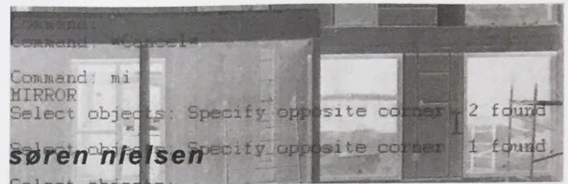

vandkunsten.com
MAX. 3000 KG.




AP 65 607



søren nielsen

```
Select objects:
Specify first point of mirror line: Specify seconc
Erase source objects? [Yes/No] <N>:

Specify base point or [Displacement] <Displacement
<use first point as displacement>:
Specify second point or [Exit/Undo] <Exit>: *Cance
```

DET ARKITEKTONISKE MOTIV

```
Command: Specify opposite corner:
Command: e
```

I SKITSERINGENS AKTØR-NETVÆRK

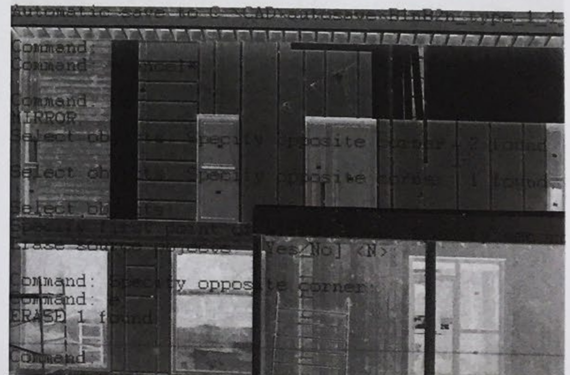
```
Command: co
COPY
Select objects: Specify opposite corner: 9 found

Select objects:
```

masterafhandling

```
Specify base point or [Displacement] <Displacement
<use first point as displacement>:
Specify second point or [Exit/Undo] <Exit>: *Cance

Command: s
STRETCH
Select objects to stretch by crossing-window or cı
Select objects: Specify opposite corner: 2 found

Select objects:

Specify base point or [Displacement] <Displacement
Specify second point or <use first point as displa
Command: *Cancel*

Command: di
DIST Specify first point:  Specify second point:
Distance = 2775.0,  Angle in XY Plane = 90.00,  Aı
Delta X = 0.0,  Delta Y = 2775.0,   Delta Z = 0.0
```

master i design 2007

```
Command: *Cancel*

Command: l
LINE Specify first point:
Specify next point or [Undo]:
Specify next point or [Undo]:
```




```
Command:
```

kunstakademiets arkitektskole

```
Command: *Cancel*

Command: mi
MIRROR
```

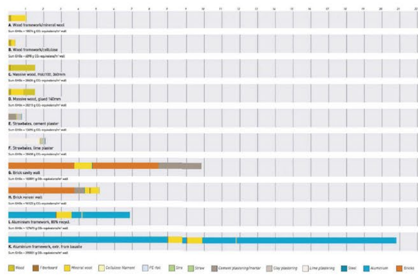
INDUSTRIAL PHD HALF-WAY REPORT JANUARY 27 2011

Tectonics of adaptability

Kunstakademiets Arkitektskole, Institut 2, Cinark
Industrial PhD Candidate: Søren Nielsen
PhD Supervisor, Academic: Olga Popovic Larsen
PhD Supervisor, Industrial: Jens Arnfred

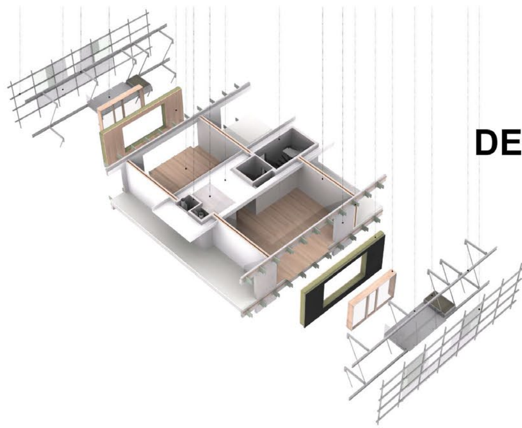
OBJECTIVE 1: The adaptability perspective

NEW NECESSITY



SAVING OF ENERGY CAPITAL

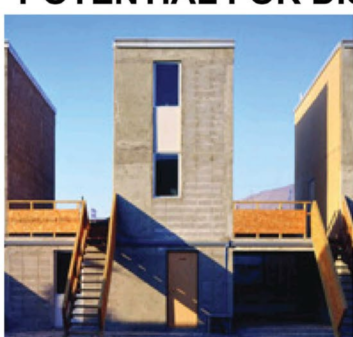
NEW METHODS

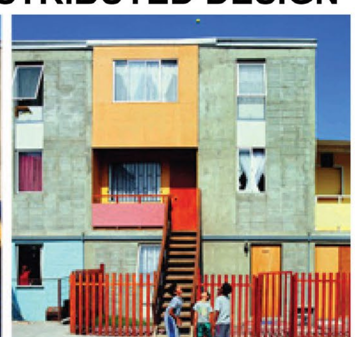


DESIGN FOR DECONSTRUCTION

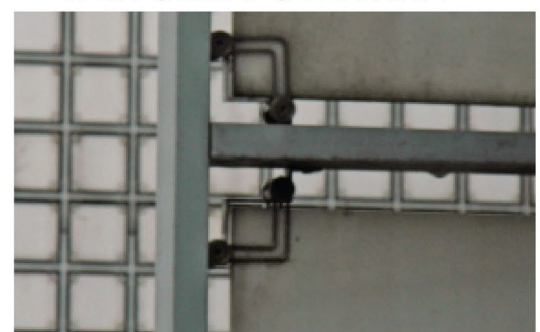
NEW QUALITIES

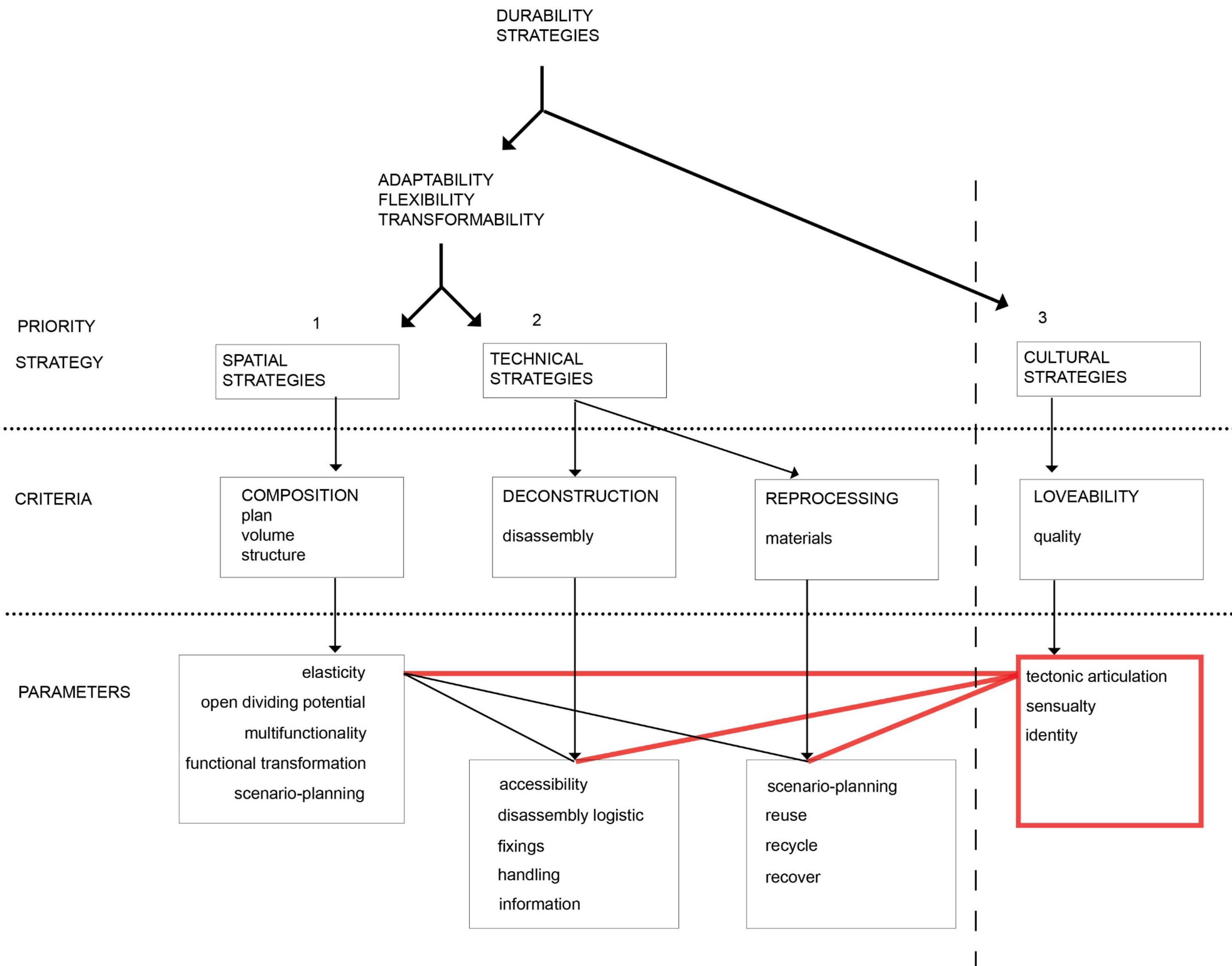
POTENTIAL FOR DISTRIBUTED DESIGN





TECTONIC POTENTIAL





Durability strategies

research focus (original contribution)

Vandkunsten, resource preservation hierarchy

	strategy	*criteria*
Plan A:	**CULTURAL**	***appreciation***
Plan B:	**FUNCTIONAL**	***robustness***
Plan C:	**TECHNICAL**	***reversibility***

architectural and social potential

OBJECTIVE 1: The adaptability perspective

IDEA OF BUILDING

DYNAMIC PROJECT

historic layers and traces
open work aesthetics
participative
robust

DURABILITY

STRATEGY

STATIC OBJECT

high profiled autorship
design aesthetics
impeccable
vulnerable

'LOW ROAD'

'HIGH ROAD'

