how to lay it out...

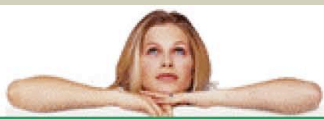
Finland



Arabianranta / Helsinki
Esko Kahri, Architect



Arabianranta



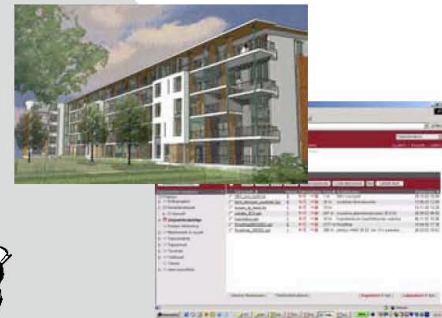
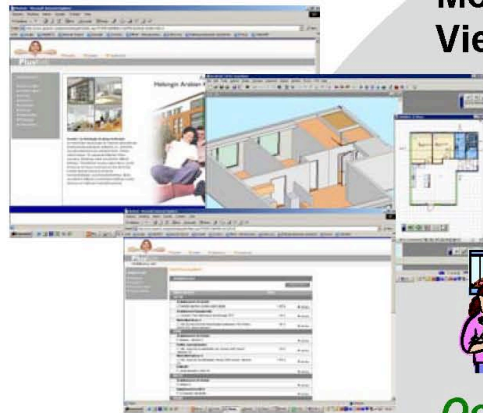
PlusHome - Concept with wide occupants choices

Occupant service

Design management

Model & Occupant View

Model & Drawings View



Occupant

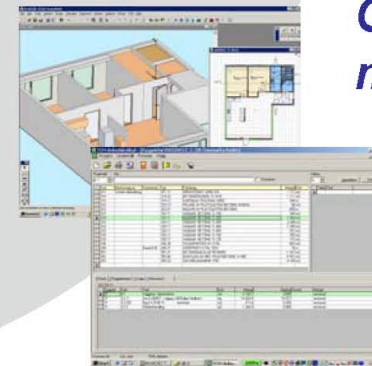
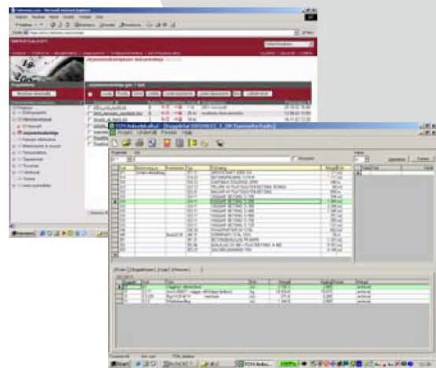
Architect

Project management

Quantities & Documents

Model & Quantity View

Quantity & Cost management



Project manager

Quantity surveyor



Each occupant is responsible for its own fit-out.



FINLAND

TILA/ Helsinki

Architect: TALLI - Pia Illonen



Chile



ELEMENTA

Social housing in Chile, in which each family has extended its starter-house and made the inside their own, too.



QUINTA MONROY Social Housing, Iquique, Chile Architect: Alejandro Aravena



MEXICO



Social housing in Mexico

Each family made the inside their own, slowly improving it when they could afford to.

Mexico City

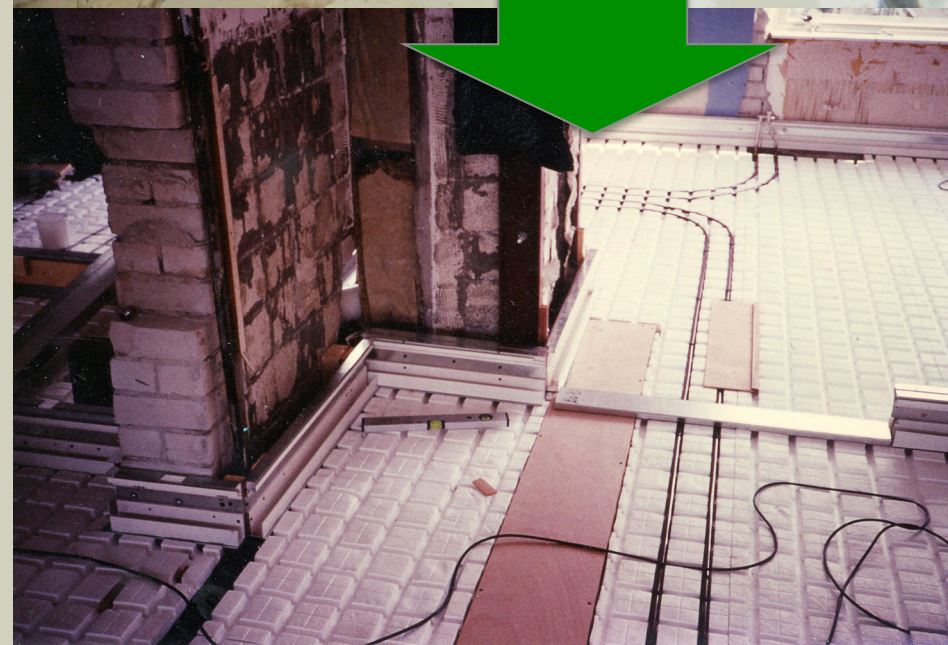
Architect: Jorge Andrade

5
4:28 PM

The Netherlands



Re-activation of a 1960's apartment building of small, standard apartments



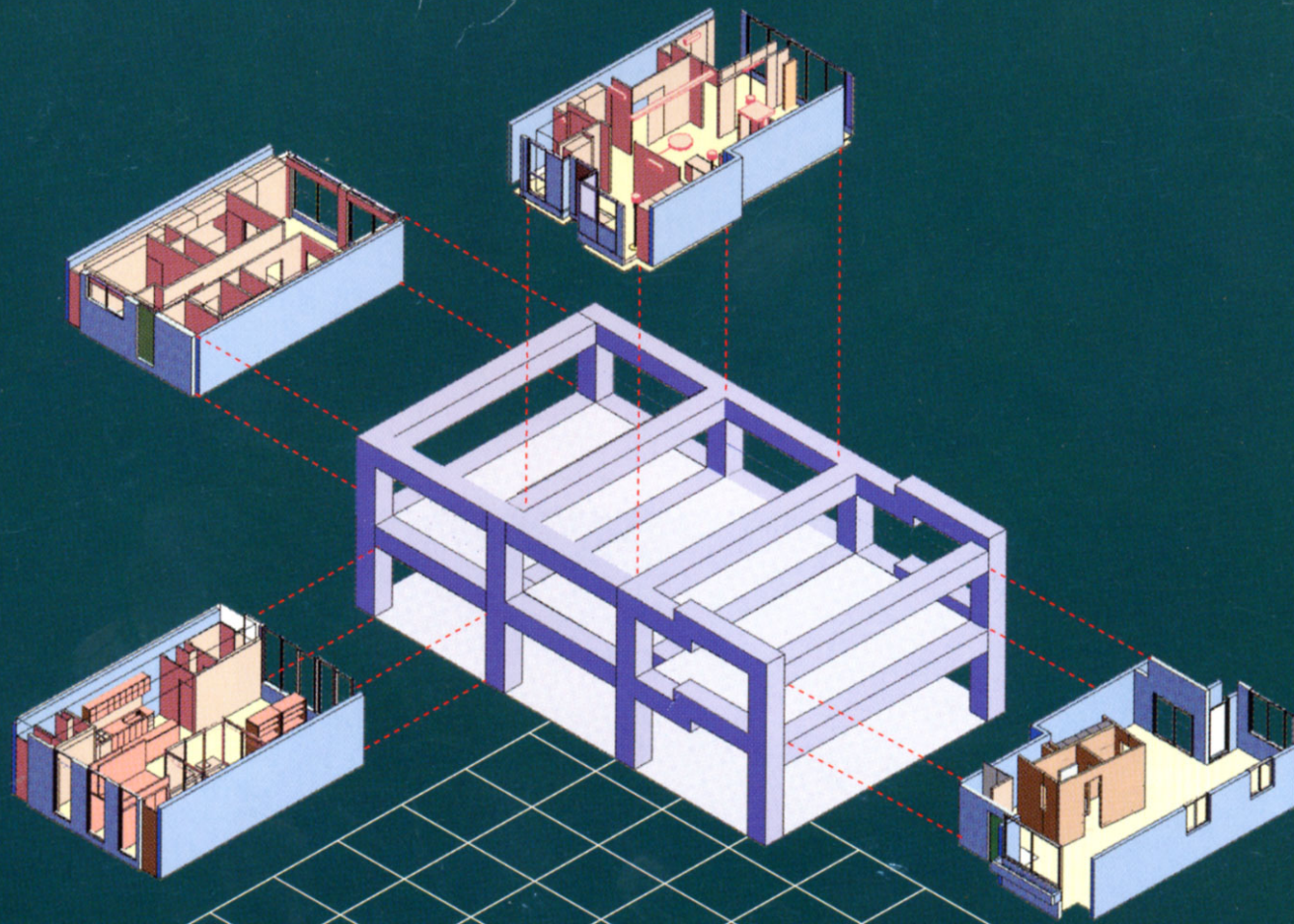
Patrimonium Woningun Voorburg, the Netherlands

What do these examples of open building teach us?

- 1. Open Building isn't new**
- 2. Open Building isn't only for residential architecture**
- 3. Open building isn't for one kind of culture or economy**
- 4. Open Building uses many kinds of building technology**
- 5. Variety isn't less efficient than uniformity**

What do these examples of residential open building teach us?

- 1. Real clients with real budgets build them;**
- 2. All are quite different architecturally;**
- 3. The architect of the building generally doesn't design the individual dwellings;**
- 4. Households take responsibility for their dwellings in a shared architectural infrastructure**
- 5. Household aspirations are different and change on shorter time cycles than group aspirations**



All examples reveal a common goal:
autonomy of each dwelling
in multi-unit buildings

**Divided
(distributed)
construction,
divided decision
making and
divided accounting
is not new**

Divided Construction Costs

Base Building and Fit-out

Categories of Work

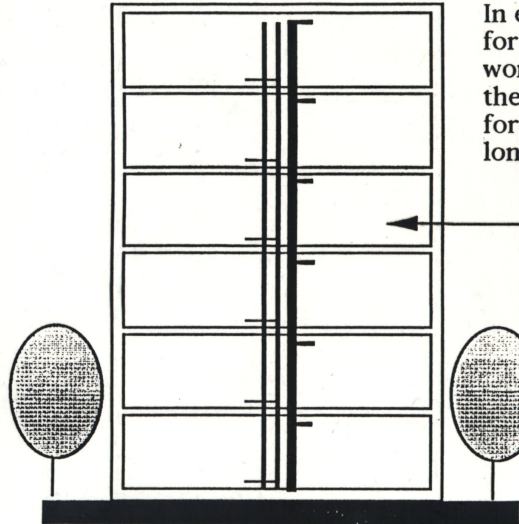
		Base Building	Fit-Out
Preliminaries	BB+FO	.5%	.5%
Foundation		10.2%	
Rough Structure		16.6%	
Full Enclosure		15.1%	
Finishing Trades	BB+FO	3.0%	9.8%
Flooring	FO		7.0%
Interior Trim Carpentry	FO		3.0%
Interior Doors	FO		1.6%
Ceramic Tile	FO		.7%
Cabinets and Vanities	FO		4.2%
Appliances	FO		1.7%
Rough and Finish Plumbing	BB+FO	1.2%	5.0%
Rough and Finish Electrical	BB+FO	1.3%	2.3%
Lighting Fixtures	FO		1.0%
Completion		4.8%	
Specialties	BB+FO	3.6%	3.2%
Other	BB+FO	1.1%	1.0%
TOTALS		57.4%	42.6%

Note 1: Dividing basic cost components this way, using a conventional line item breakdown, indicates the potential benefits from systematic and efficient organization of that % of total costs belonging to the "fit-out".

Note 2: Most "fit-out" work uses higher value added components, most frequently subject to buyer choice, life style variation, high maintenance and shorter use life.

