

# Lesson 4 Viva

**DESIGNING MATERIALS:**  
is like designing surfaces.

Thanks to new collaborations between builders and designer, a project also aim to design materials.

PEOPLE ARE INFLUENCED BY QUALITY & COST + AESTHETICS OF MATERIALS

RISE OR FALL of specific materials

**AESTHETIC PERFORMANCE:**  
Technical progress is accompanied by improvement of performance, freeing designer from constraints, in favor to aesthetics stimulated by SENSES

**MATERIAL AS A MEAN OF COMMUNICATION**  
(not only natural/artificial feature, colour, perception)

**GRAPHIC MATERIALS:**  
Sophisticated process of digital manipulation, reproduction/print of images, obtained with new surfaces:

- LAMINATES
  - GLASS
  - CERAMICS
  - FILMS
- The image can be printed on any material and hide the material appearance

\* Example: PHOTOCRETE used by Herzog & De Meuron, Technical School Library, 1994

\* "GRAPHIC WAY" give space to creativity, some limitation rely on format, size, quality; These images are representation of ideas, impossible to express in other ways.

## MATERIAL IMAGE

- PROJECTS FOR CLIENTS: images for business design

BIGGER PROJECTS: need to give expressivity to the project.

**NARRATION-STORYTELLING:**  
Linked on effectiveness of images/themes in relation to materials. images are unlimited, but themes can be divided in:

- INSTANT MESSAGE;
- PHOTOSHOP EFFECT;
- NATURALISTIC INSPIR.
- LETTERING & SCRIPT.

### INSTANT MESSAGE:

Photographs, pattern, illustration thanks to new technologies can be materialized on architectural environments:

- Facades = great signs
- Interiors = self-celebrative

Designers not always explore, they prefer using represent of functional elements/needs. Ready to use, no limits on applications. In material, unreal images & hyper-realistic

### PHOTOSHOP EFFECT:

Term used by Brouwer, to describe transformation of architectural - urban landscapes by the invasion of digital images. Used "as new building material" for immediate communication. The nature/structure of the material disappear, using its surface only for representation

### LETTERING & SCRIPT:

Projects using fonts allow two types of reading: graphical & narrative. A very direct type of design. It's a way of enriching surfaces of buildings with meanings. Through lettering the observer needs full involvements of senses.

### NATURALISTIC INSPIRATION:

Humans always make reference to nature, influencing, attracting us. In the past nature inspired shapes for decoration, i.e. Renaissance. Nowadays, nature can be the theme of our projects, inspiring new ideas, made possible by technology, which simulate physicality of material, atmosphere of landscape, and on. Not limiting itself to only abstract.

# CATEGORIES OF THEMES

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## IMMEDIATE MESSAGE

- **Characteristics:**
1. Project with themes (Damien Hirst, Pharmacist, London, 1998)
  2. Free subject: freedom of choice.
  3. Surprise effect: mix between graphics/archit.
- **Technologies implemented + materials:**
1. **SILKSCREEN:** special paints vetrified by cooking them at 500. Old way for transferring graphics/images. Can have many special effects to make material more appealing.
  2. **DIGITAL PRINT:** new technology which allow great flexibility and customise products. Now replacing silkscreen, now known as "mass customization".
    - **TECHNIQUES:** INK-jet, where image can be printed directly on material. Very low initial cost, constant production costs; not limited to colour choice; fast sampling. Take account to diff. substrates: wallpaper - laminates - textile
    - **DSY (Design your slabs)** by Iris able to print on ceramics, providing chromatic effect (metal look, bright colors, photos + artistic reproduction)
  3. **WORD, WALLPAPER on demand:**
    - graphic gesture
    - **Trompe l'oeil:** illusory 3D effect, good knowledge of perspective & manipulate light and colour. Get its effect only by distance.
  4. **RAPROXY:** Resin + paper. Allow use of paper placed on floor. Resin create a protective film. Effect: finish gloss/matt
  5. **SENTRYGLAS EXPRESSION, DU PONT:** Complicated technology. For flooring panels of laminated glass, PVB film glued in between. The image is printed on PVB. Gives a special effect on floor. Also used for partitions of doors. This tech allow the use of color gradient. Protects from mechan. damage, aesthetic quality, easy to clean, protects from breaks, UV rays, noise & temperature control.
  6. **SUBLIMATION:** Combine digital prints process transferred on any material through heat. A solid substance changed into gas in transferred to object, as a result of pressure, sublimation pigment ink penetrate to the surface. Resistant to scratch & water, protects material
  7. **PRINTING ON LAMINATED APL:** image from laptop printed on laminate. simple, fast process, keep same character of material
  8. **HANDDRAWING:** Room size effect, photoshop effect on architect elements
  9. **STICKERS.**