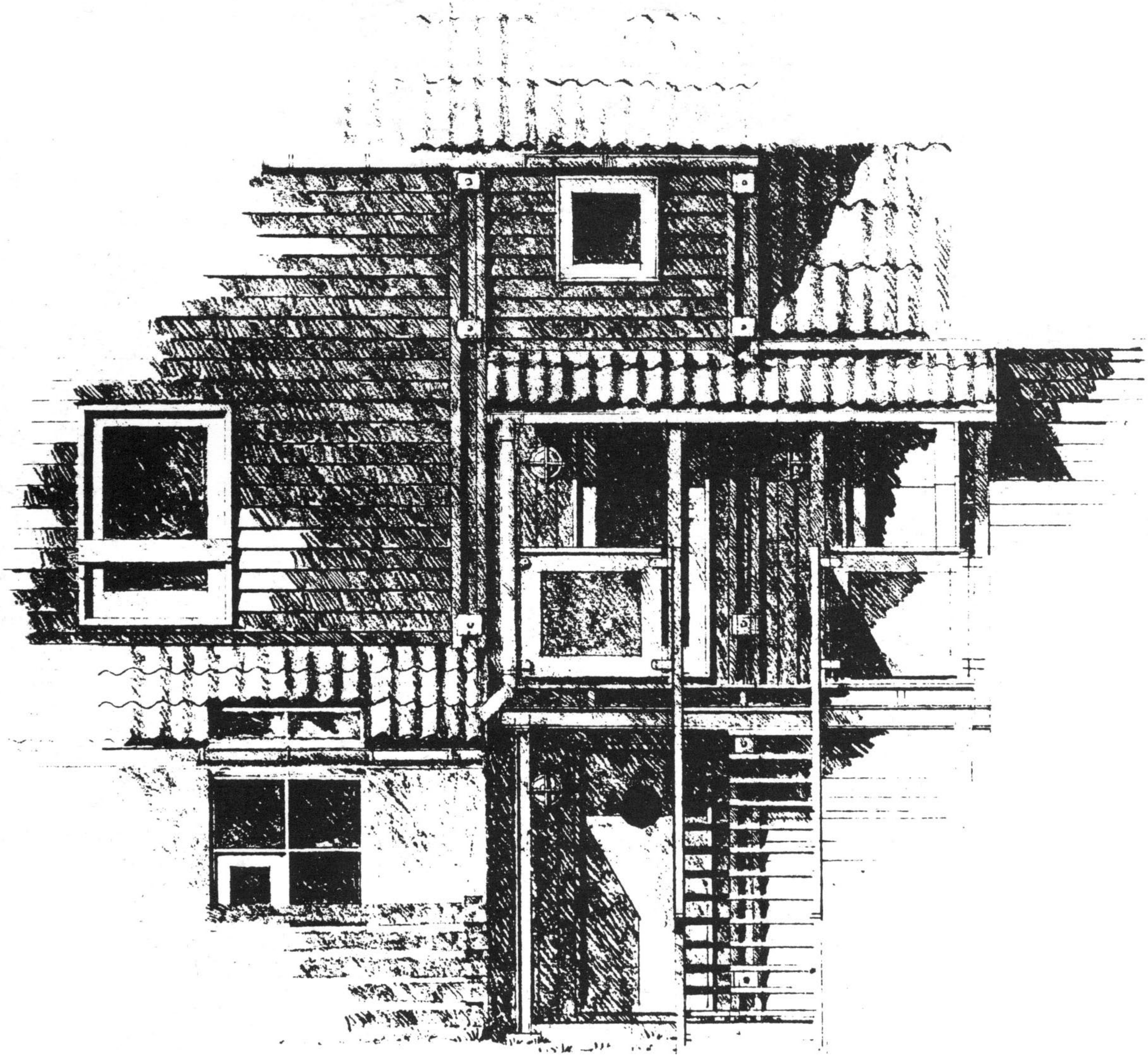


PHOTO BY JENS ARNFRED

PHOTO BY SØREN NIELSEN

PHOTO BY SØREN NIELSEN

PHOTO BY POUL PEDERSEN


PHOTO BY SØREN NIELSEN

PHOTO BY SØREN NIELSEN


PHOTO BY MADS FREDERIK


HIPHÄP
GUA
MEUS
NAHE
2012!


PHOTO BY MADS FREDERIK


PHOTO BY MADS FREDERIK


PHOTO BY MADS FREDERIK
ST.

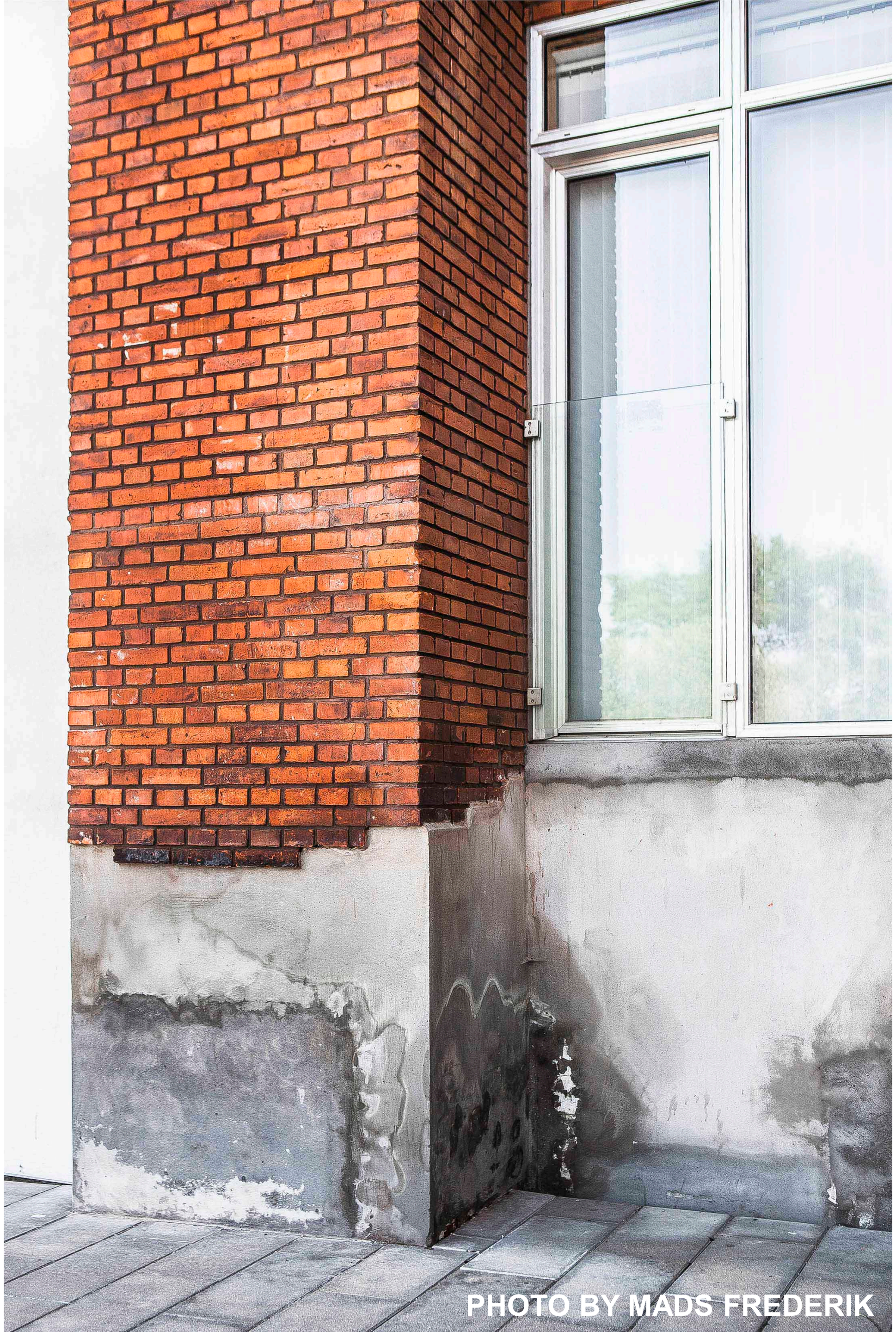
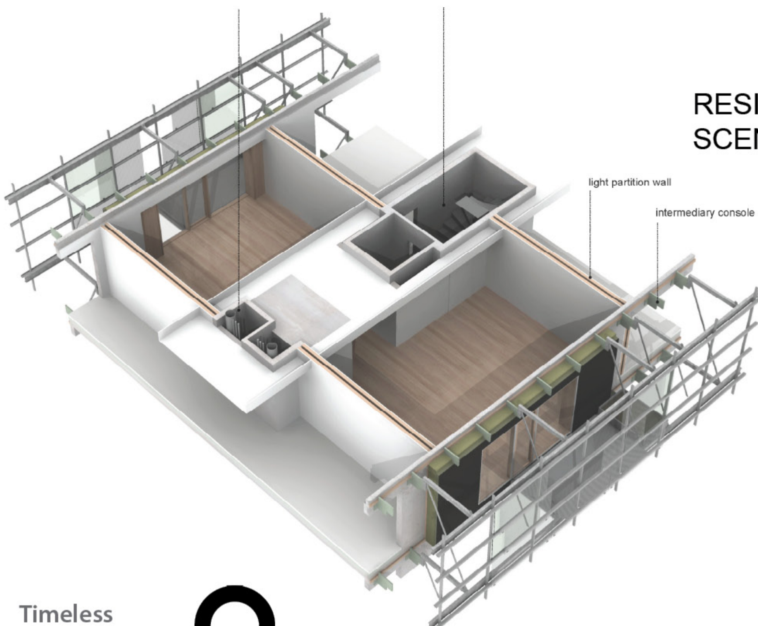


PHOTO BY MADS FREDERIK


ADAPTABLE FUTURES: IDD - *Industrial Democratic Design*
LIBRARY
ESPRESSO BAR
new
PANTONE bag
vandkunsten 2011