Note 3: Separation of Fit-Out and Base Building stages of work, disentanglement of subsystems within the Fit-Out, and use of Fit-Out installation teams produce an efficient process which matches rather than anticipates (changing) household demands.

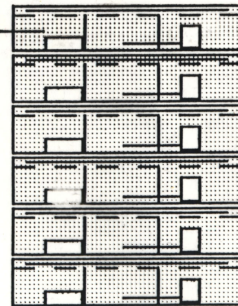
1955 - 1975



Base Building Level

In early examples of Open Building architecture for office buildings, investment in base building work exceeded that for fit-out. Most components of the mechanical systems were in the base building, for example. Buildings were expected to have a long life, and so all parts were integrated to last.

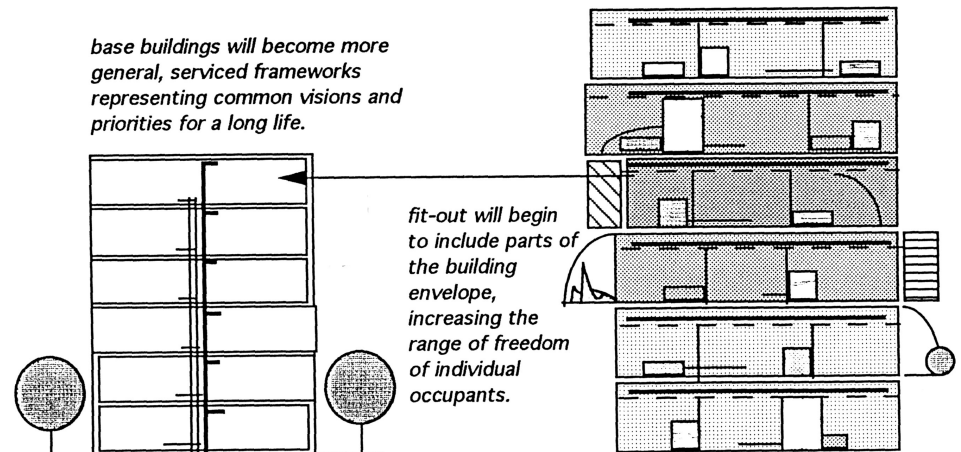
Further, fit-out tended to be uniform in both layout and hardware. The state of the art at the time limited the ability to make variety efficient.



Fit-out Level

Open Building is evolving...

1995 - 2015



base buildings will become more general, serviced frameworks representing common visions and priorities for a long life.

fit-out will begin to include parts of the building envelope, increasing the range of freedom of individual occupants.

Base Building Level

Fit-out Level



Life cycle: 50-100 years
long-term investment,
unchangeable



Life cycle: 15-50 years
medium-term investment,
adjustable



Life cycle: 5-15 years
Short-term investment,
changeable

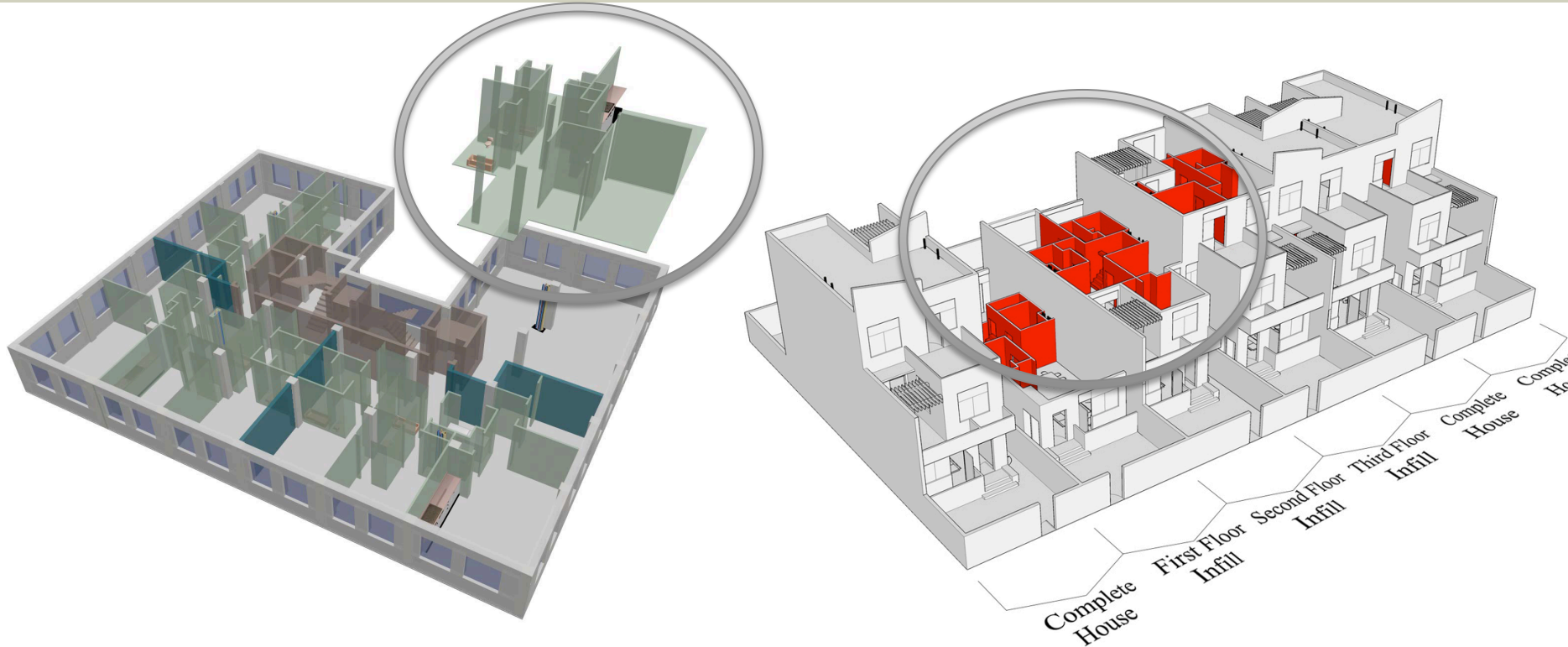
Source: Office of Buildings and Properties, Canton Bern, Switzerland

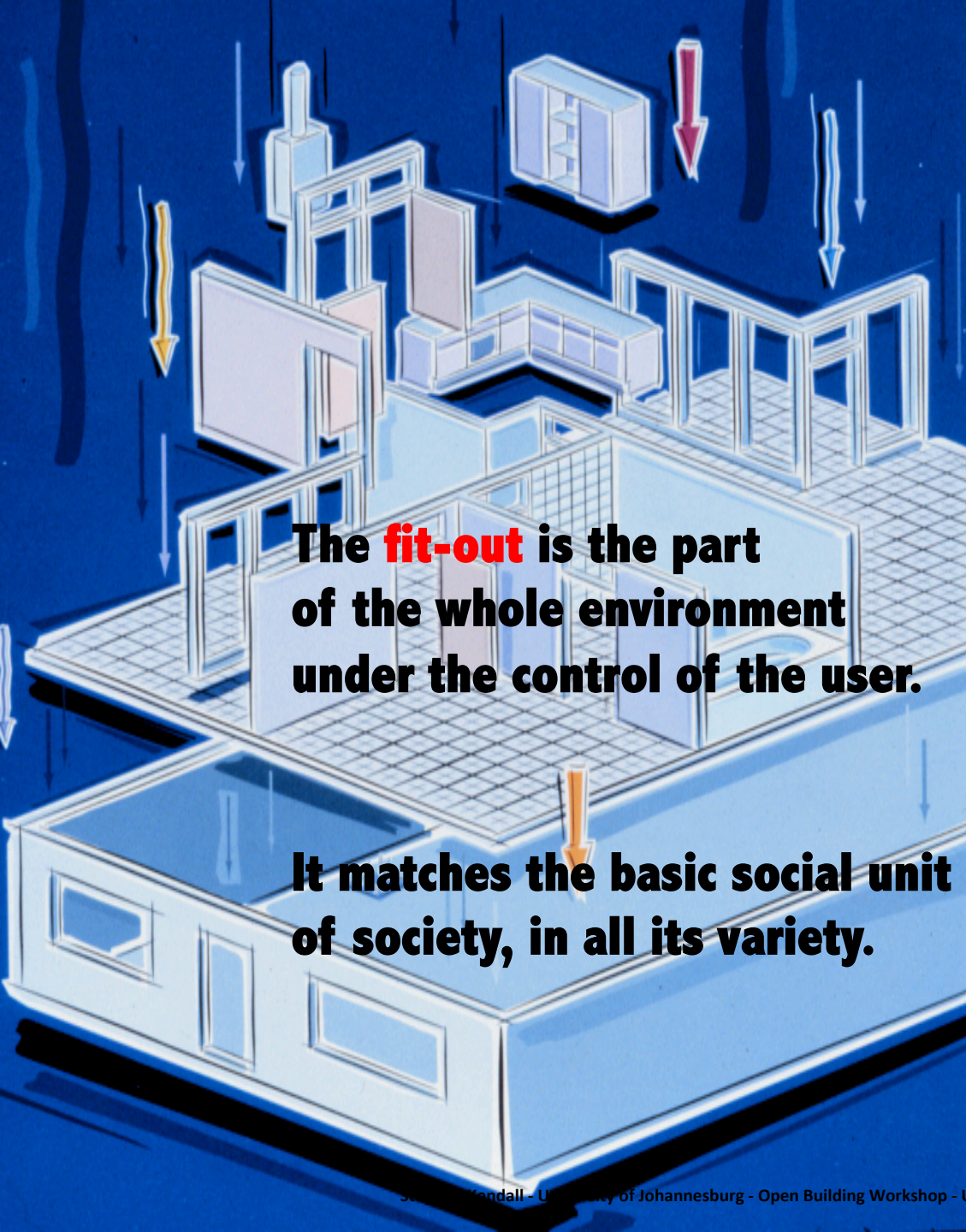
Open Building makes Sustainable Assets

Looking to the future

a fit-out industry

delivering variety efficiently...enabling change without waste and conflict





The **fit-out** is the part of the whole environment under the control of the user.

It matches the basic social unit of society, in all its variety.





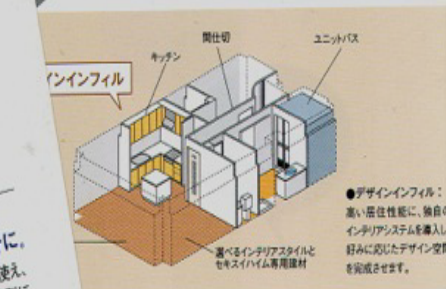
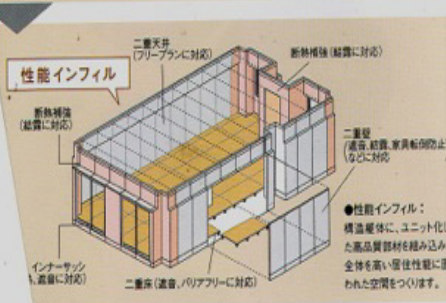
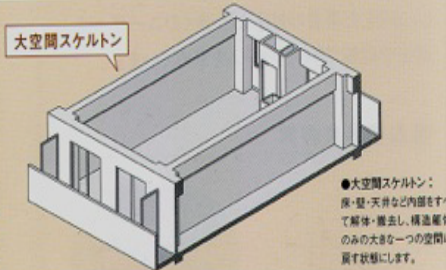
携帯電話で
ネクストインフィル工法の
詳細をご覧ください。

In Japan

アまで、
ます。

質な部材をユニット化することで、
同様の安心・快適な住空間を実現する—

NEXTInfill.



nextINFILL (now ECOCUBE),
A single apartment unit entirely
renovated in several weeks.
Early signs of an entirely new
industry, with a potential
market comparable in size
to the automobile industry.