## PHOTOSHOP EFFECT

- **Characteristics:**
1. aim for spontaneous communication
  2. surface-skin: representation of a significance.
- **AIMS FOR:**
1. **Levitating atmosphere:** treat surfaces as they were white pages to write, or reproduce colored lights, creating a dynamic atmosphere. Atmosphere created w/ ~~lights~~ projections. Case study: Claudio Lazzarino and Carl Picketing, Nil Rome, 1998
  2. **Project's visibility:** architect work on building's skin, seems most satisfactory way to give importance to projects, which otherwise disappears. Use to exalt/highlight the project cultural dimension. Usually building skin won't match with building's structure. Case study: Fox & Fowler, Conde Nast Building, Nasdaq Market Site, NY.
  3. **Metaphoric Surfaces:** thanks to cinema and TV we are used to moving images, which could be found in the future in interior's wall and building skins. Case study: Conde Nast Building, NY; Blacksheep, Inamo Restaurant, London
  4. **Graphic interiors:**
  5. **Hyper Reality:** realise a realistic projection on walls, ceilings
  6. **Extending human perception:** don't require human interaction only required to look. sensory info is encoded w/ data, processed and made visually perceptible. Sensors provide a new vision of reality
    - ↓ change atmosphere during night, as well as when there's bad weather, change to another image of abstract rain drops

# NATURALISTIC INSPIRATION

# LETTERING & SCRIPT

→ **INSPIRED BY:**

## 1. TRUE ARTIFICIAL NATURE:

In some case artificial replication of nature can be preferred over natural. An abstract image respond to the search of authenticity and distinction between nature. Result as different, independent from tradition.

2. **THEME:** Refer to case study: Hetong & De Meuron, Ricca Building, Mulhouse, 1993.

3. **CLIMATE:** Looking external environment, without imitating it.

Refer to case study: Virpila & Stone, Burberry Showroom Milano, 2004.

+ representing climate & natural scenes shown from windows to attract customers. Ionnau, Sotiropoulos, van, Alider, Food + Caffè, Atene, 2004. Can regulate lights, intensity, move image of clouds/sunset.

4. **Irony:** Refer to case study:

Restaurant Reef by Mario & Gianluigi Grammetta in Rome. Here they create an image through a material (broken glass = waves).



# Lesson 5 Viva - VIBRANT COLOURS

CHROMATIC = in relation to temperature of light's  
ATMOSPHERE + colour of materials  
Different ways to design materials:

## COLORED SURFACE

- FEATURES:**
- Add colour to surface
  - Design choice
  - Resist as example

## PRODUCT:

- Natural & Pedyed
- Veneers **ITALY**
- wood use to give homogeneous aesthetics
- dyeing natural wood
- \* Natural colours, wood warm material
- = ICE COLLECTION =
- MARKETING CHOICE, MOST FAVORABLE COLOURS
- \* MADE IN ITALY
- \* ASH collection many diff. colours
- \* MDF veneer applied on it.

## CASE STUDY:

- FAGIO NOTEMBE:**
- Triennale Design Museum Milano. Inspired by rainbows (concrete sky + ground)
  - "Inspired" by 2D graphic
  - "Realized" a 3D block
  - at entrance: front view
  - pages all white: go in
  - pages diff colours made by superpositioning w/ beam. Figures of each section have strong clarity create effect + give attention to something specific = no disturb w/ light

## DEEP COLOUR

- FEATURES:**
- rely on thickness of material
  - marble cut-through same colour.
  - possible with other materials, ie cement (add pigments to it on cast structure)

## PRODUCT:

- **VALDROMAET:** wood fibre board coloured through. Trade w/ residue of timber mills and recycled pines.
- ECO-friendly
- HDF add colours, available in 12 colours
- easy to work, flexible
- From 8mm to 16mm thickness up to 3m
- cast with sandblasting or laser cut
- Advantages: many solution for use, assembly.
- Time-saving sawing for smooth machining + easy finishing
- no edging required
- UV resistant

## CASE STUDY:

- WUDC - MILAN**

Colour depends on light, important understand material's position in relation to light. Colours are part of material's names come from natural env.

## BRIGHT CHROMATISM

- FEATURES:**
- Different colour effect is given by material
  - best effect given by glass, plastic
  - play with new technologies.