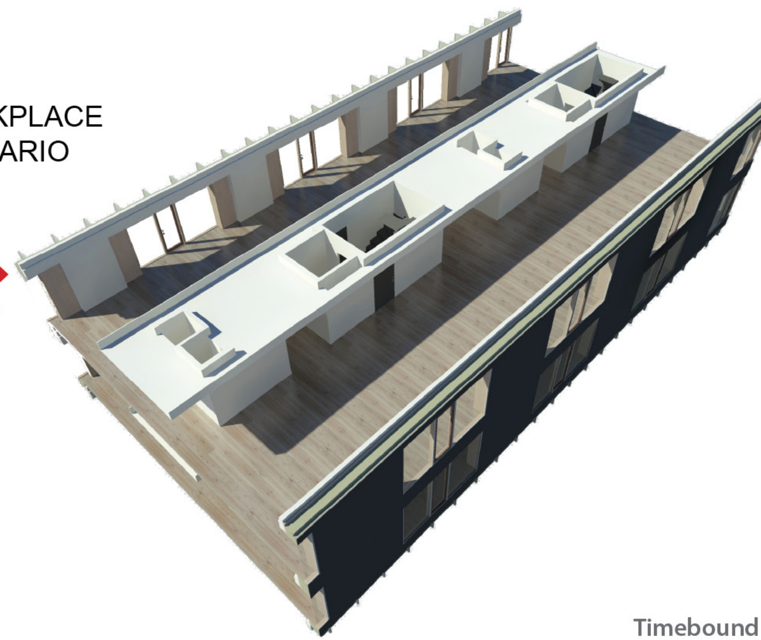
IDD SYSTEM - CONVERSION SCENARIO



RESIDENTIAL SCENARIO

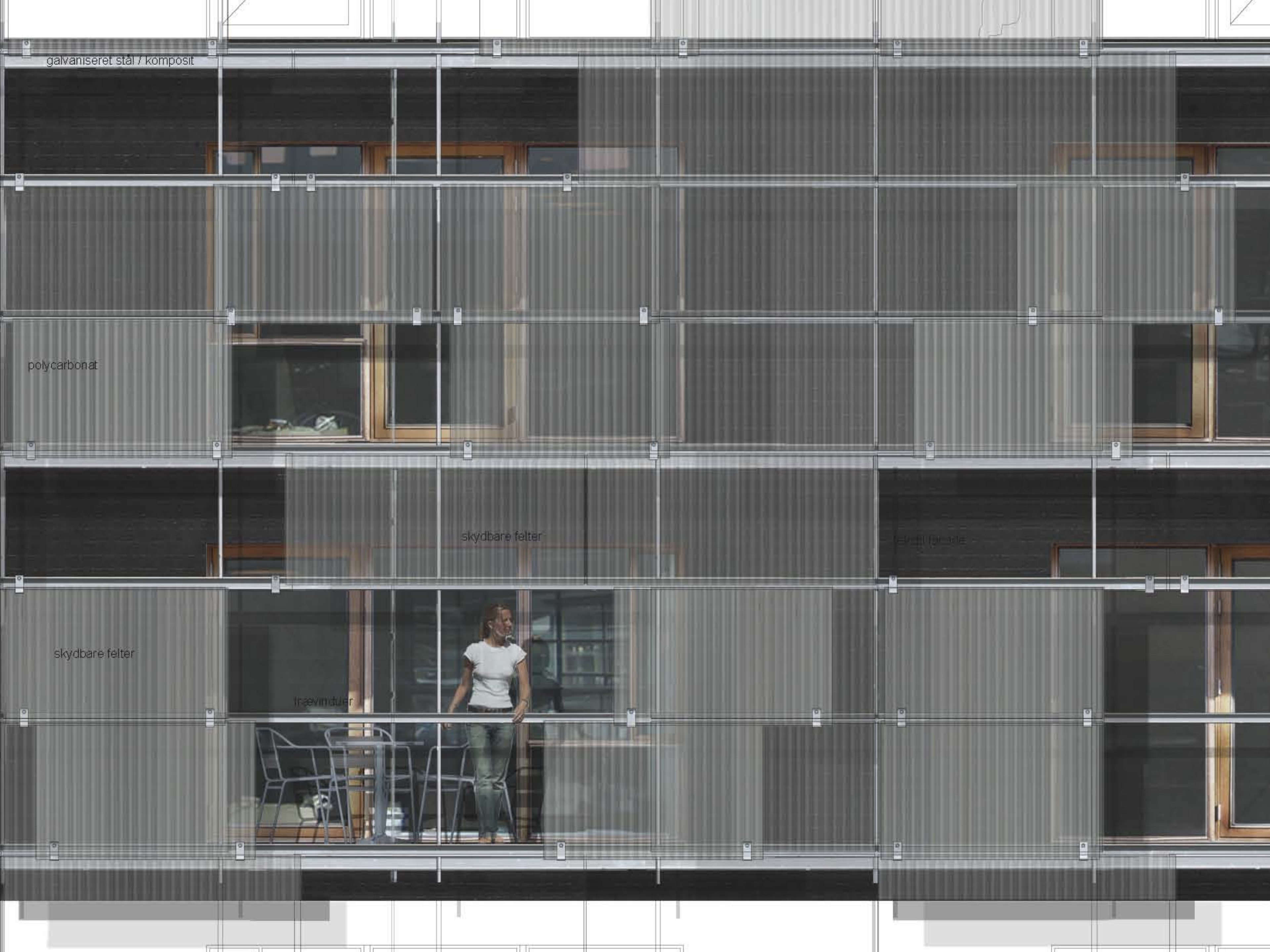
WORKPLACE SCENARIO

CONVERTIBILITY

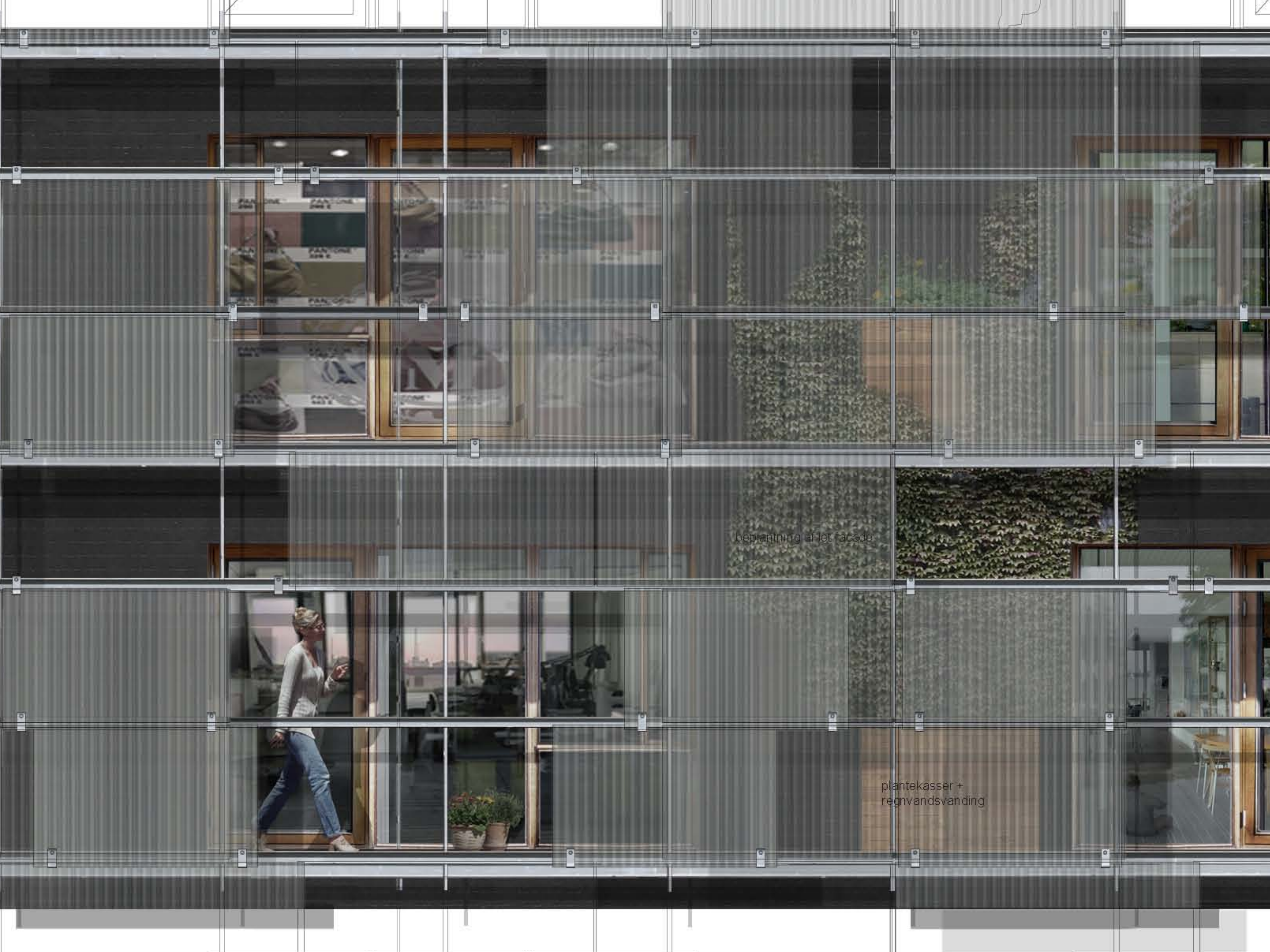


***AF* - ADAPTABILITY RESOURCES SPECTRUM**

***VANDKUNSTEN* - INDUSTRIAL DEMOCRATIC DESIGN**



galvaniseret stål / komposit
polycarbonat
skydbare felter
skydbare felter
trævinduer



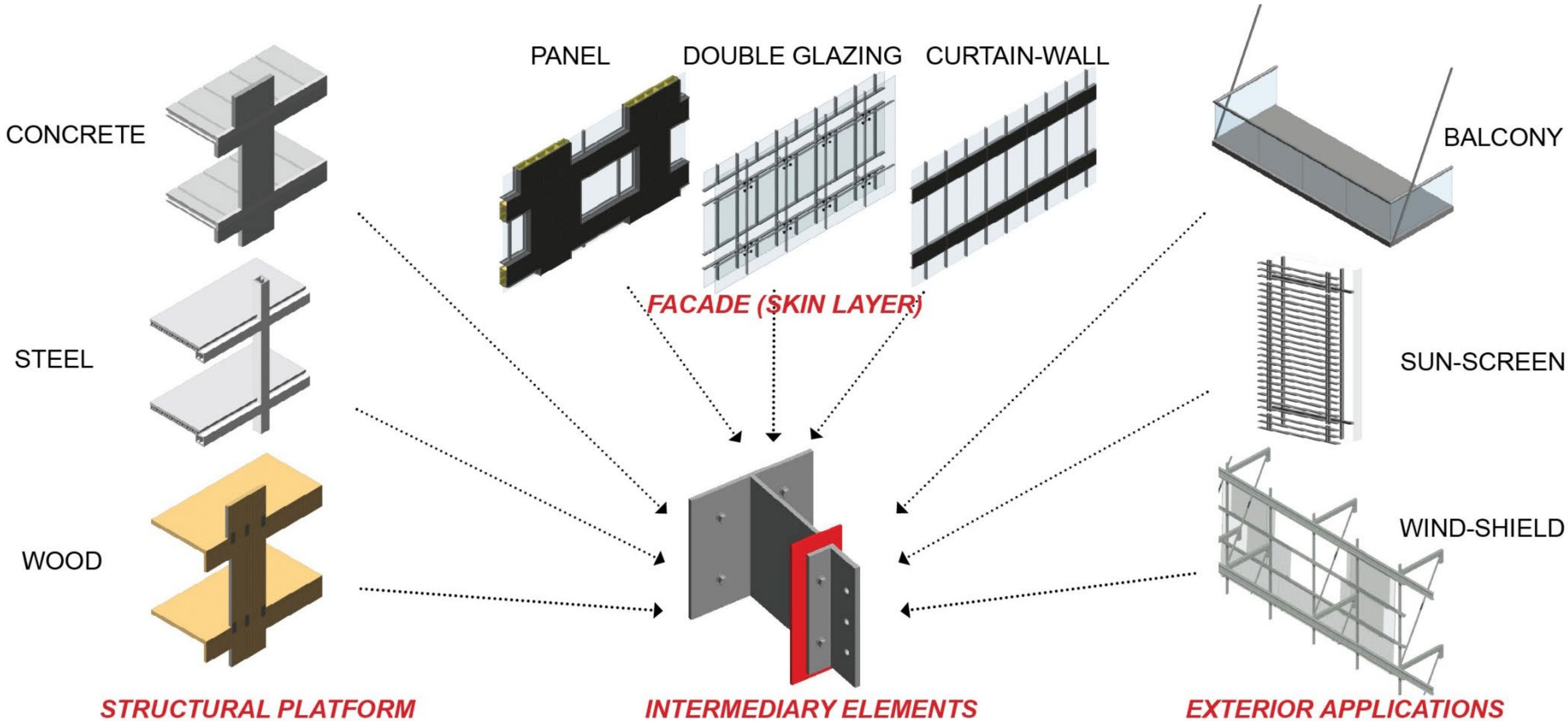
beplantning af let facade
plantekasser +
regnvandsvanding