ライフステージ別リフォーム例

将来を見据えた
フレキシブルなリフォームに。

〈リフォーム例〉

家族構成
団35歳 團30歳 団15歳

家族の団楽を重視し、
子供の成長を育む空間設計に。
多目的に使える玄関ホールやリビング、
ゆとりある洗面・バスなど、家族が
いつでも楽しくふれ合える利便性の
高い空間に設計。

家族構成
団45歳 團40歳 団15歳・10歳

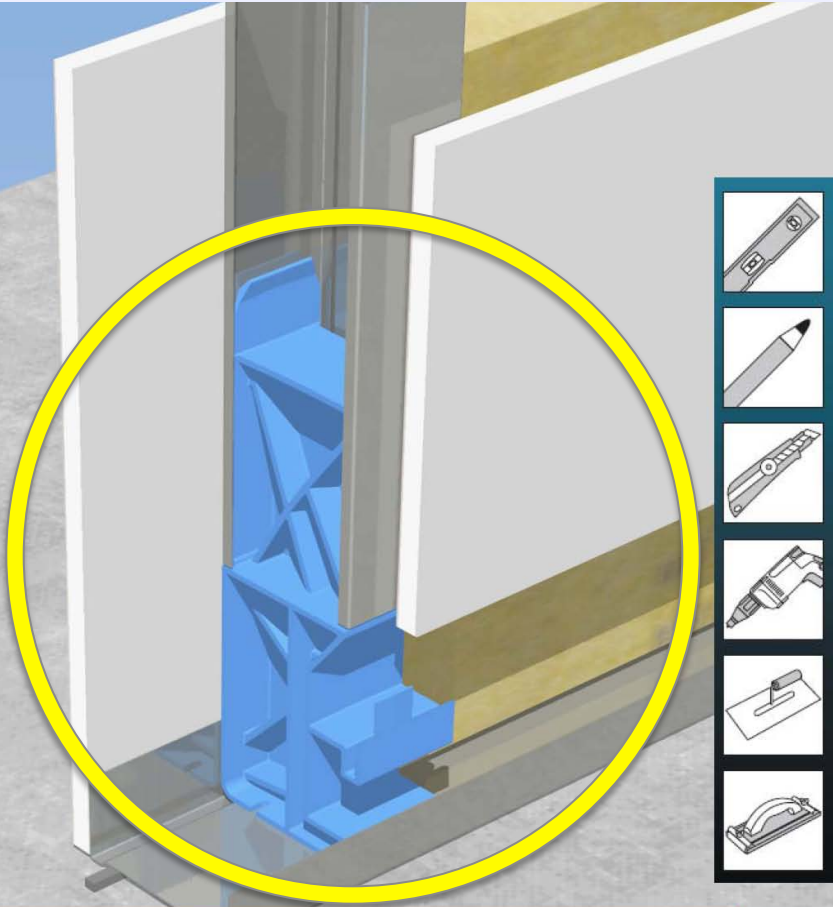
子供のプライバシーを確保し、
収納も充実させた設計に。
成長した子供のプライバシーを重視し、
独立した子供部屋を確保。洗面・
バスもゆったりと、収納機能もより
充実させて設計。

家族構成
団65歳 團60歳 団独立

夫婦がお互いの時間を
自由に楽しく過ごせる設計に。
広い土間のある玄関は多目的に使え、
ご近所との交流に。寝室は夫婦別に
設け、それぞれが時間を自由に使い
楽しめるように設計。

Disclaimer
This is an unofficial translation for internal use by Infill Systems Delft NL only. No rights can be derived from this translation; no responsibility can be accepted for use or interpretation of the English texts.

Other building products
are available to
companies delivering
fit-out services



Gyproc Cable Stud[®]

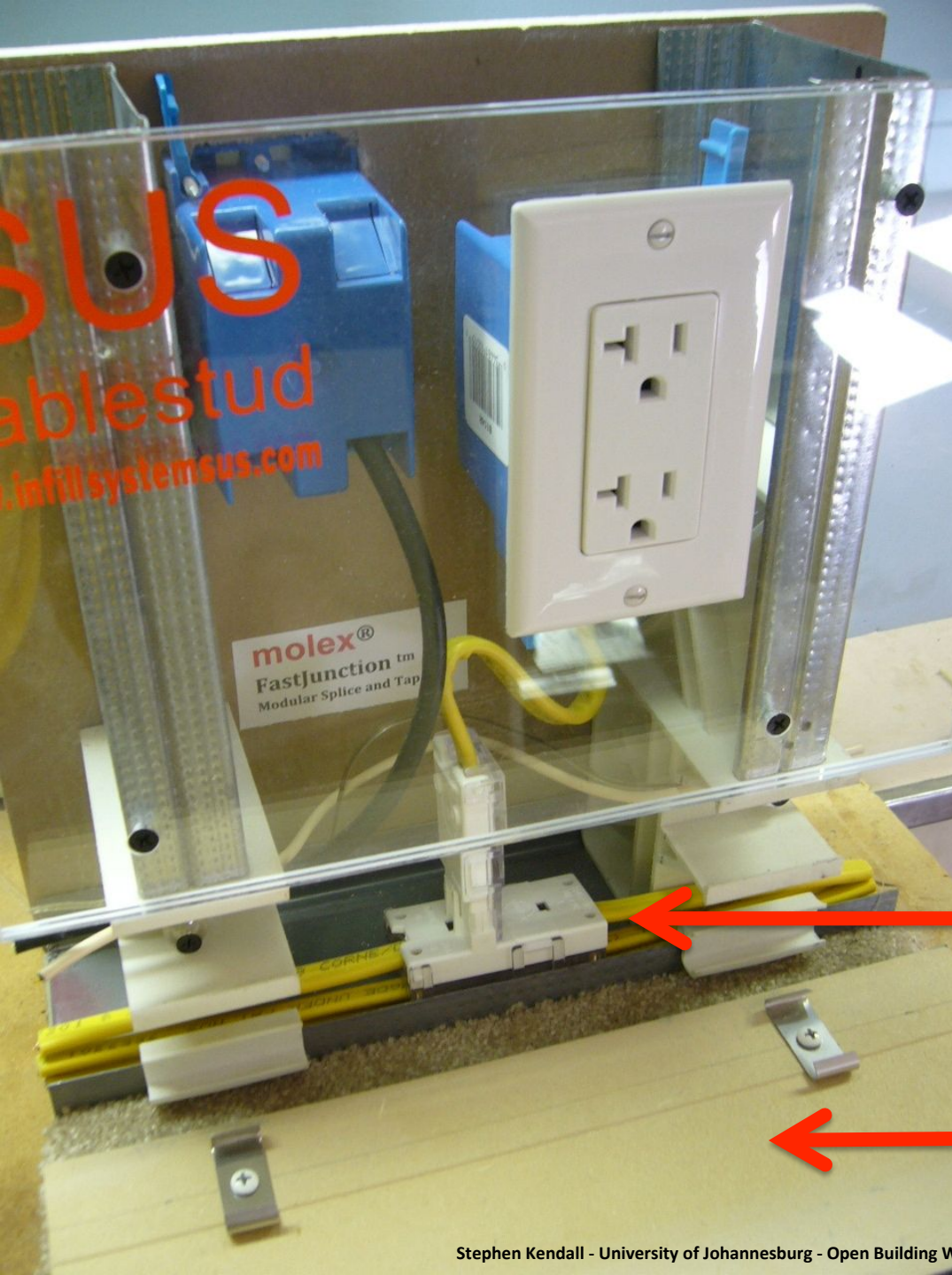
Installation instructions

Gyproc, uw gids in gips

TVE
Januari 2009



A field of endeavor for
product designers...



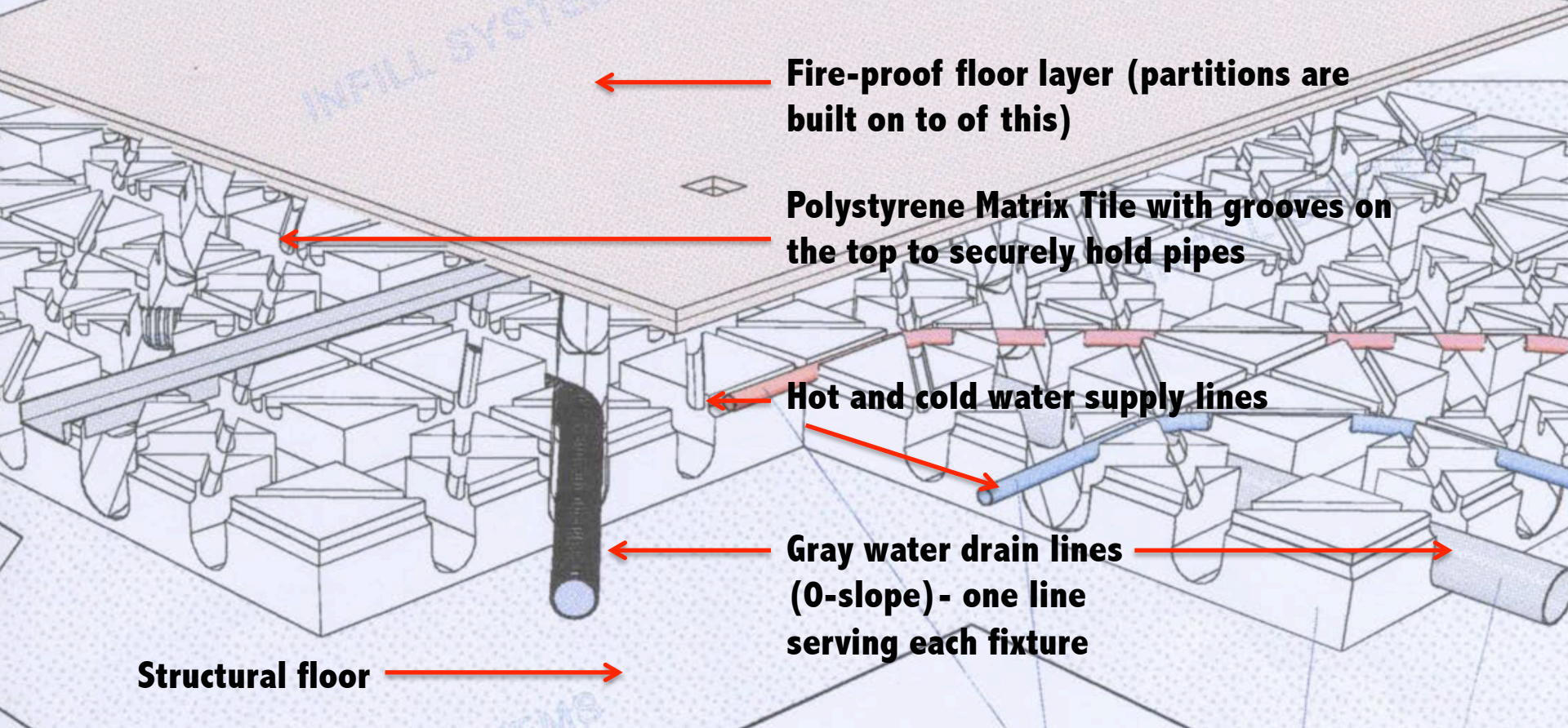
CABLESTUD for wiring management

Outlets anywhere, anytime.