## PRODUCTS:

- Coloured glass: 1. Leaning glass; 2. Pigment addition; 3. PVB; 4. Silver screen printing
- **PVB glass:** two sheets of float glass joined by a thin layer of PVB adhesive in between. Process made by high temperature + pressure.
- **VAHTEL:** used for interiors, PVB can be transparent or satin.
- Acoustic insulation, UV rays protection
- very resistant to cracks & breaking
- 16 colours + 8 basic colours (give infinite combinations) easy to customise. (Isaerbruch thufon, pharmaceutical laboratory)
- **EMMERED GLASS (EMMERED)**
- use for furniture or walls, not for floors very resistant. Diff sizes. up to 3m panels.
- colour is sprayed/painted at the back (light add special quality)
- satin glass difficult to clean (absorbs made w/ sandblast)
- transparent easy to clean
- replace ceramic tiles, many colours
- need to decide angle can't at 45°
- **PLASTICS:** resistant, light, easy to assemble, customize. No much use in interior design

## CASE STUDY:

- 1. PIMA (Plexiglass) high transparent light transmission, scratch, chemical resistant UV resist, recyclable, easy process, available in sheet, many colours**
- 2. PDA PANT:** very resistant, much use in commercial spaces, ready to use

## COLOR OF NATURE

- FEATURES:**
- very colourful, many colours
  - limited from natural resources.

## PRODUCTS:

- **MAARBE:** used for luxury
- **CASE STUDY:**
- Alessandro Scandura, Park Store, Sed 2014: design of dif. type of marble (from red to green). No relation between floor & furniture. Marble use to express high luxury.
- **BASILIAN STATE: black (IT):** green + red (bratit). Can be a smooth material. Not so expensive for this is quite used. Same performance, only dif. is in relation to light. Black slake used for flooring (Lexocem) otherwise it bends. Can't customise it because natural not for kitchen top. + luxury effect.
- **CASE STUDY:** Piero Zolatti - Parma Building: use in office + matching w/ environment.

## CASE STUDY:

- SERPENTINE: stone (Italy)**
- from north of Italy. Darker depend from the extraction point. can be smooth, strong texture
- CASE STUDY**
- **DATHU Stocchi:** Almu Bergamo used the material w/ 90 diff greens.

## COLOR OF ACCENTS

- FEATURES:**
- more used in design area.
  - colour can be obtain w/ objects.
  - objects can be material

## CASE STUDY:

- **fason Holcan**
- The house Holcan. Space have standard colours but give strong impact because of the use of yellow: sofa, lamps, chairs + use of black = STEBBUC CHROMATIC EFFECT.
- **PAITONE** make combination of colour making reference to food + colours.

## HAPTIC SURFACE

When identifying a material that looks close to natural, we classified as NATURAL

TEXTURE = not only surface of material also traces left by machineries.

## Lesson 6 - Viva

No natural material is READY-MADE, need to "transform" it in order to design.

## NEW FINISHES

Not all stones can be processed, but those are unlimited processes, where intensity can be adjusted. New technologies enhance natural look, produce rough surfaces without compromising the material thanks to a PROTECTIVE TREATMENT (water-oil repellent).

→ BRUSHING = Now very used. Final effect smooth & nia touch (ie orange). Can close pores by ~~brushing~~ firing. Can be used as a final passage (metal brushes or plastic abrasive). MATERIAL = GRANITO NERO AFRICA ~~can have diff. effects depending on~~ applied over other finishes.

→ WATER-JET = Have to use 1. cutting, high pressure water, instead of laser. 2. Abrasive: ex: waste, work wt texture, take away material. MATERIAL = GRANITO NERO AFRICA can have diff. effect depending on jet, more smooth or harder.

→ SANDBLASTING = Aggressive method, used for restoration. Achieved by pressure wash of sand and water on stone. Used for cleaning pollution, give material a velvet touch, colour result more delicate, not common depends on projects. MATERIAL = PIETRA DI STRAIA MARMO DI CARRARA (used 4 last effect); BEOLA VERDE; GREEN GUATEMALA MARBLE, becomes white when treated with sandblasting.

→ TUMBLED AGING = give an ancient effect. Consist in putting the slabs in water + sand, after a while the fragment of the stone consumes the surface. Acceleration process of aging rocks. MATERIAL = TRAVERTINO recall old monuments, wholes can be filled wt stucco as dust can go in.

## TRADITIONAL FINISHES

Main technologies based on MECHANICAL SHOCK = Bush - Hammering + THERMAL TREATMENT = Flame finishing. Traditional finishes divided in two categories: 1. Shocks; Shimming by impact made with drills and chisel, while shimming wt abrasive powders; 2. Saw plan: obtained by sawing the blocks, where the marks of cutting disk/blade can still be seen.