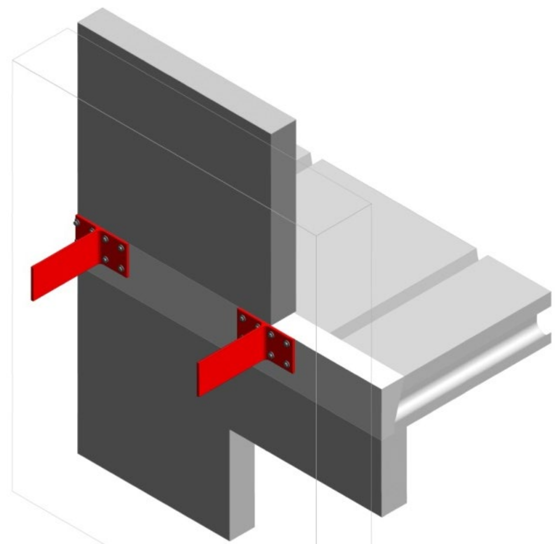

ESPRESSO BAR


SUSHI
BOAT
ESPRESSO BAR
Come in WE'RE
OPEN

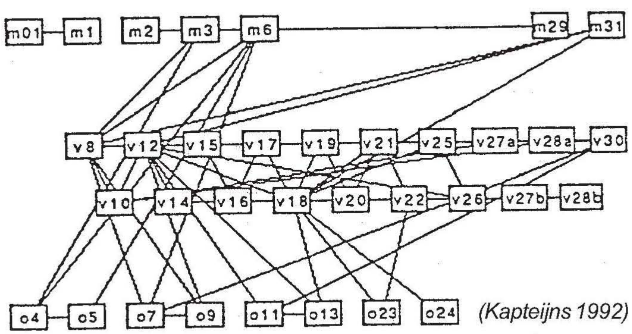
ice

office / workshop

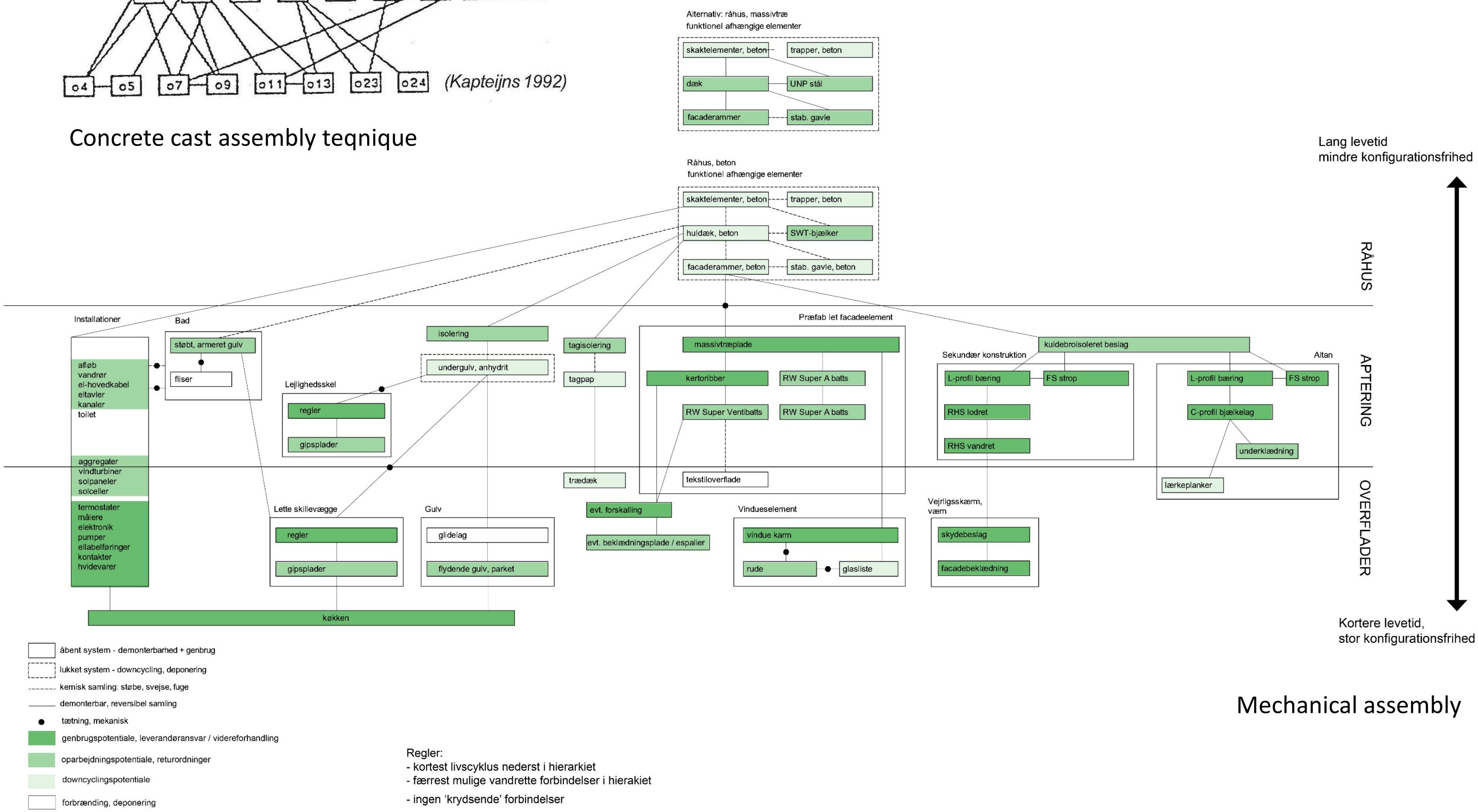

PANEL
DOUBLE GLAZING
CURTAIN-WALL
CONCRETE
BALCONY
FACADE (SKIN LAYER)
STEEL
SUN-SCREEN
WIND-SHIELD
WOOD
STRUCTURAL PLATFORM
INTERMEDIARY ELEMENTS
EXTERIOR APPLICATIONS



Case: IDD



Concrete cast assembly teqnique



Regler:
- kortest livscyklus nederst i hierarkiet
- færrest mulige vandrette forbindelser i hierakiet
- ingen 'krydsende' forbindelser

Mechanical assembly

Fig. 21A: Konfigurationsdiagram for bygningsdele - dokumenterer graden af udskiftelighed / demonterbarhed og genanvendelighed

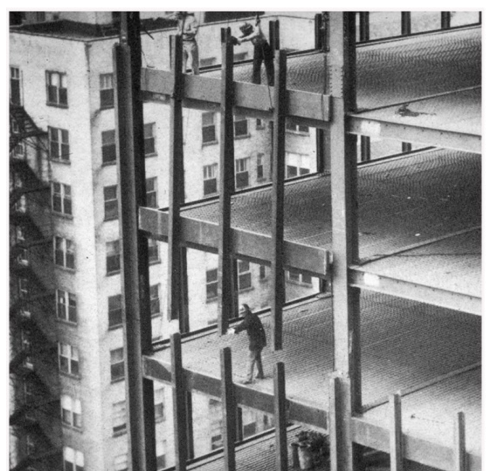
Life-cycle planning by hierarchic assembly and time-related layering

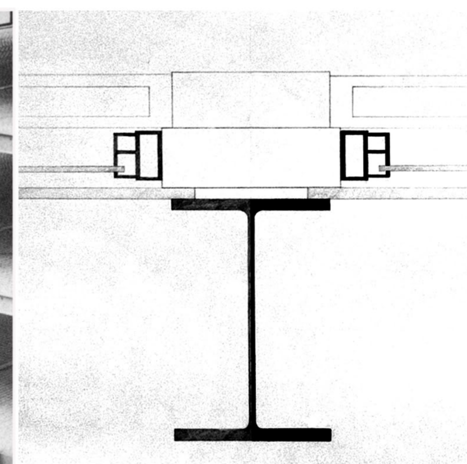
TECTONIC, definition:

'a certain expressivity arising from the statical resistance of constructional form' [ ] and correspondingly: *'the atectonic: visually neglecting or obscuring the expressive interaction of load and support'.*

Eduard Sekler, "Structure, Construction & Tectonics" in Structure in Art and in Science, New York, 1965, pp. 89-95.

The atectonic Mies





The tectonic Mies

Tectonic design practice:
Construction = motif

Architectural (atectonic) design practice:
Construction is a medium for the motif

Engineering and parametric design practice:
Result of construction makes no motif

WILLY ØRSKOV: - ings

Constructive principles

Piling (masoning)

Supporting (pillars, legs)

Spacedividing (walls and plan)

Framing

Fencing

Superimposing

Enclosing

Sheltering

Propping

Hanging

Merging

Interconnecting

Grouping

Destructive principles

Penetrating

Disrupting

Dismantling

Drilling

Exploding

Inside-out-turning

Tearing

Shredding

Cutting

Undermining

Excavating

Dissolving

Melting

Bending

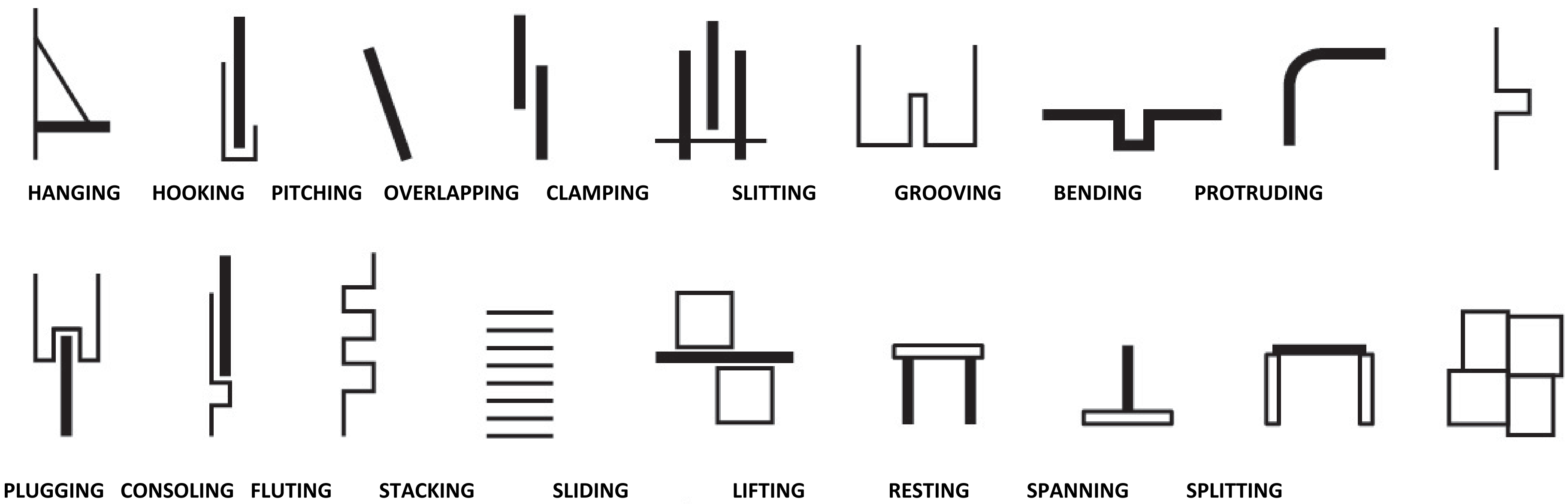
CLAY KETTER's: - ings

A **gerund** is a verb form that functions as a noun.