Wiring connections made behind a removable baseboard/skirt

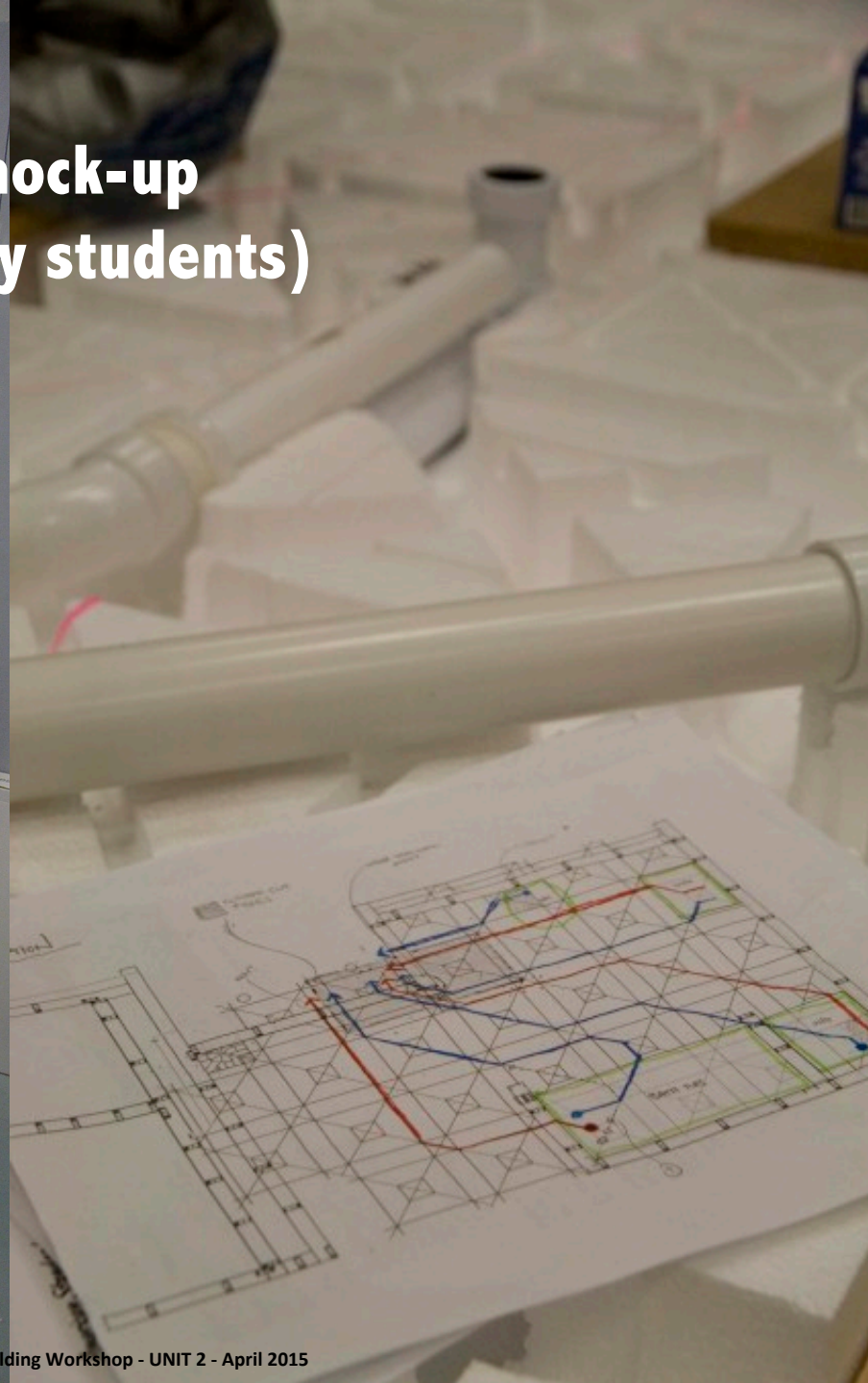
Removable baseboard/skirt

The MATRIX TILE SYSTEM for pipe management



(Patents for CABLESTUD and MATRIX TILE SYSTEM are held by INFILL SYSTEMS BV, the Netherlands)

A full-scale mock-up (built with my students)



In new construction





...and in upgrading the existing building stock

Is there a contradiction between what I am saying and these realities?




...none of what I am saying is important unless our goal is to recognize and support the aspirations of individuals living together, over time!

Now....

**PREPARING
STUDENTS for
REAL**



- 
- A multi-story brick building with a modern architectural style. The building features a prominent vertical metal column on its facade and balconies with glass railings. The ground floor has a shop named 'PHUMULANI MINI MARKET' with a 'Coca Cola' sign. A white van is parked on the street in front of the building. A person is standing near the entrance of the shop. The sky is clear and blue.
- Some questions
 - Some theory
 - Some examples

The built environment is never finished, right?



Isn't it true that there is no master puppeteer at work in the making and transforming of built environment?

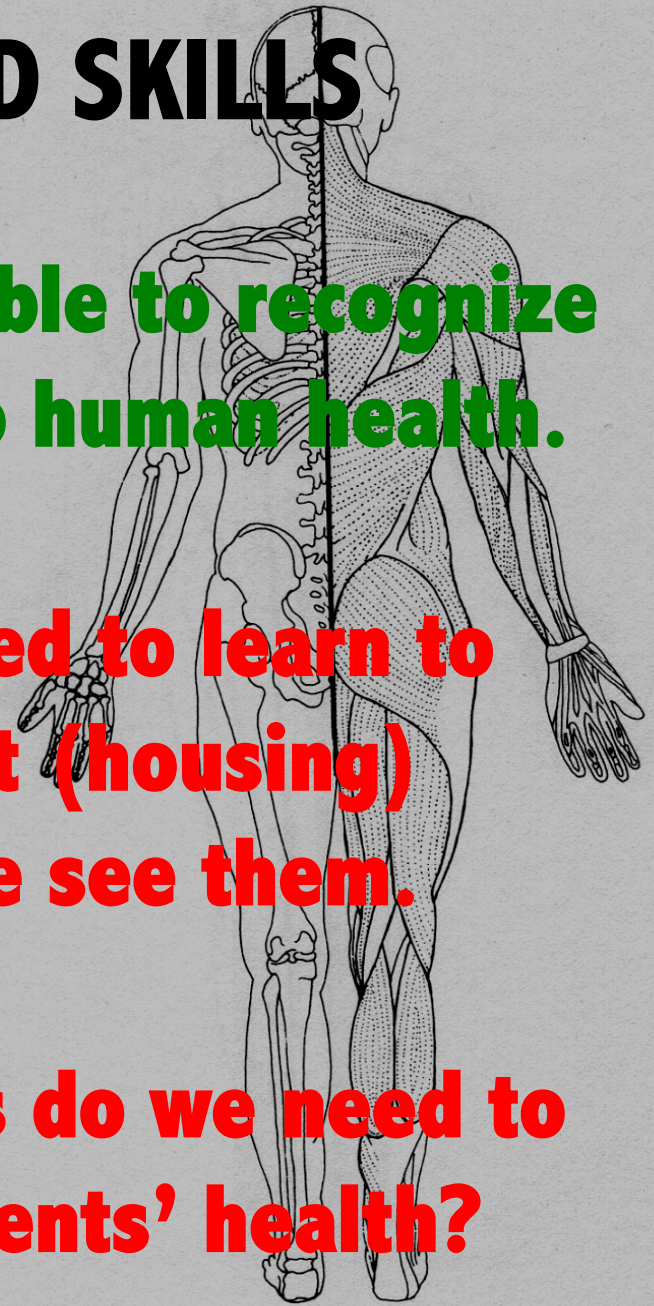
(many professions takes part, as well as inhabitants)

KNOWLEDGE AND SKILLS

Doctors are trained to be able to recognize the conditions that lead to human health.

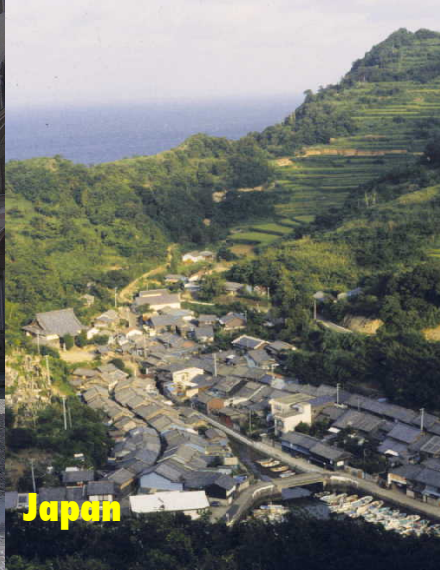
Design professionals need to learn to recognize healthy built (housing) environments when we see them.

What knowledge and skills do we need to cultivate built environments' health?





Italy



Japan



Spain



China



Indonesia



Mexico

We know of everyday environment, sometimes of quite extraordinary quality, that often comes about without much if any help from architects or other design experts.

An aerial photograph showing a neighborhood with large, rectangular lots. Each lot contains a single, small, simple building. There are significant areas of grass and open space between the buildings. The streets are wide and the overall density is low.

From modest beginnings....

An aerial photograph of the same neighborhood, now completely transformed. The large lots have been replaced by a dense grid of small, multi-story buildings. The streets are narrower and more closely packed. The overall appearance is that of a thriving, high-density urban area.

To thriving, dense neighborhoods

By a process of incremental development...





**No matter the income level, the built environment
gradually transforms
if it has good bones, organs and nutrients....**

装饰部
黄 隔断 防盗网

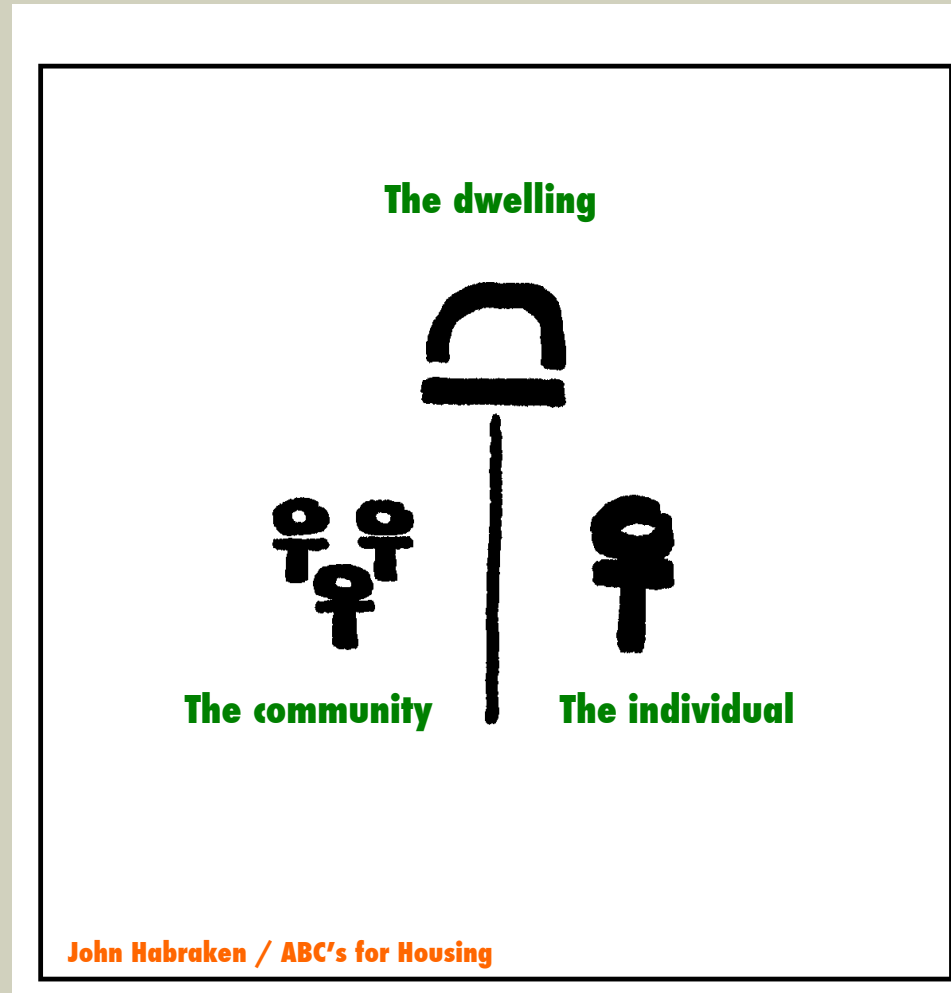
**Supported by
industrial
producers and
sophisticated
R&D serving
both the
informal and
formal
markets**



A theory about change:

- The city structure is permanent to the urban fabric
- The urban fabric is permanent to the building
- The building is permanent to the fit-out

AND...housing results from action in two spheres



Some big questions come from this understanding:

1. What **BUILT FORM** should the shared environment take –
and the individual environment on the other hand?
2. As the built environment continues to transform,
who controls which parts?
3. **What roles can architects and other design professionals
play given this understanding?**