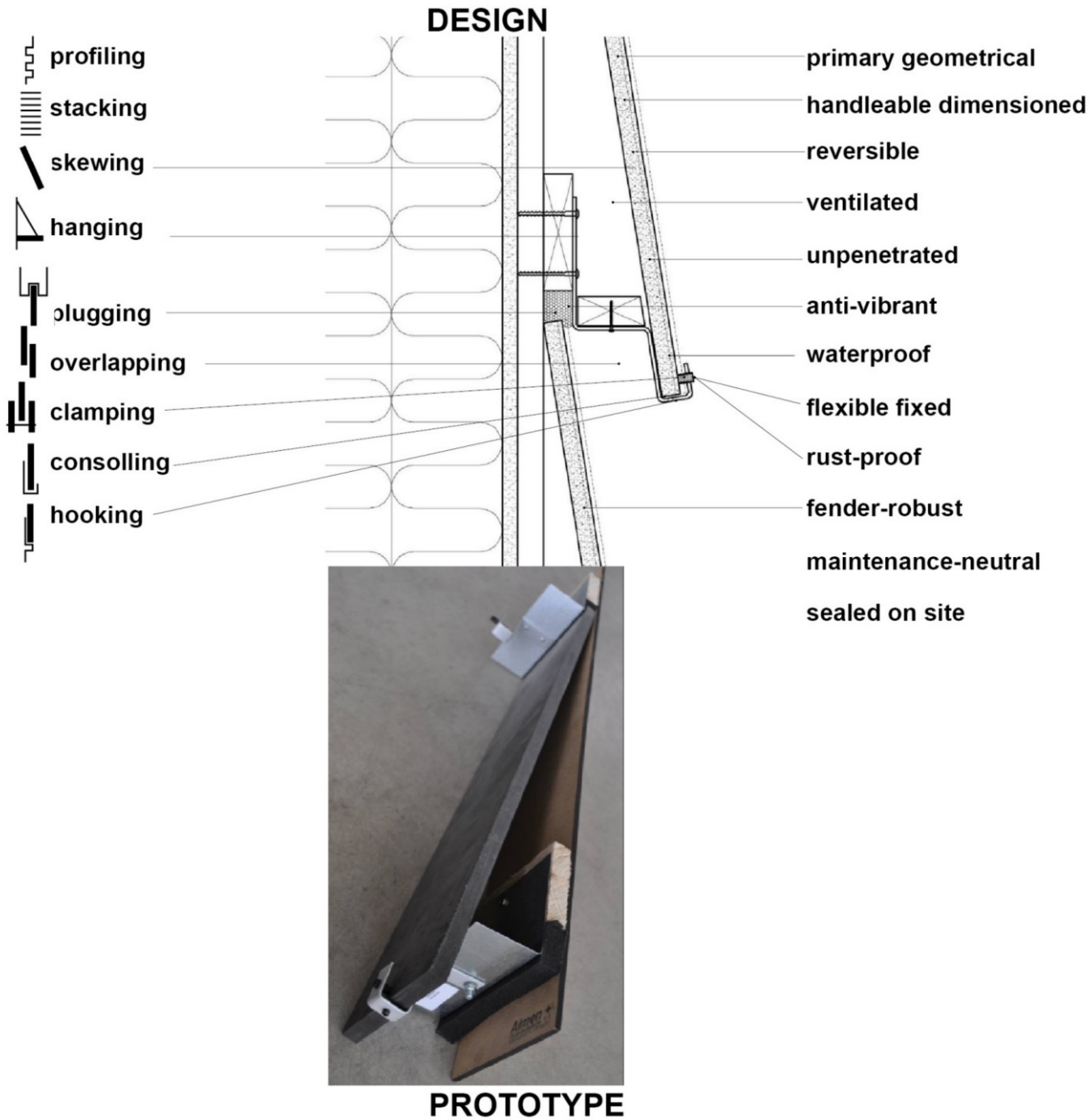
DESIGN FOR DISASSEMBLY – TECTONIC POTENTIAL

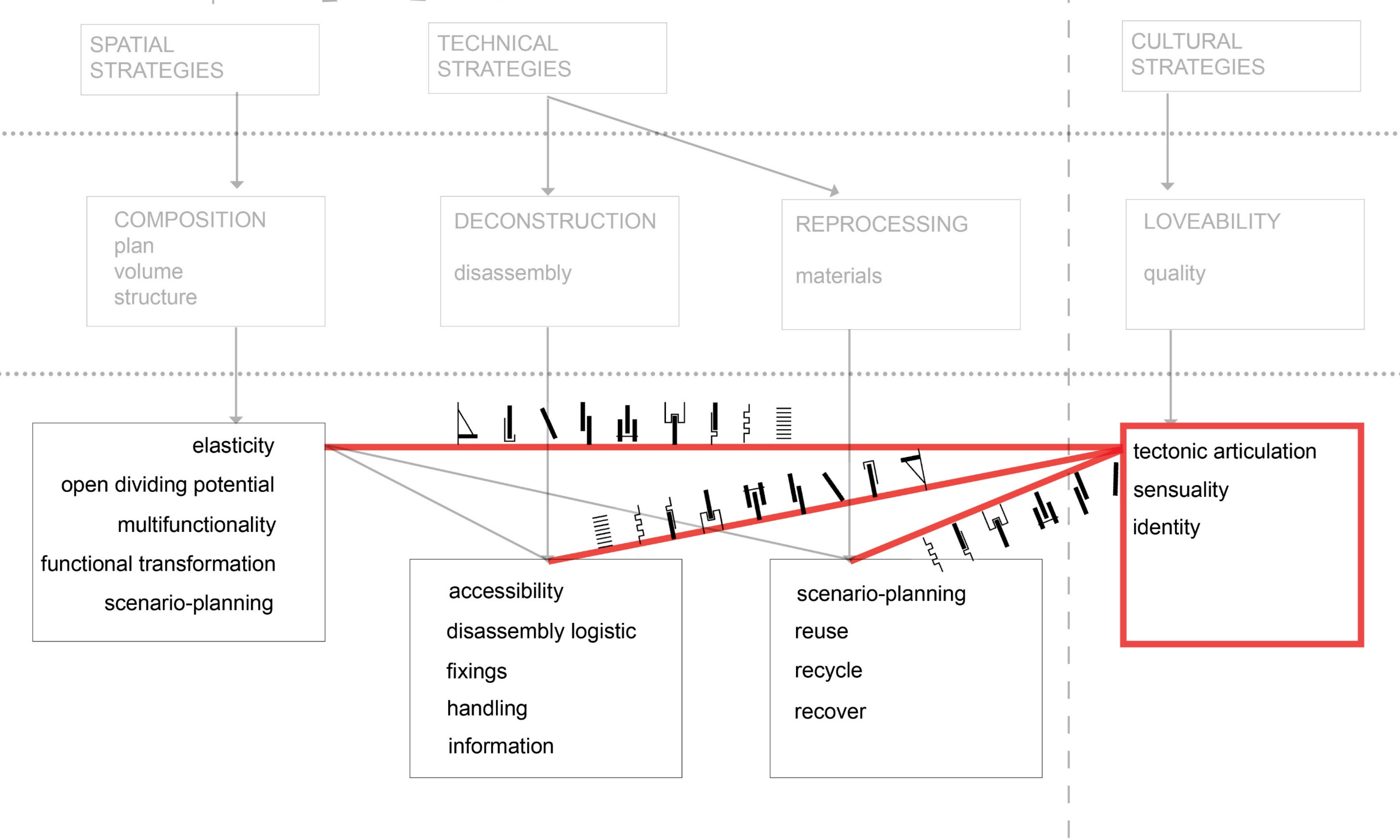
TECTONIC MOTIF, definition: ‘Actions’ of construction (e.g. 'hanging’)

’ALPHABET’ OF TECTONIC MOTIFS



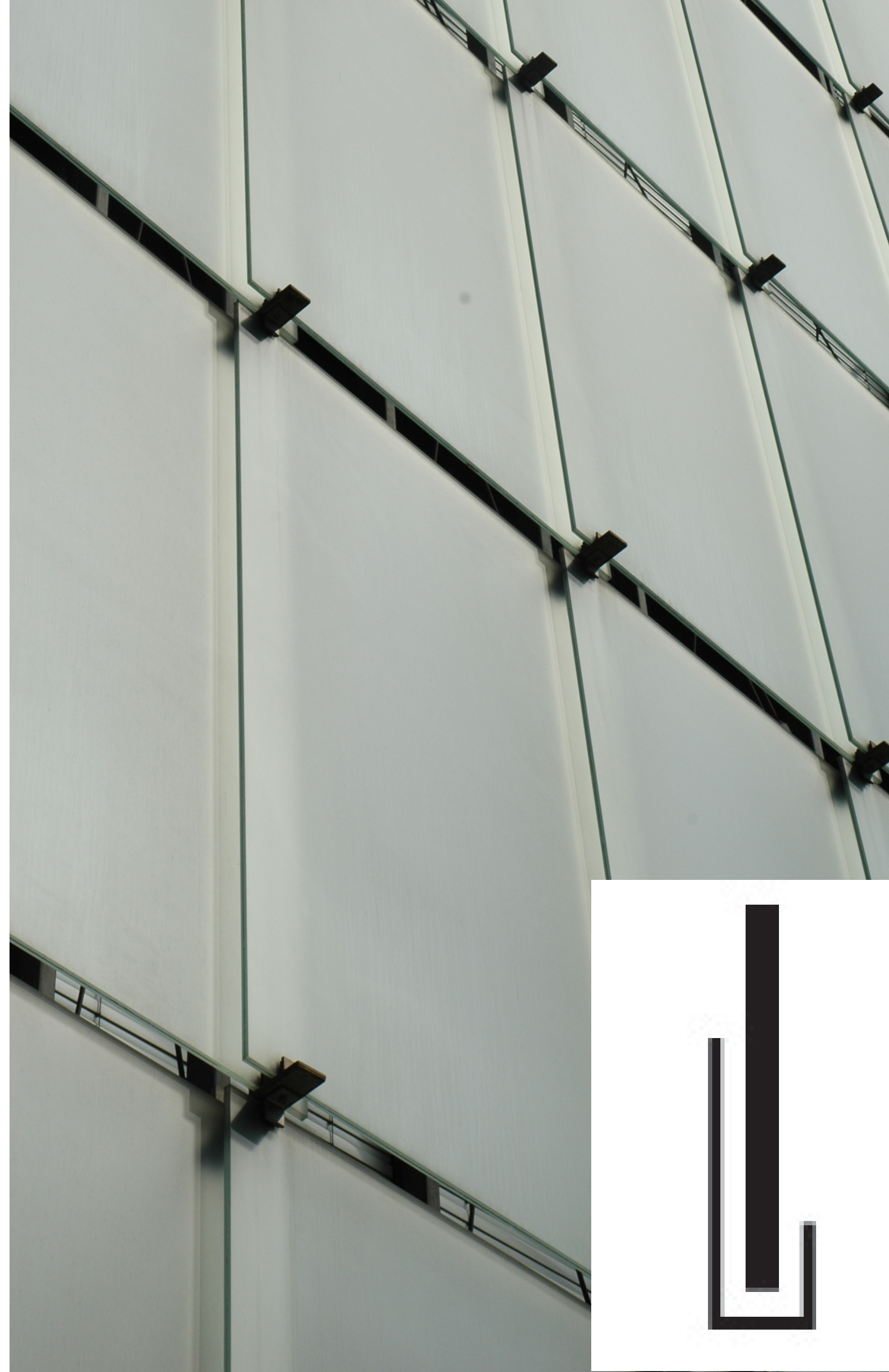
TECTONIC PRINCIPLES **TECHNICAL PRINCIPLES**

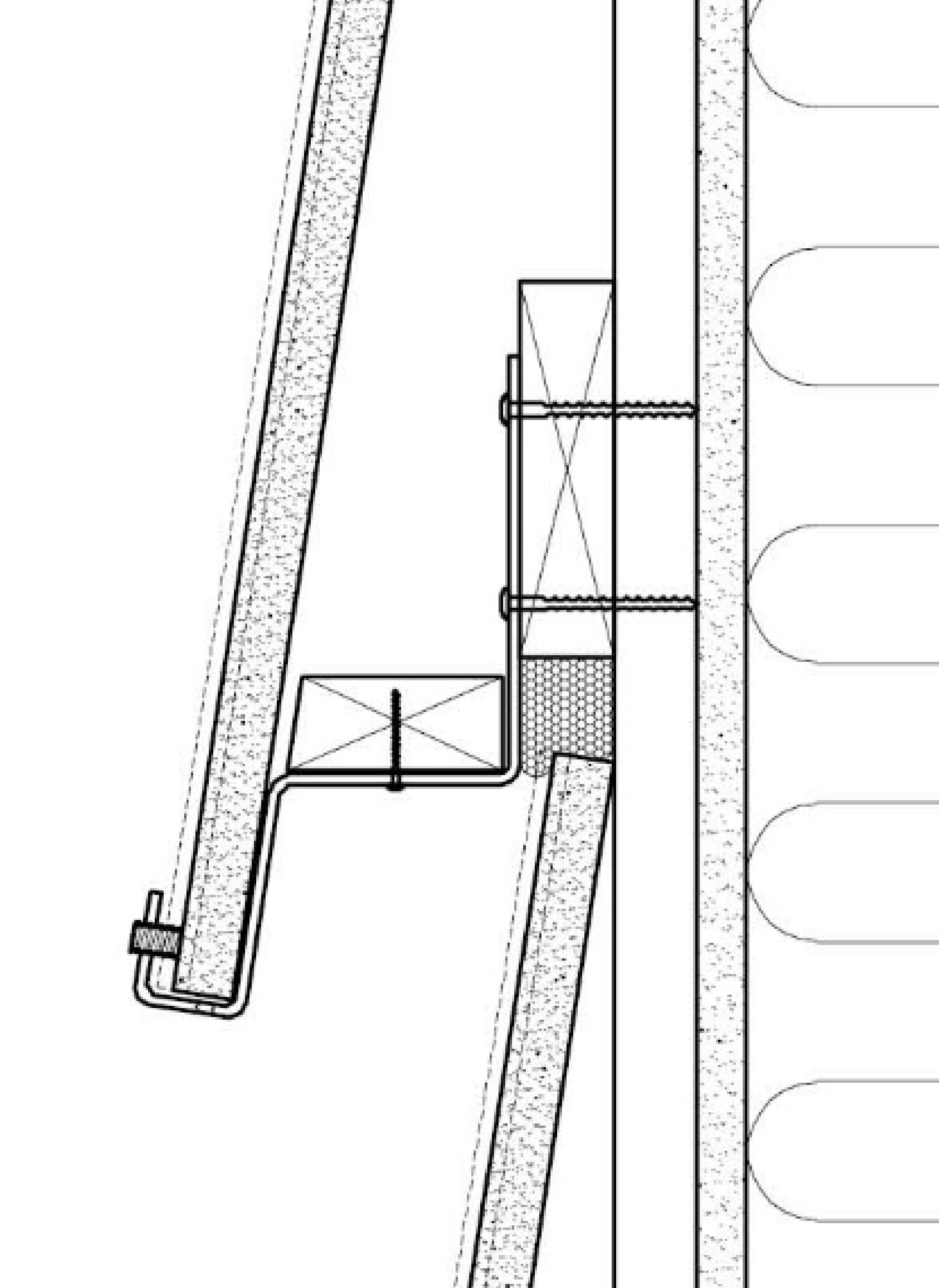




SPATIAL STRATEGIES
TECHNICAL STRATEGIES
CULTURAL STRATEGIES
COMPOSITION
plan
volume
structure
DECONSTRUCTION
disassembly
REPROCESSING
materials
LOVEABILITY
quality
elasticity
open dividing potential
multifunctionality
functional transformation
scenario-planning
tectonic articulation
sensuality
identity
accessibility
disassembly logistic
fixings
handling
information
scenario-planning
reuse
recycle
recover


Kunsthaus






Almen
facadedetalje 1:1


Albertslund Syd

Gårdhustypologien som opus

Gårdhustypologien som dynamisk proces

3 CAPITALS OF BUILDING MATERIALS

	$ økonomisk værdi, brugt kr	MJ energiværdi MJ	kulturel værdi
Gulvbjælkelaget af ru tømmer i dimensionen 50x150, ca. 200.000 lbm	4.000.000	170.000	bevidsthed
Gulvene af 22 mm massiv bøgeparket, ca. 80.000 m2	13.200.000	2.900.000	synlig historik
Lette facadepartier i moduler, ca. 18.000 stk.	4.500.000	15.792.000	synlig historik
Indvendige skillevægselementer, ca. 40.000 stk.	9.600.000	5.400.000	synlig historik
Indvendige dørelementer, ca. 5500 stk.	2.750.000	275.000	synlig historik
Hoveddøre, ca. 1000 stk.	750.000	900.000	synlig historik
Køkkenelementer, ca. 1700 stk.	1.600.000	500.000	synlig historik
Glasfiberafskærmninger af fjernvarmeenheder, ca. 1000 stk.	500.000	1.725.000	synlig historik
Hegnsbrædder af gran eller trykimprægneret fyr, ca. 100.000 lbm	1.500.000	650.000	bevidsthed
Stolper af gran eller trykimprægneret fyr, ca. 24.000 lbm	1.800.000	450.000	bevidsthed
Belægningssten af beton, ca. 30.000 m2	2.400.000	10.800.000	bevidsthed
Affalds beholdere, ca. 1000 stk.	500.000	600.000	synlig historik
	43.100.000	40.162.000	

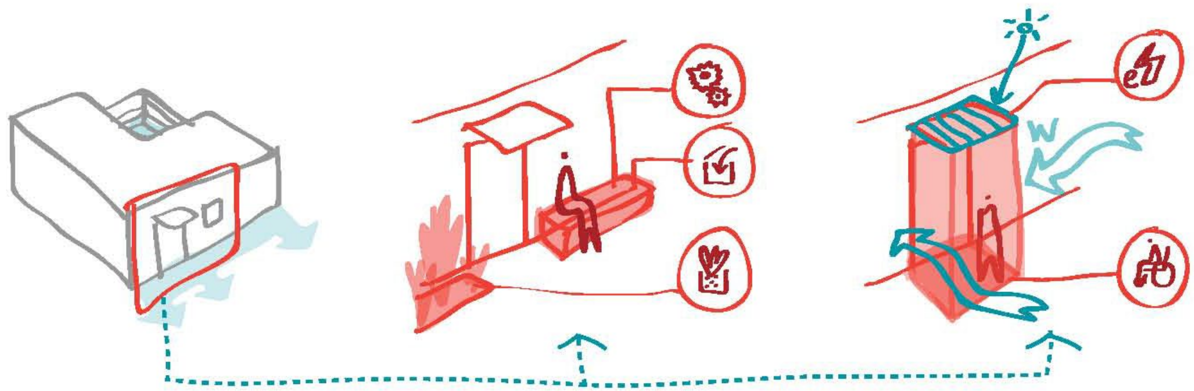
(svarer ca. til 1 mio.l fyringsolie eller 2.400.000 kg CO2)






PHOTO BY TORBEN ESKEROD


PHOTO BY TORBEN ESKEROD

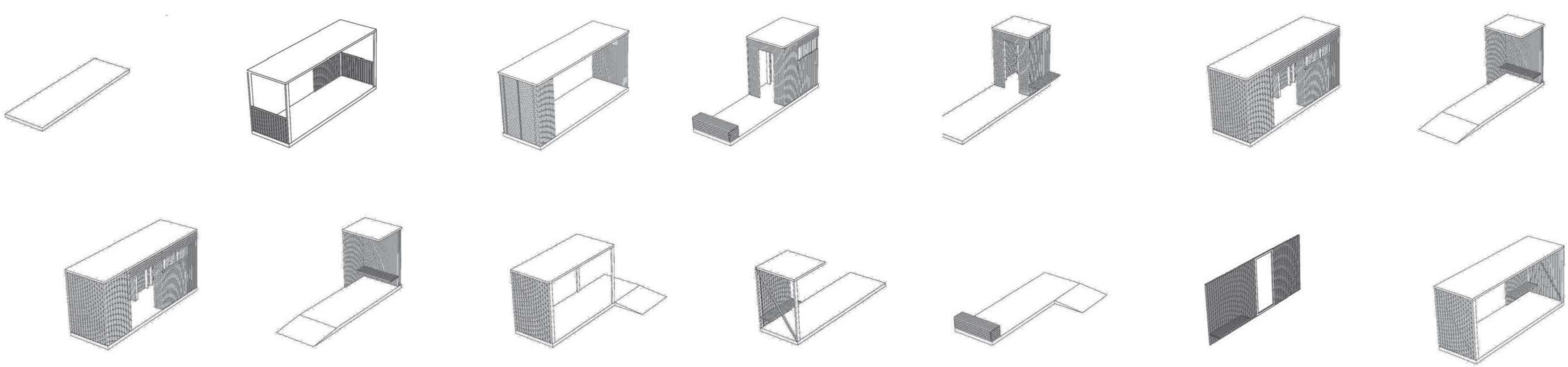


X-box tilbygninger

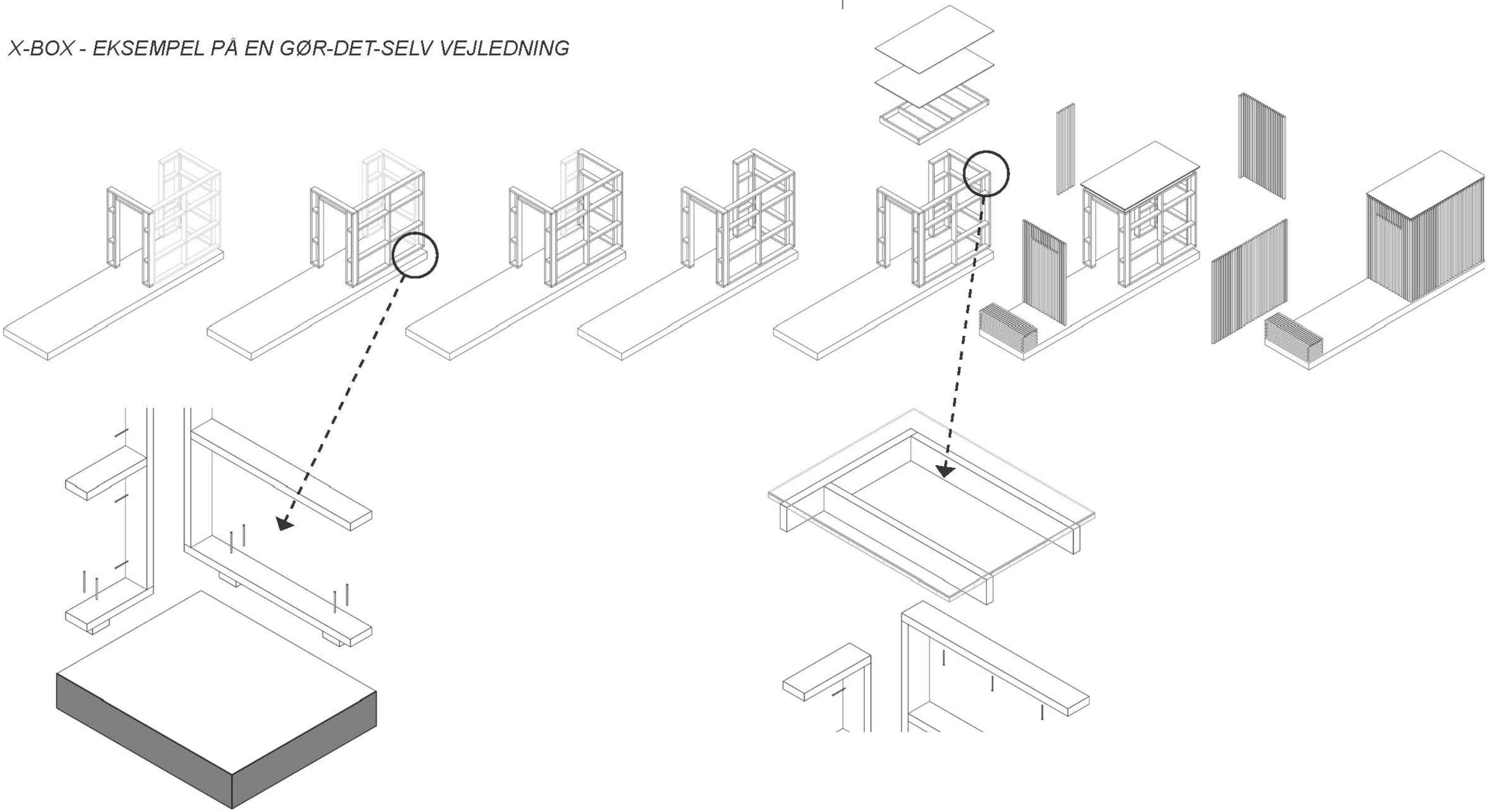
X-box vindfang med depot

X-box bænk

X-box med depot og overdækning



X-BOX - EKSEMPEL PÅ EN GØR-DET-SELV VEJLEDNING

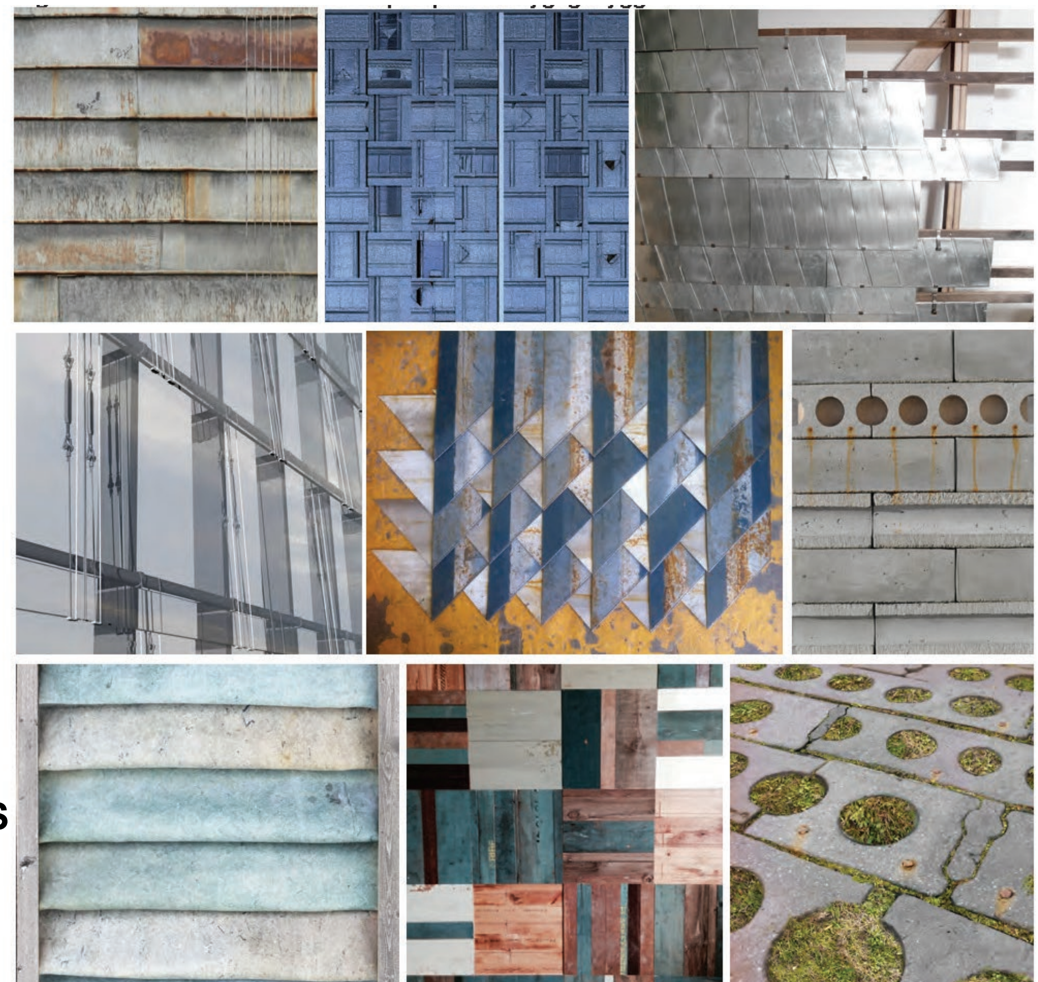


NORDIC BUILT COMPONENT REUSE:

The project explores, by means of 1:1 mock-up modeling, novel practices for repurposing dismantled building components and materials at all product stages:

- salvaging
- rehabilitation
- design integration
- construction
- marketing

PRODUCT EXAMPLES



HARVARD CENTER FOR GREEN BUILDINGS AND CITIES at the Graduate School of Design

Harvard University Graduate School of Design

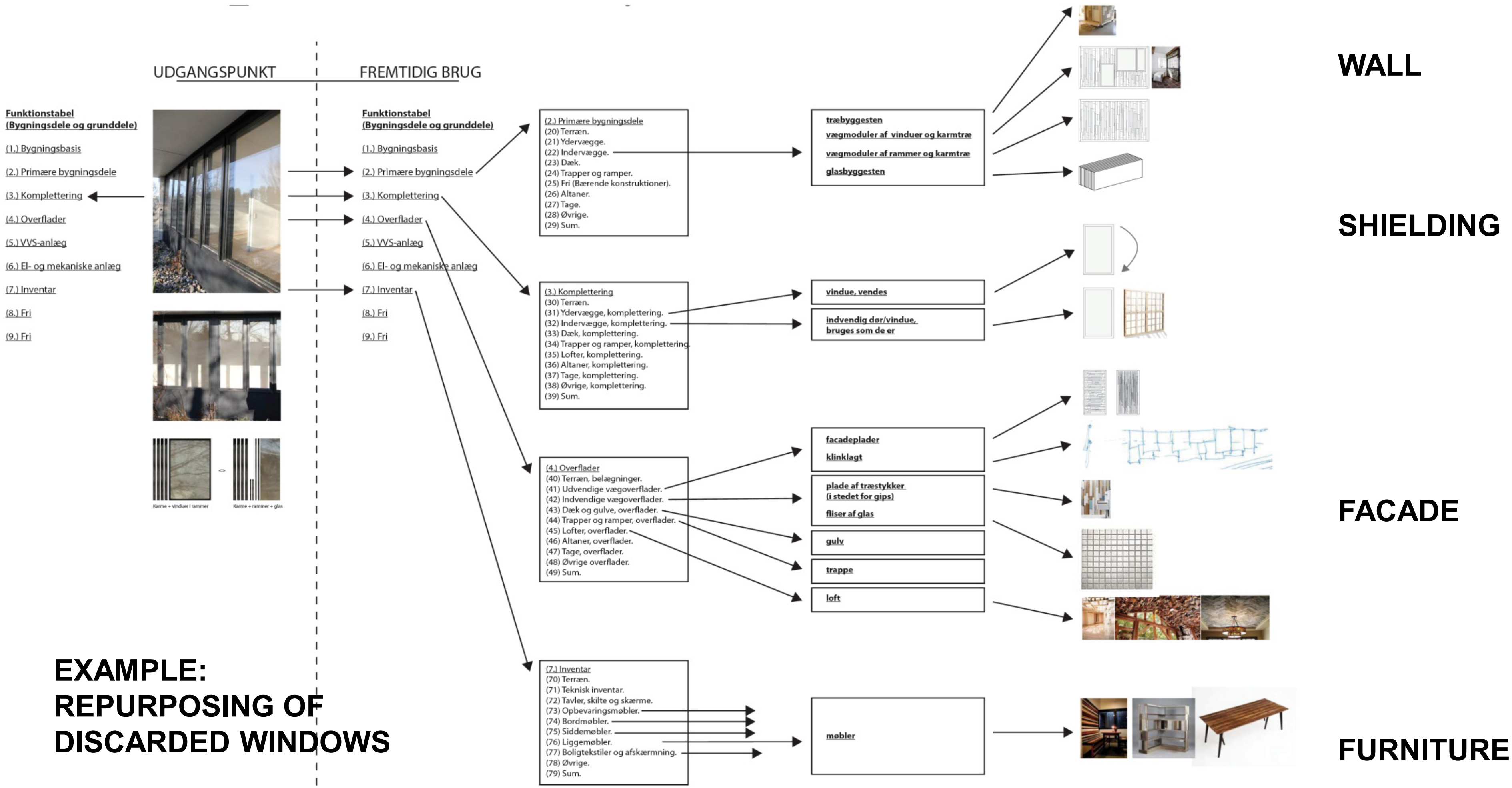
Team:

- **Vandkunsten DK**
- **Genbyg DK**
- **Asplan Viak NO**
- **Malmö Högskola S**
- **Hjellness Consult NO**

Methodology:

Explorative displacement of components

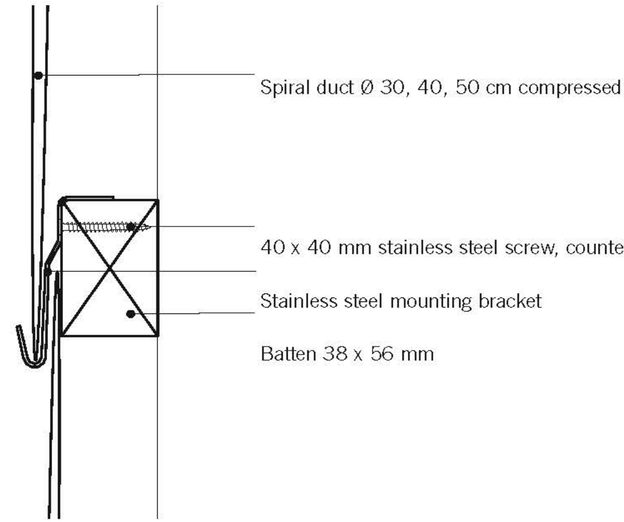
within the classification system of building layers and components.



EXAMPLE:
REPURPOSING OF DISCARDED WINDOWS

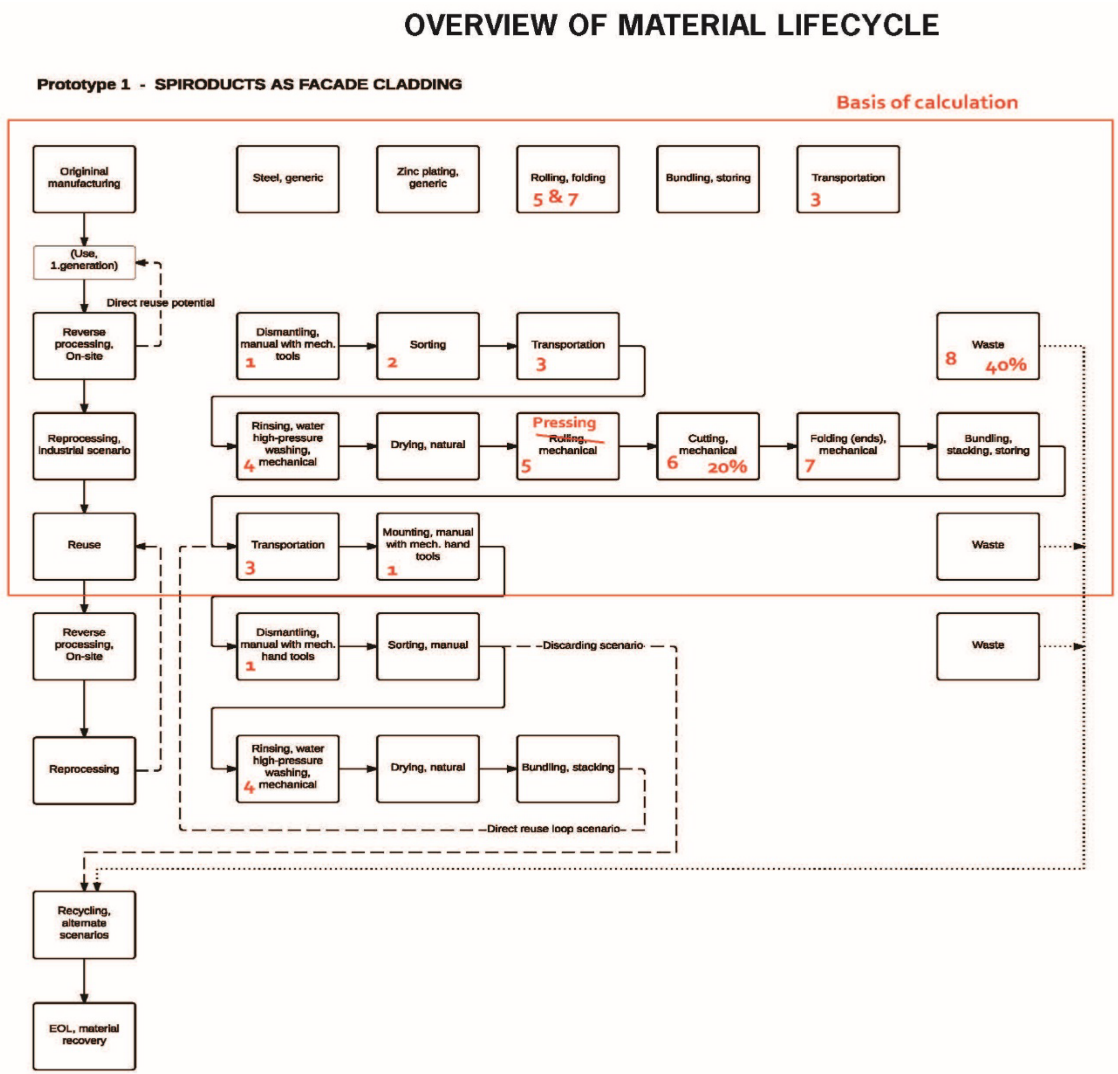
Experiment process:

- Finding and salvaging dismantled components
- Designing prototypes
- Constructing prototypes at workshop
- Evaluation



Process:

Processes are mapped in flow charts with data input for LCA evaluation



INDSATSFAKTA

Estimate of 5 x 1040 cm Spiro duct (needed for 1m2 facade) Various diameters

WEIGHT LENGHT RATIO
Fx Duct diameter: 12,5 cm weight pr 100 cm: 1857,14 gram

1) Dismantling/mounting by mech. tools - 10 minutes
2x2 sec. unfastening of screws,
DeWalt machine 14,4 V
250 Watt

2) Sorting is done by manual labor - 2 minutes
no energy consumption
when taken done, a lot of the remaining particles in the duct will/can be shed
maybe obsoleting the rinsing process?