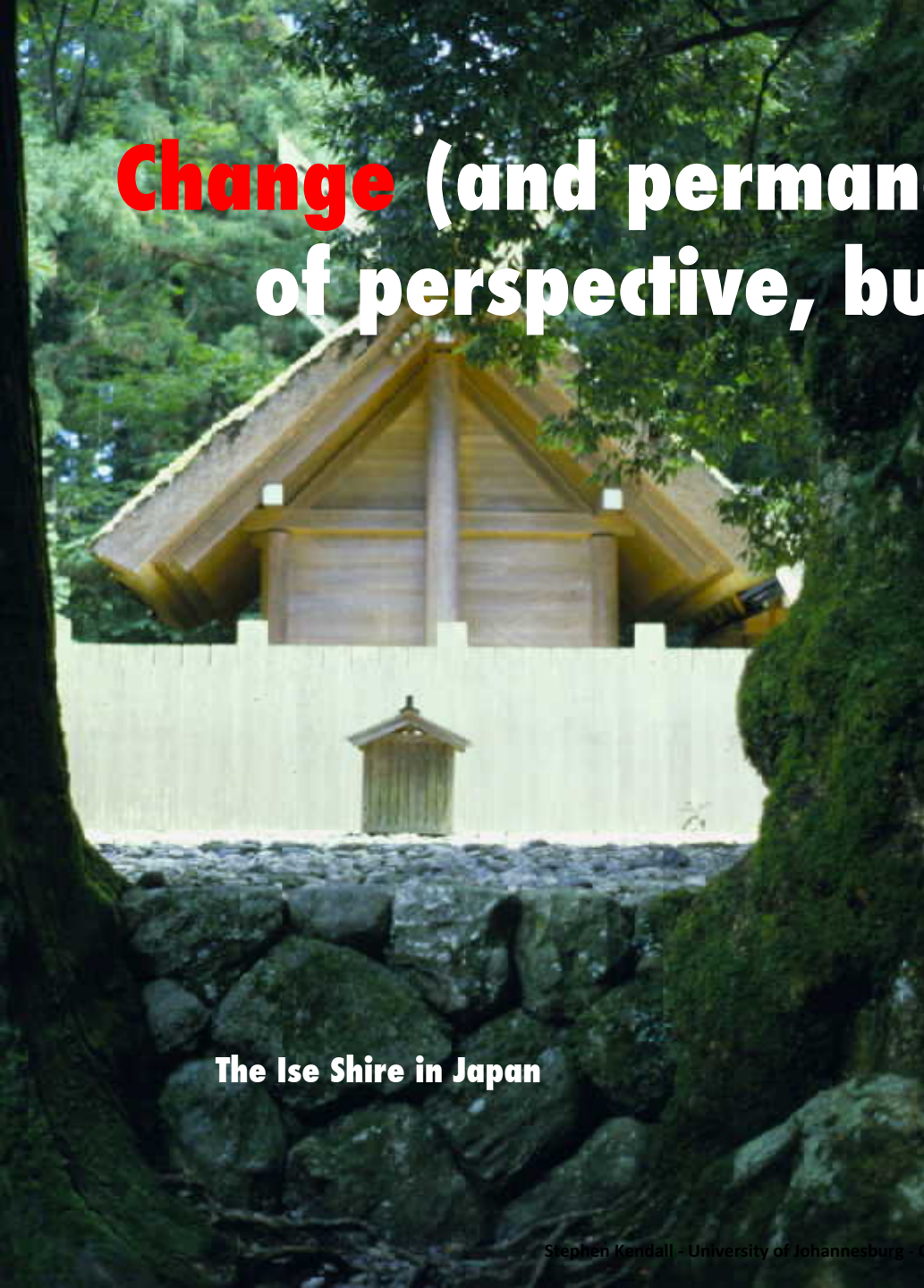
Control (territory)



Signs of territory

Both visible and invisible

Change (and permanence) ... a matter of perspective, but is inevitable



The Ise Shire in Japan



Remodeling an apartment in Beijing (or Port Elizabeth)



We recognize “good” environment when it can gradually evolve and change (avoiding rigidity and uniformity which no one likes)

Townhouses in transformation



An interior undergoing transformation



These changes add up to a huge economic reality



**SO...we need to teach at least these four
fundamental concepts:**

DISENTANGLEMENT

CAPACITY

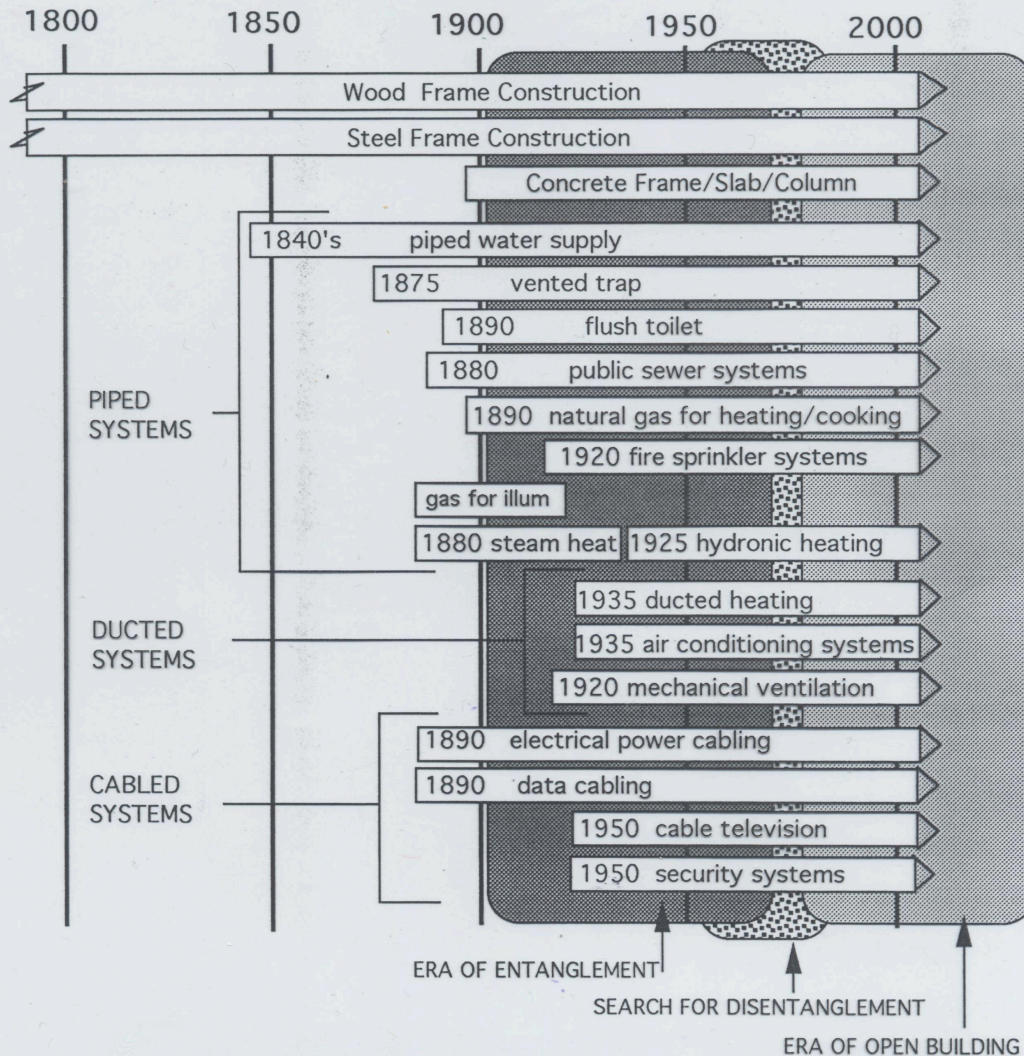
DOMINANCE

MAKING and USING CONSTRAINTS

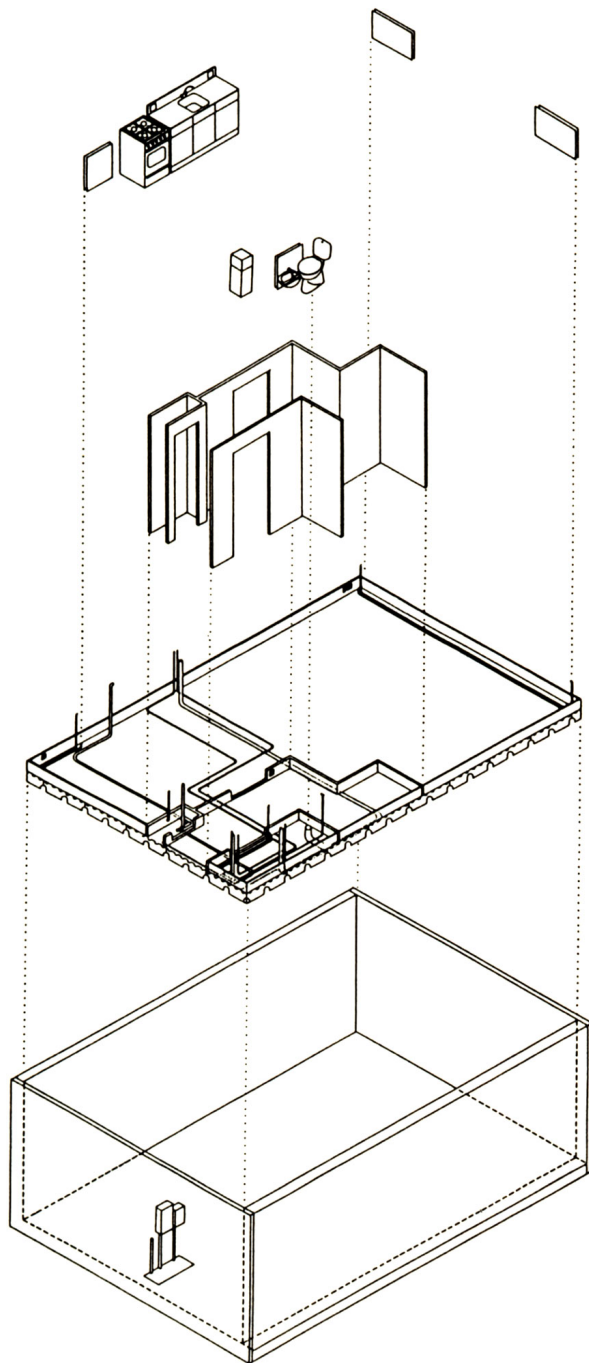


ENTANGLEMENT

Introduction of Technical Systems into Building Construction



The gradual encroachment of resource systems (MEP) into architecture is a reality we have not yet fully mastered...