3) Transportation - 2 minutes
fx. 25 km by lorry, Mercedes Sprinter 316 CDI 163 HK (typical in Cph)
Max. load 1.400 kg
Own weight: 2214 kg
Diesel consumption when emtpy: 12,6 km/l, when fully loaded, maybe 8 km/l
Energyclass F

4) Not sure whether this procedure is nescessary, but info is: - 5 minutes
data from http://clena.dk/ks-station%C3%A6r

5 sec. high pressure rinsing
5,5 kWh
3x400 V
50 hz

if chemical is needed, then this could do perhaps:
http://www.rkimiljo.dk/media/files/Datablad_NY/UDEN/816001%20-%20280311.pdf

5) Pressing/flattening - info from danvals.dk - 5 minutes
Done by hydralic press
10 tons press,
30 sec. press
1,5 kWh

6) Cutting to standardized dimensions - 2 minutes
Done by steel sheet shearing machine/cutter
5 sec.
1,5 kWh
Cut-offs will be about 20%

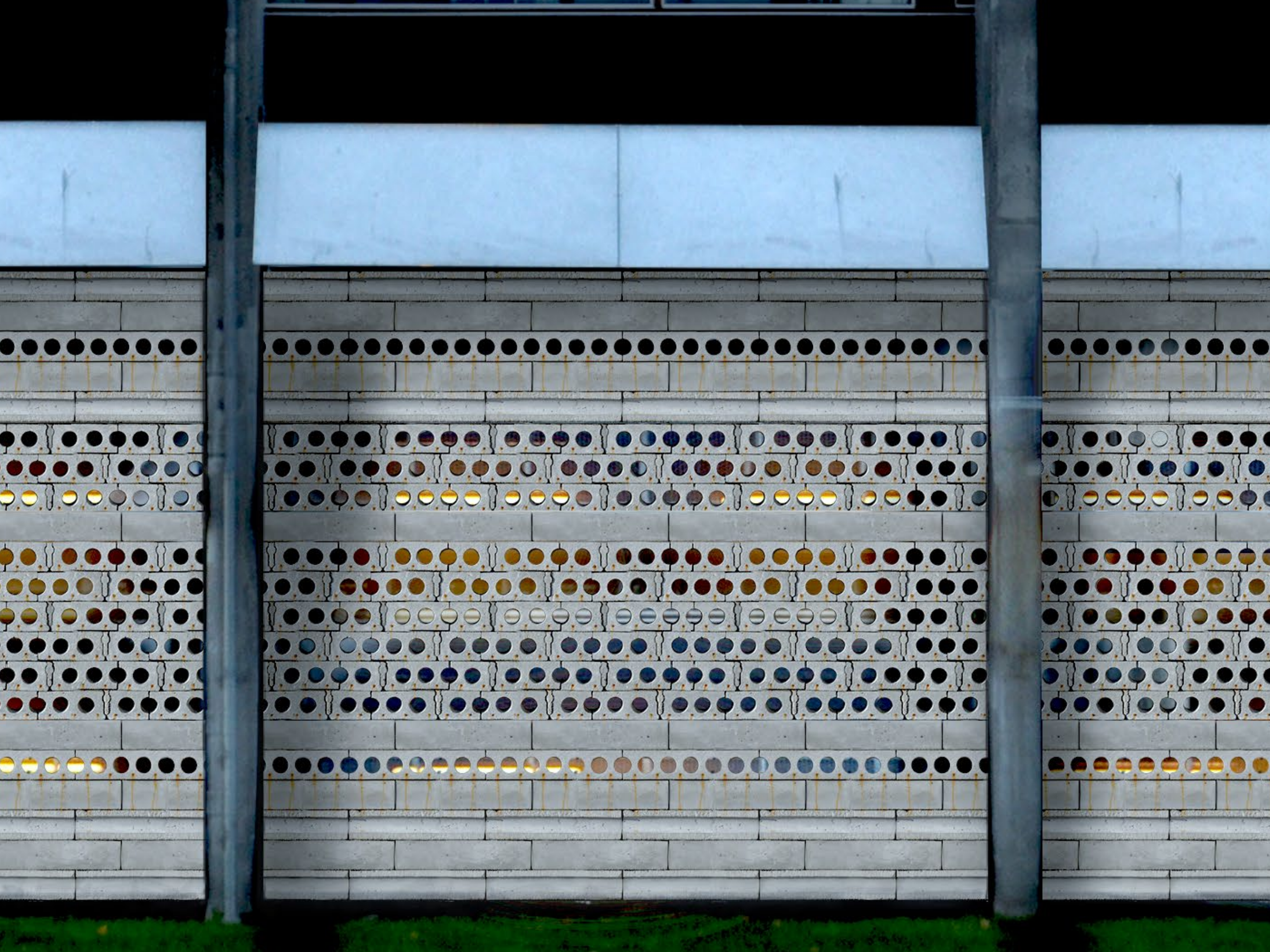
7) Folding (ends) - 8 minutes
Done by Hydraulic bending machine or press brakes
20 sec. each end of each duct.
3 kWh

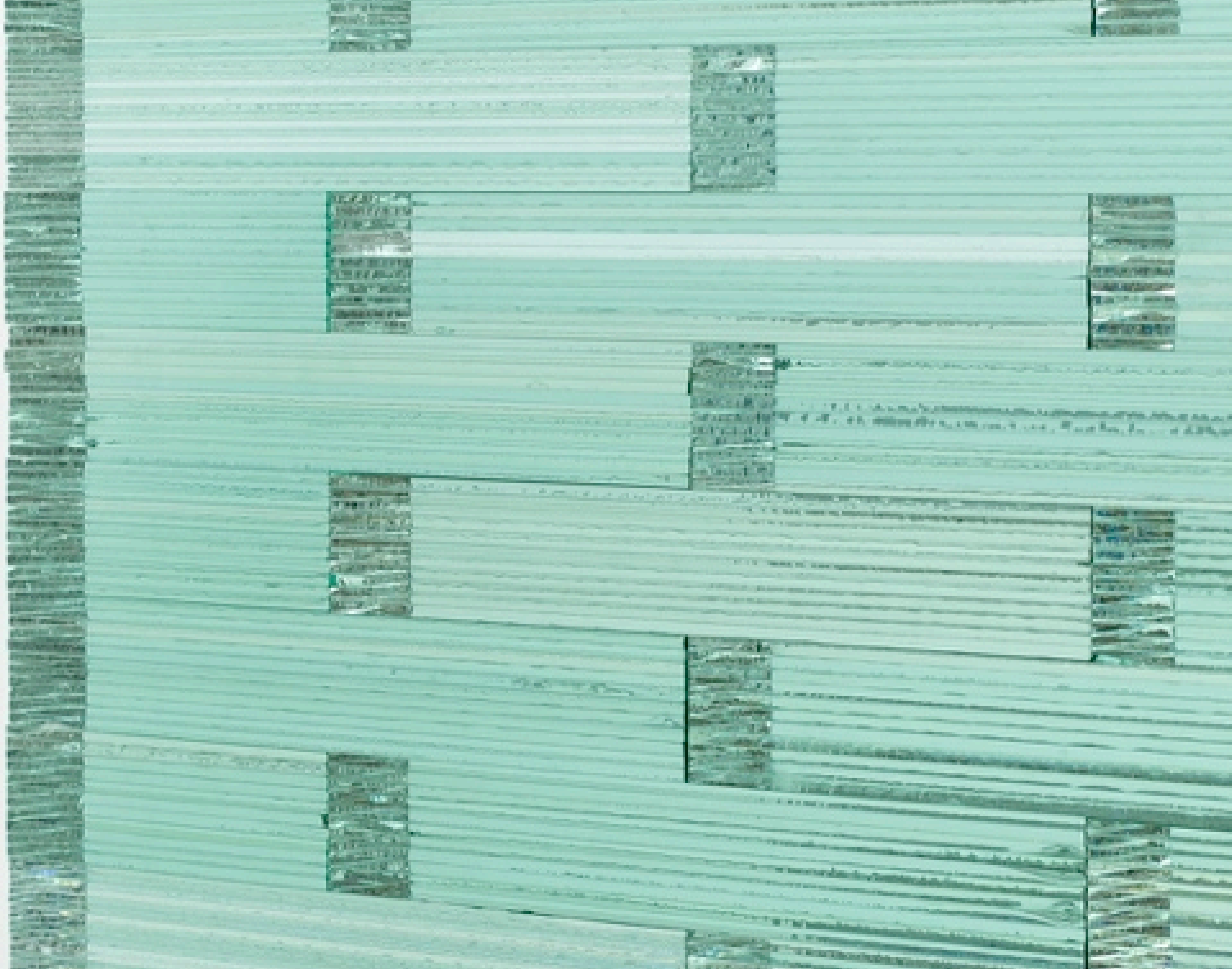
WASTE PRODUCTION

8) We estimate 40% waste in the initial reclaiming process (tear from aging and bended ducts, corners etc.)

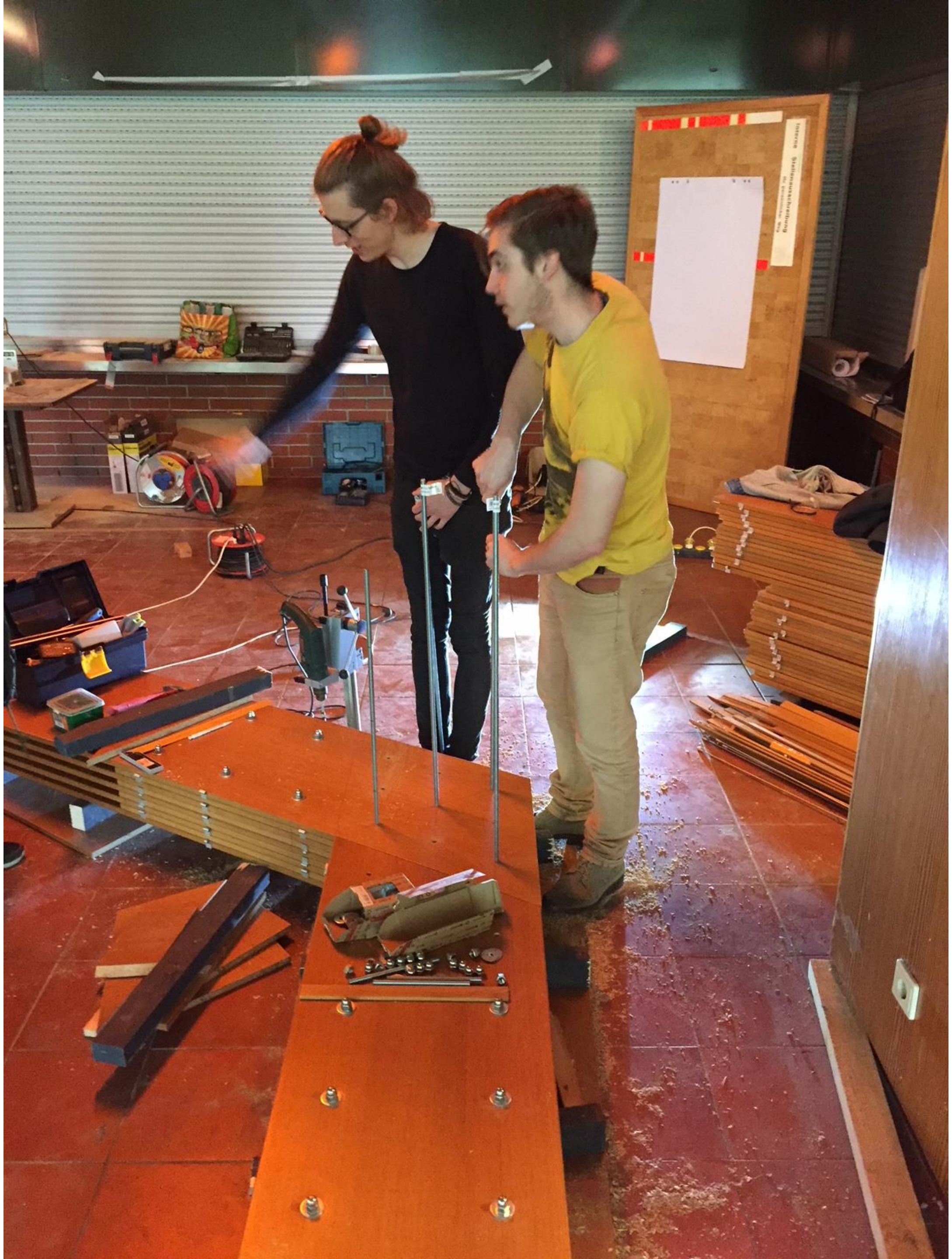
TOTAL WORKING HOURS INCLUDED IN PRODUCTION OF 1 M²

34 minutes of efficient production time + 2 minutes of transportation + 20 minutes of mounting = **56 minutes embodied work hours pr. m²**






DANBUK 4
MAX. 1 MM STÅLPLADE
IKKE RUNDT PROFIL




-75 73 41


vandkunsten.com