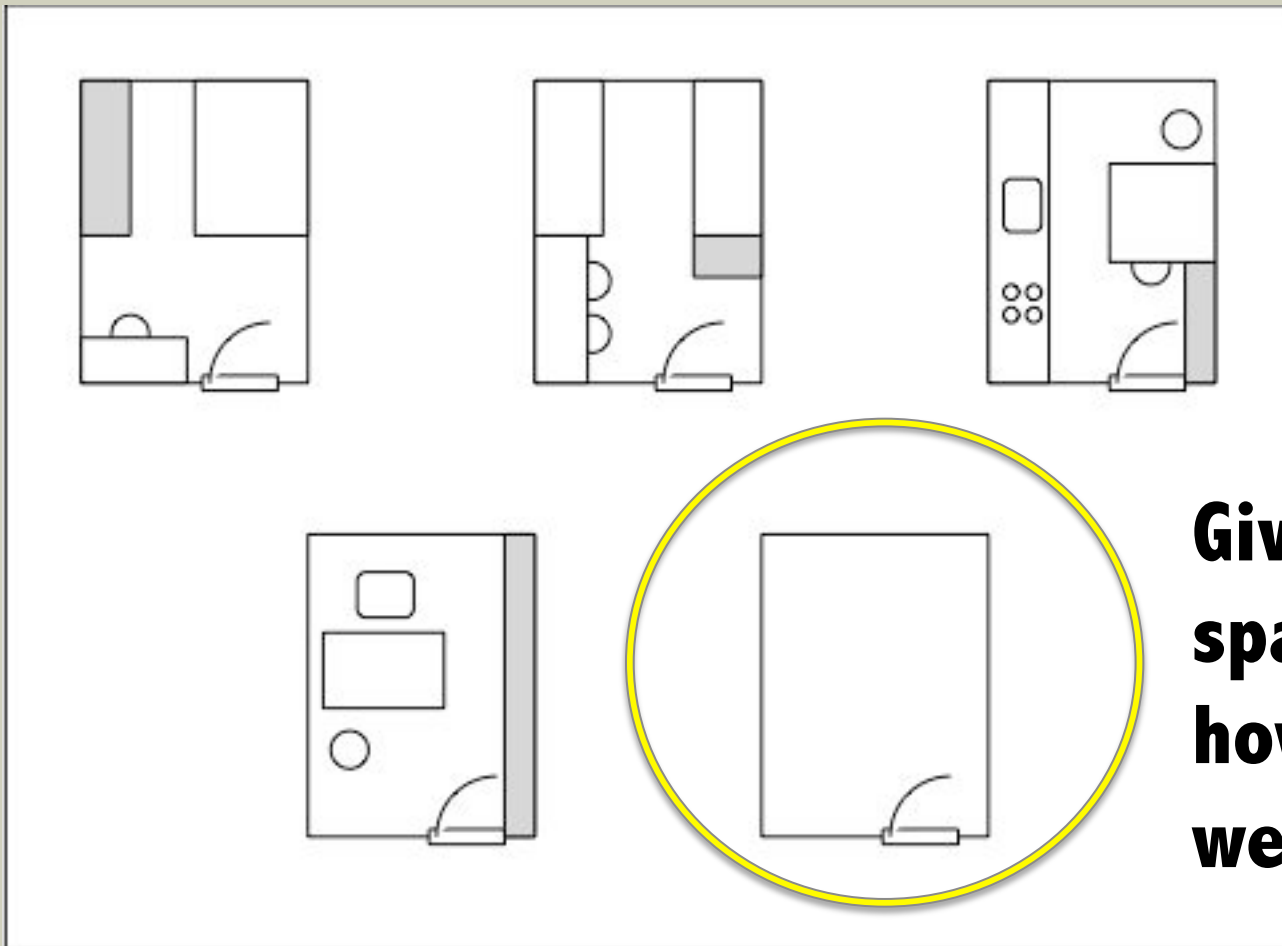


DIS-ENTANGLEMENT

means:

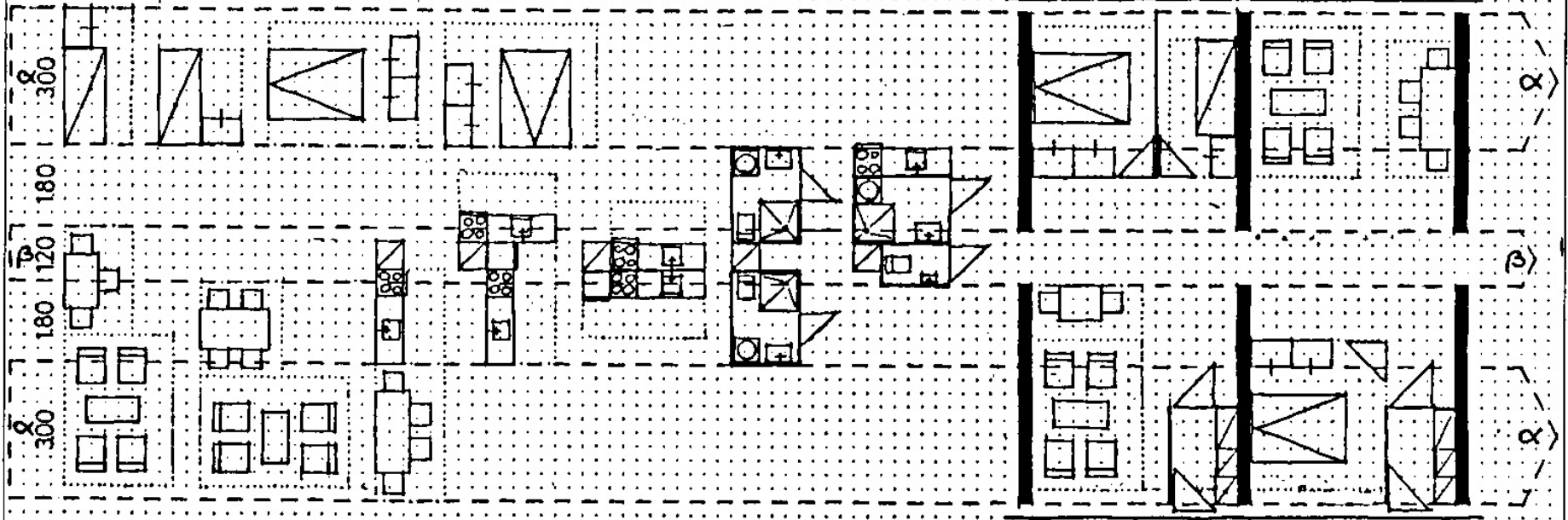
- 1. Separating long-lasting parts from parts with shorter lives;**
- 2. Assuring the replacement of one part by a similar part performing the same function;**
- 3. Assuring the autonomy of units of inhabitation**

CAPACITY



**Given a space,
how can
we use it?**

CAPACITY



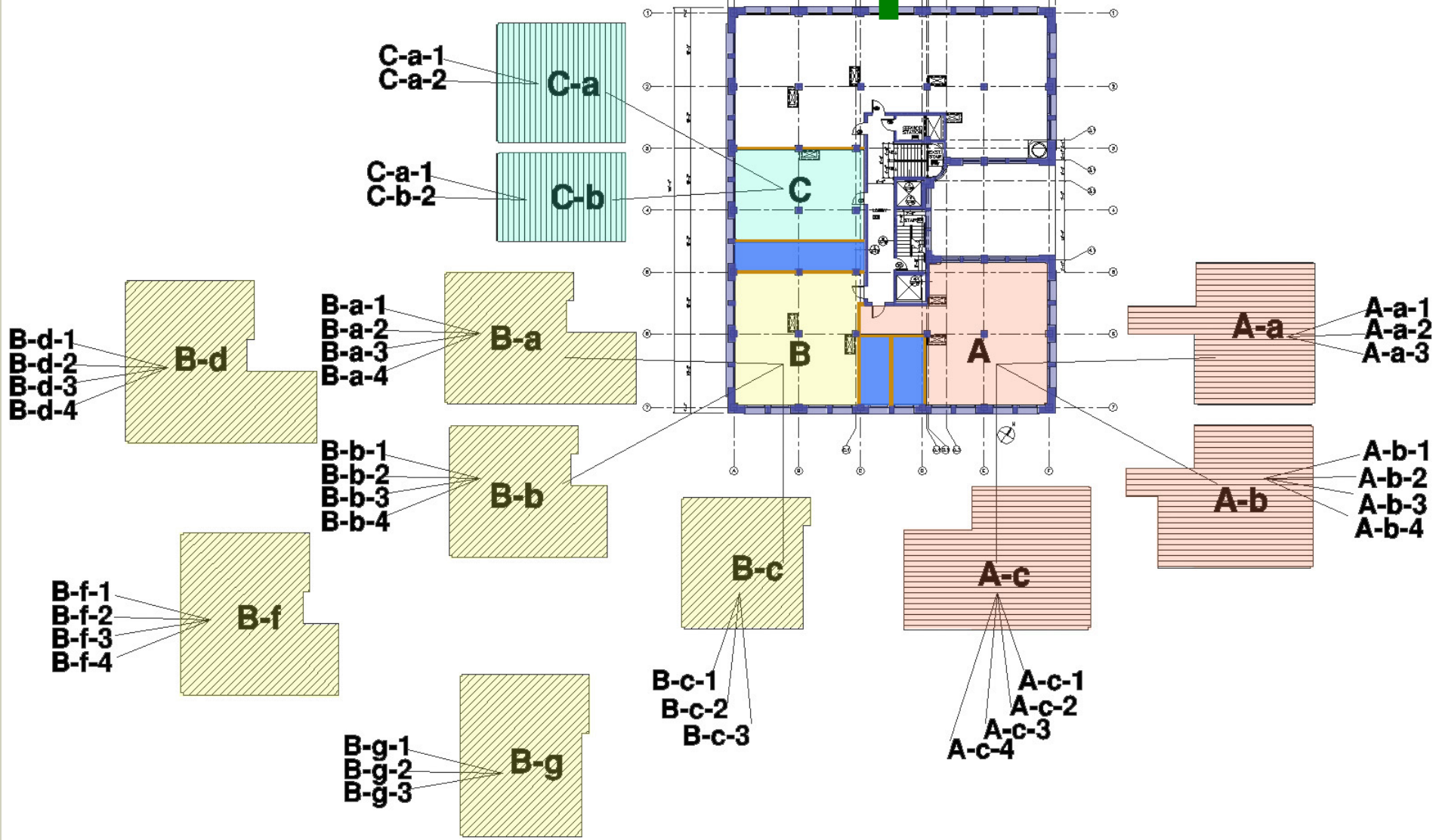
Functions

Given a standard structural bay, what functions can be accommodated?

CAPACITY – in new row-houses

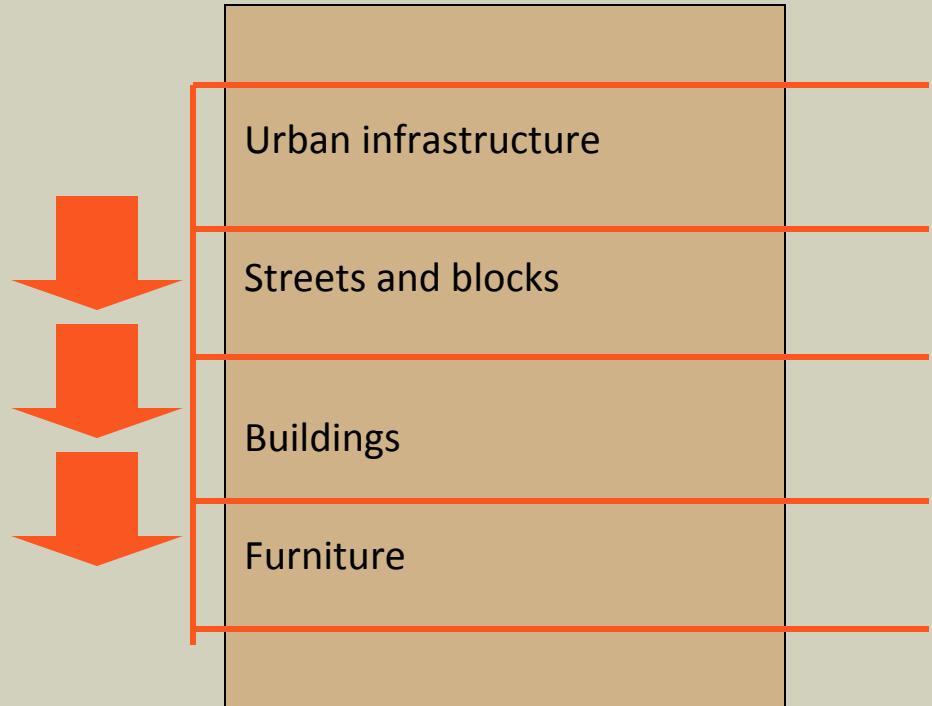


CAPACITY – in adaptive reuse

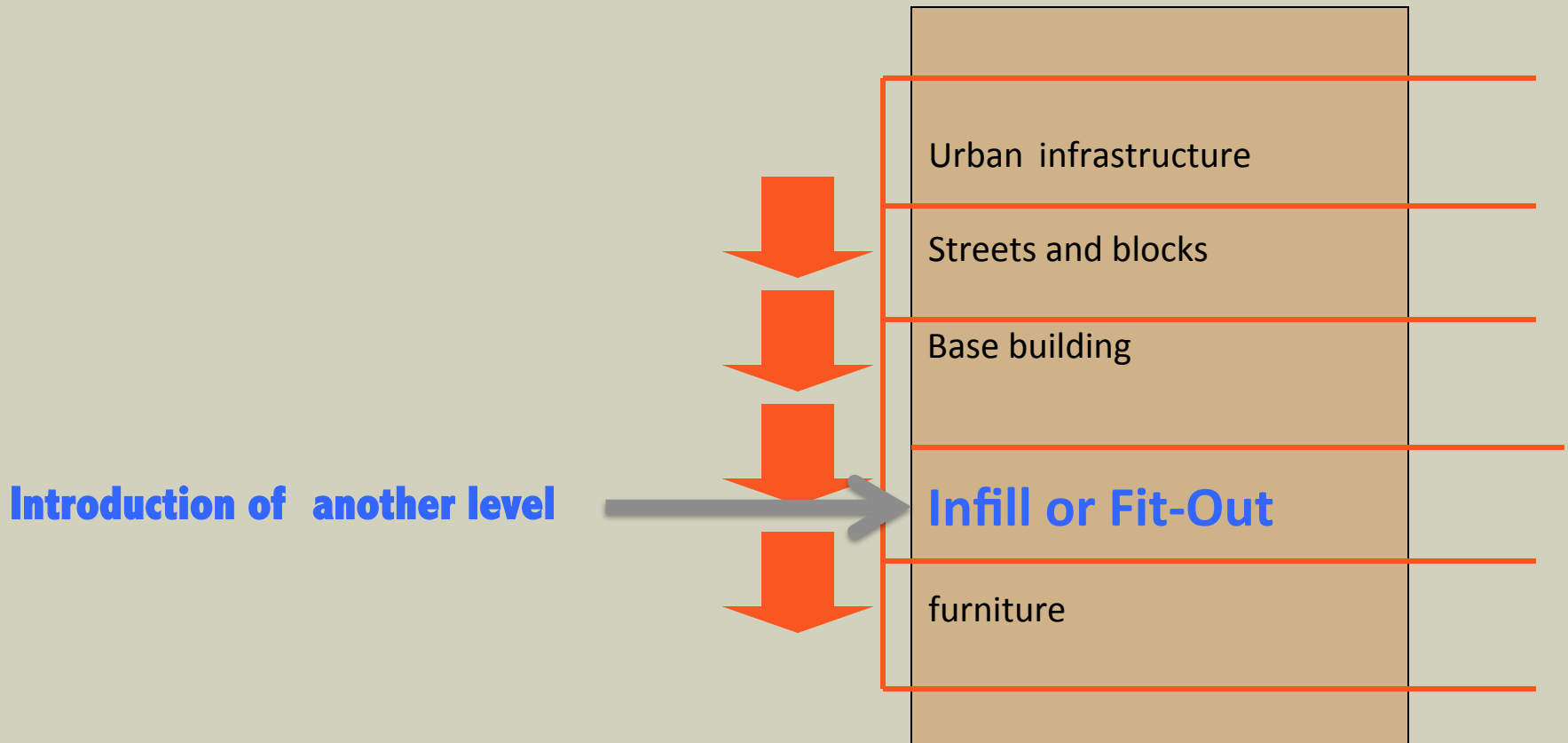


DOMINANCE and LEVELS OF INTERVENTION

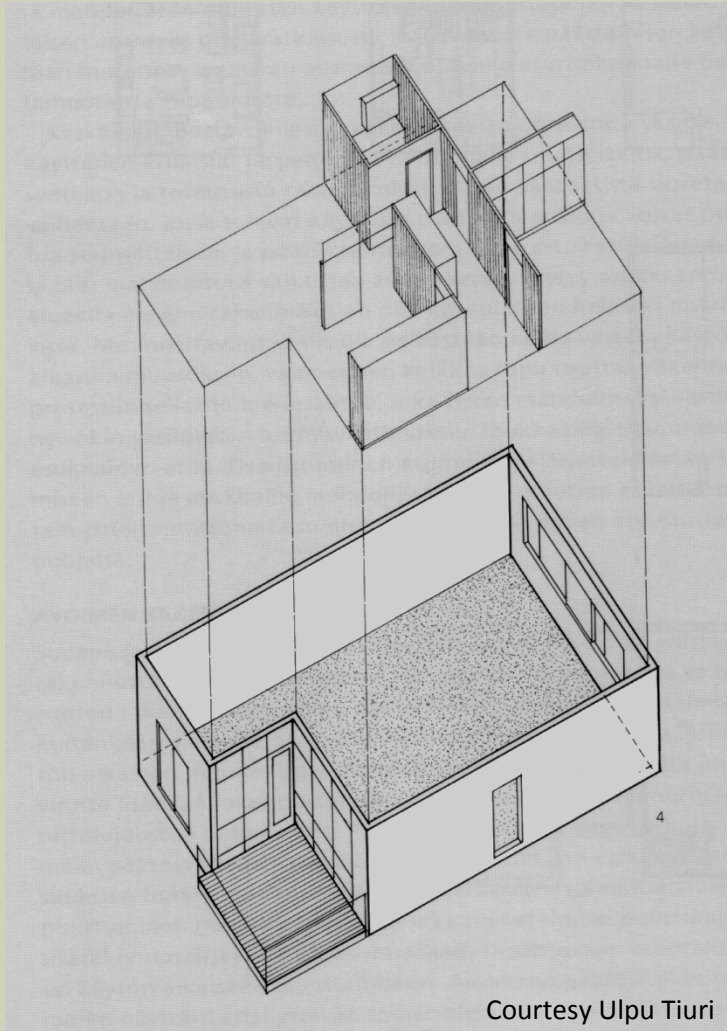
- **DISTRIBUTION OF DESIGN CONTROL**
- **Levels and the identity of professionals**
- **A vertical relationship among designers**



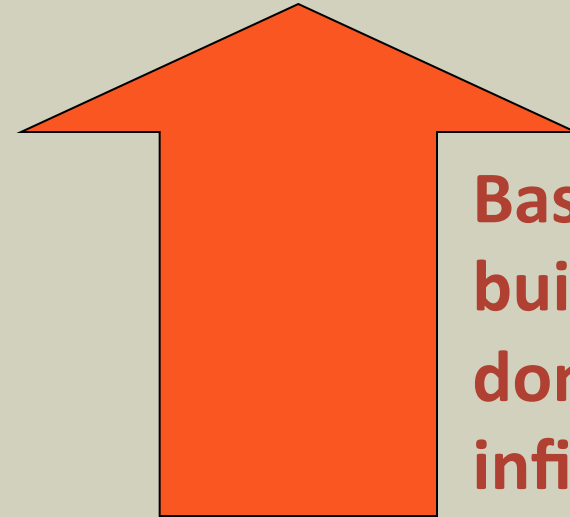
Another level has emerged (this is not fiction)



DOMINANCE




Fit-out can change without disturbing the base building



**Base
building
dominates
infill**

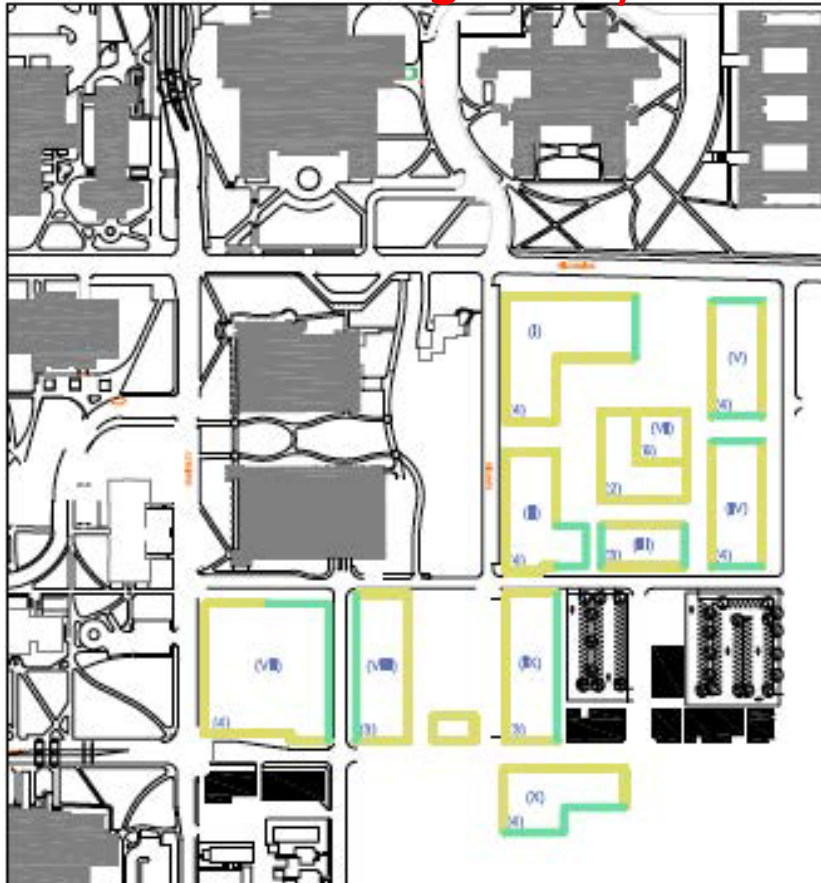


When the base building changes, fit-out must adjust



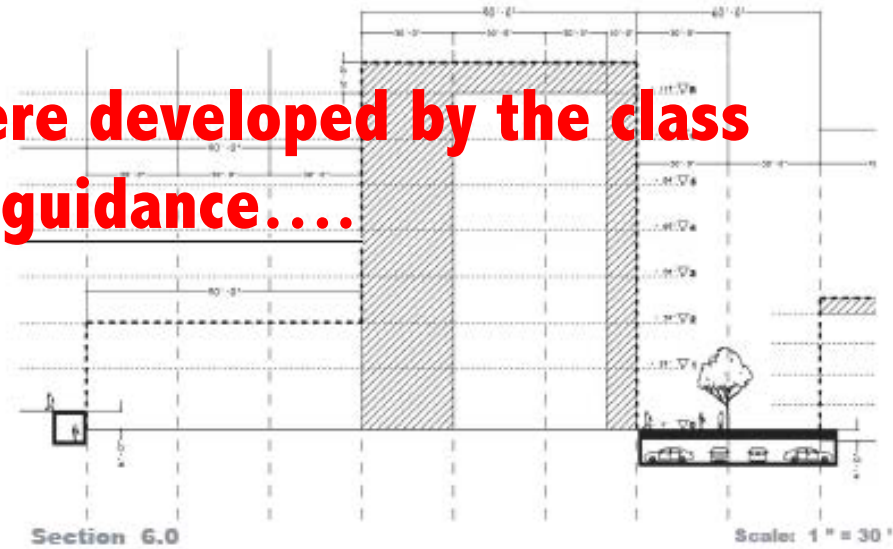
Making and using constraints (handing-off)

Here, urban design “rules” were developed by the class of students together, with my guidance....



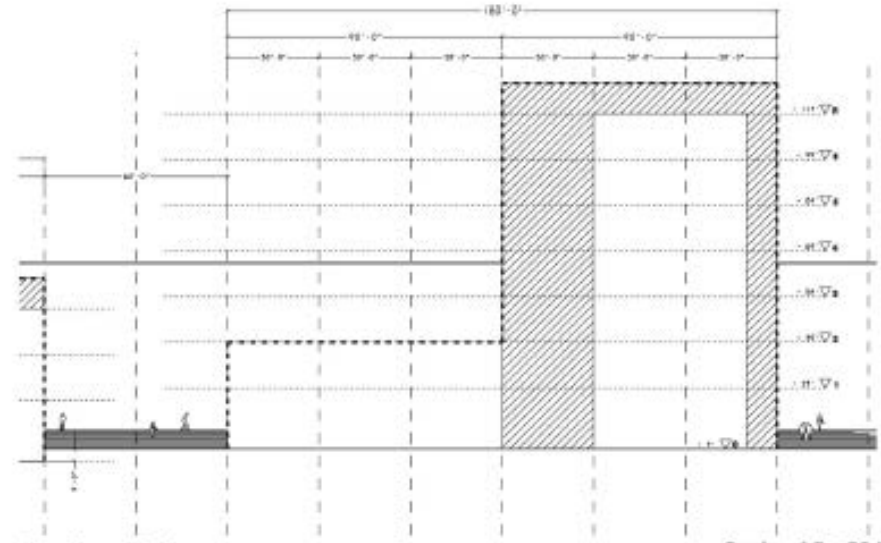
- Building front
- Building back

Building front defines the sides of building which must appropriately address the adjacent space as a building front. Building back provides the framework in which one can locate service entries, but is not obligated to.



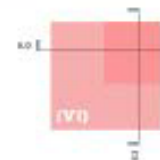
Section 6.0


Scale: 1" = 30'



Section 6.1

Scale: 1" = 30'



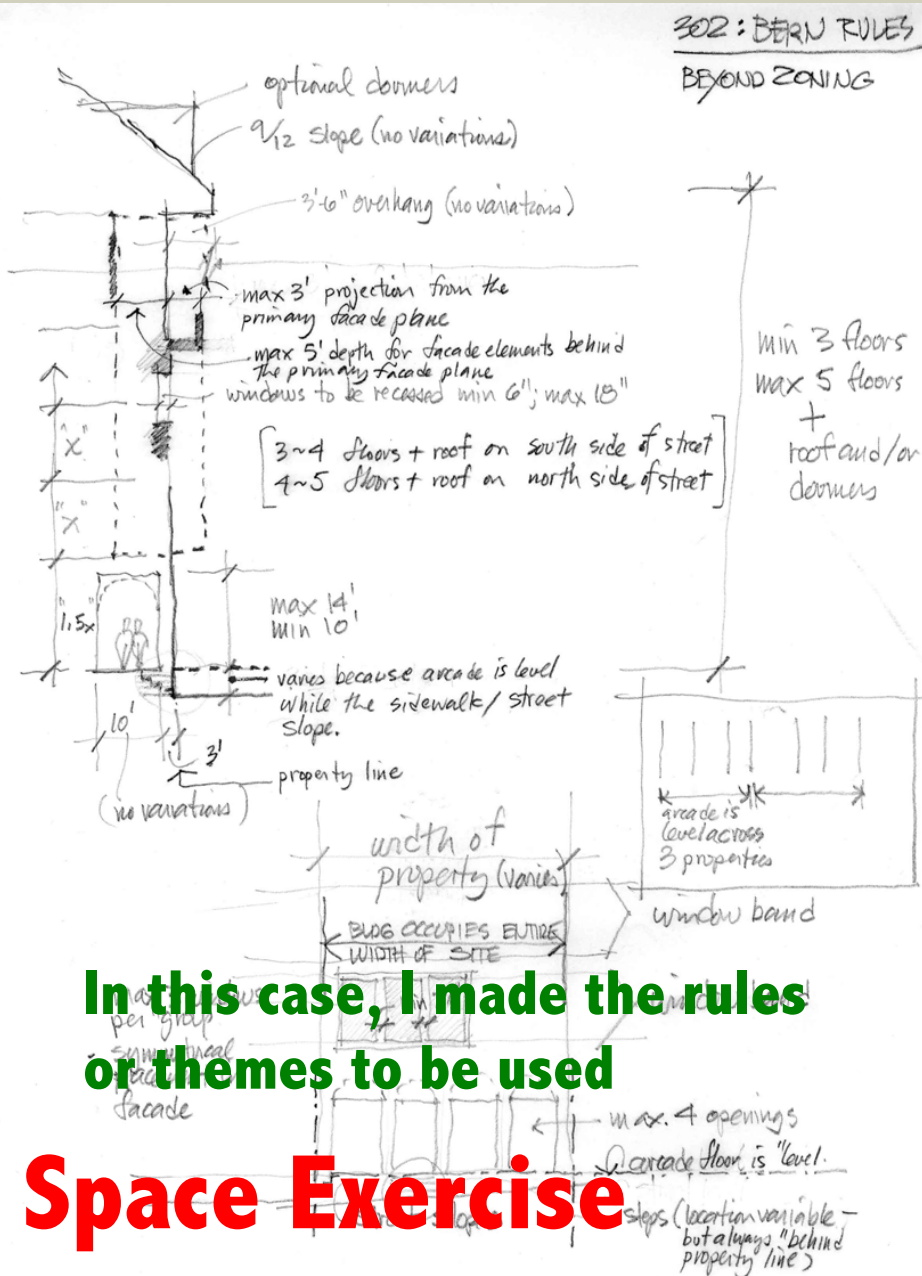
An aerial photograph of a city block, showing a variety of building footprints and shadows cast by the sun. The buildings are mostly rectangular and have different rooflines, some with flat roofs and others with gabled or pitched roofs. The shadows are long and cast towards the right, indicating a low sun position. The ground is a mix of paved areas and green spaces with trees. The overall scene is a dense urban environment.

Seven project proposals sharing the same constraints or rules or themes...



- Studying precedents as one basis for designing;
- Documenting themes, types, patterns and systems
- Selecting constraints (rules) we want to follow.

The BERN Street Space Exercise



In this case, I made the rules or themes to be used



Each student was assigned a “property” and designed a “thick façade” using the prescribed themes...as a way to study coherent variety...





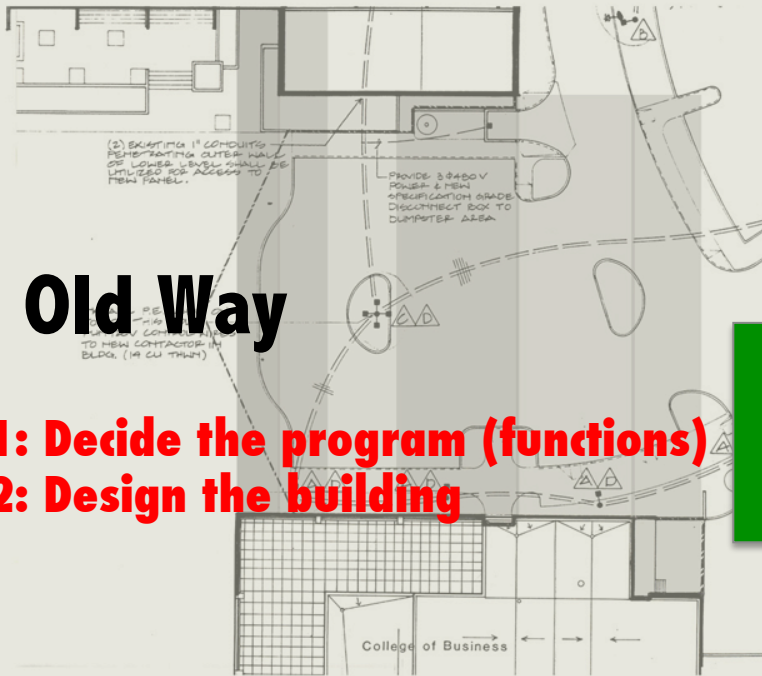
HOSPITALS ON THE TIME AXIS

Preparing Hospitals for Inevitable Churn:
A Proposed New Hospital Pavilion at the University of Chicago Medical Center

Ball State University Department of Architecture
Graduate Studio 501 / Fall 2009
Professor Stephen Kendall, PhD

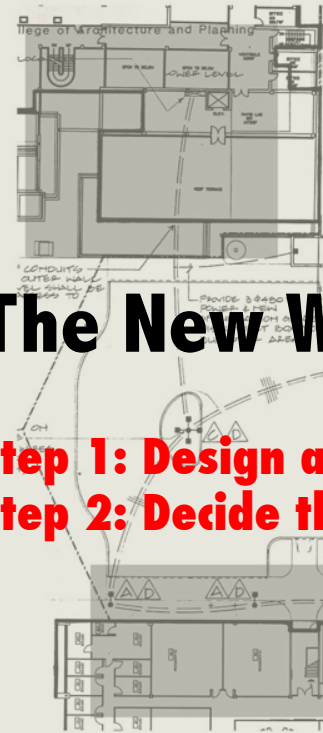
The Old Way

- Step 1: Decide the program (functions)
- Step 2: Design the building



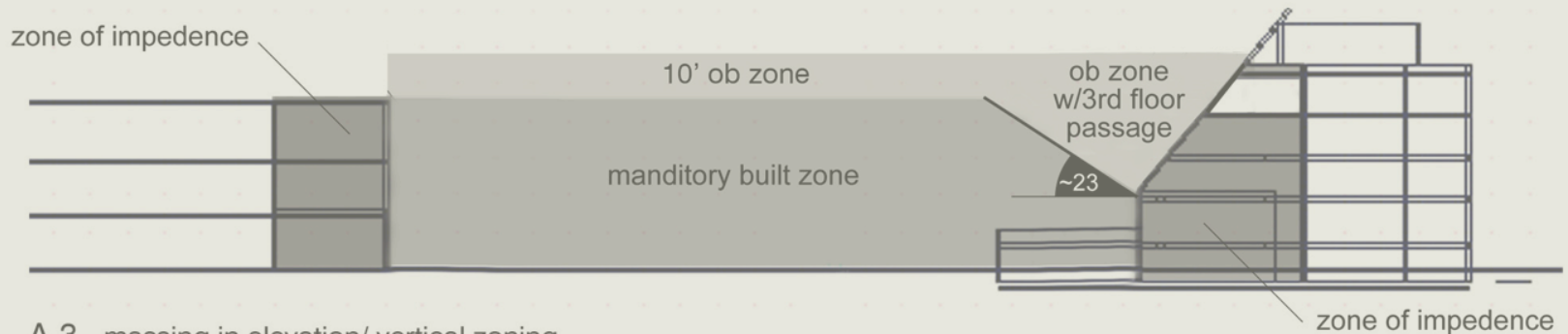
The New Way

- Step 1: Design an open building
- Step 2: Decide the fit-out



A-1_ increments of massing should correspond to existing adjacent massing

A-2_ maximum impedance on existing buildings



A-3_ massing in elevation/ vertical zoning

A shift of perspective is needed

*shift perspective

from monument

from static form

from function

from resource depletion

from unified design control

to

everyday environment

to

change

to

capacity

to

sustainability

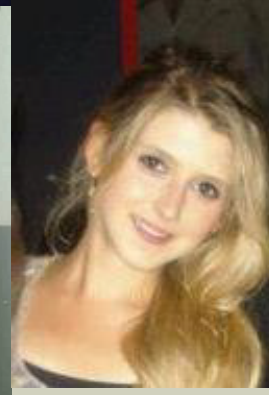
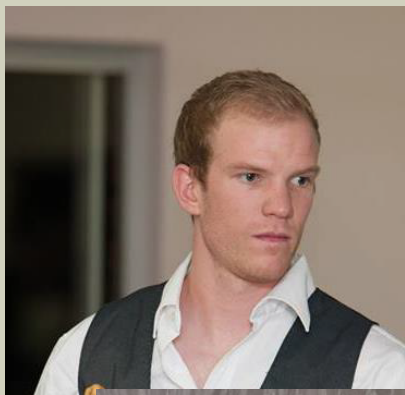
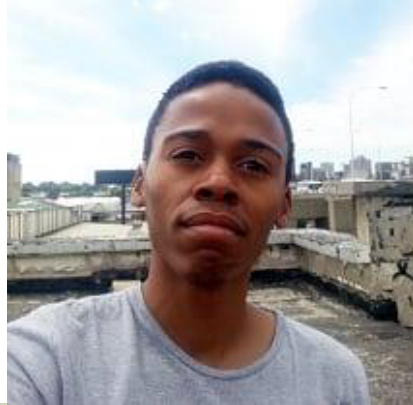
to

distributed design control

Habraken on the attitude of the methodologist and research

“For the methodologist whose position is inevitably academic, what happens in the field is of fundamental importance. It is our primary source of knowledge: the inescapable reality where habits and conventions make work possible and where new trends of working appear under the pressure of changing technology and evolving demographic and social forces.

The observation of this real world invites clarification of what is emerging, raises new questions to be answered, and opens the possibility of generalization and extrapolation that, in turn, must be tested against what is actually happening on the drafting tables, in the management meetings and on the building site.”



Thank you