→ HAND SPLITTING/CLEFT = can be applied only on 3 materials. The stone is split along its line to open the rock on its natural grain. Natural character. MATERIAL = 1. MARBLE soft, delicate, full of colour; 2. GRANITES contain crystals, much resistant; 3. NATURAL STONES: BRAZILIAN SLAB + ARDESIA LIQURE natural look.

→ CHISELING = mechanical process, use to make decor, done together wt other process. Provide rough surface, can be repolished. On GRANITE NOTRICE MATERIAL = PIETRA DI STRAIA, can be done on all stones.

→ FLAMMING = heat up to 2500° applied on surfaces, Good for material composed by multiple minerals. Use a brush effect to finish. Mask imperfection to make plain surface's. Difficult to clean, colour might change.

→ POLISHING = Smooth matte effect, resembling the stone to its natural effect. Show strong colour + spots which are typical of veins. MATERIAL = TRAVERTINE, LIMESTONE, ARDESIA LIQURE, PIETRA SERENA (these last 2 can't be polished).

→ POLISHING = glossy finishing, make stone smooth, reflective surface. Most common finish, enhance colour of stone. Can be done in two ways: 1. Chemical polish (for marble) obtain wt abrasive + acid. 2. Mechanical polish (for granite) using abrasive tools (progressively finer). MATERIALS = MARMO DI CARRARA, WHITE CRYSTAL looks almost transparent, the edges disappears because full of crystals; light enters material, luminous and brilliant effect; BLACK GRANITE more uniform than AFRICAN BLACK GRANITE have shiny effect; BEOLA VERDE; GREEN GUATEMALA when polish green colour pops up.

# WORLDWIDE: International

Harmonization. Products + technologies.

## STONE PROCESSING COMPANIES

→ VASSELLI MARINI: new language of stone.

- used for bathrooms
- water proof
- rude effect

→ Cactola, Baffi Company: wash basin + bathtub

→ Side kitchen by Marco Fajoli & Emanuele Goupani kitchen made of metal + marble innovative

→ Quantity house - Florence: use traverse of lapalavo two looks row + contemporary aesthetic designs.

→ BODDI Patricia Virquiola, Experiment marble mix w/ dif materials. various projects. 30 types of marble. goal: discover new products.

→ PIRA MADINI: Philippe interested in geometry, works w/ interpretation of geometry + design firm.

→ GABONE: uses Pietra Serena, concrete effect.

# HAPTIC SURFACES - PROTECTS

CONSORZIO = group of companies in same area: Raffaello Galotto - warm feel. Daga (Venetian tradition mix of stones)

Since 1920 UADE STONES associated to brands

stones + marble identified by geographical position

## LOCAL STONES

→ From Italy:

1. CARREA MARBLE
2. LIGURIAN SLATE
3. ROMAN TRAVERTINE
4. VENETIAN MARBLES

## TRADITIONAL STONES

5. PEDESTONE + TIMBA (stone) brown color, thanks to strong oil. villa Spione, Italy used on floors.

6. BASALT/BASALTINA from Lazio, volcanic stone gray colour. Arch Dace & Gabano, Milano

1. PORPHYRY: effusive, eruptive stone, used. Culturally correspond to giants. hard surface.

homogeneous slabs, quartz brown background

→ FROM EUROPE:

3. OTO Dryllite: smooth and brilliant for mica w/ other materials. Two main qualities: available in slabs, w/ many finish (polish, brushed, honed).

used in import. projects. 9. BLUE STONE (Belgium) naturally very dense. Getting tends to brighten there's platino finish beauty of material. Grey w/ shadows of blue used in kitchen, bathroom for stairs, floors, coating. waterproof. Can be used near fireplace. No require of treatments. it - Appunti e dispense per superare i tuoi esami universitari

## METAL MESH LASER CUT

Come from mechanical work of metal. Process is the same even if is diff. material to obtain an effect. The removal of material produce empty spaces due to the reduced thickness of slabs.

Method can be used as a semi-finished material. Light material.

## EXPANDED METAL MESH

In market can find standard solutions, not customized. Used both for interior in an exterior.

Made by a resistive net produced by engraving + stretching metal sheets. Shapes: hexagonal along round, many sizes, small large. Material used: iron, aluminium, steel, zinc, titan.

## PERFORATED METAL MESH + WOOD PANELS

## ENGRAVING

Diff. levels of resistance. Anti-slip quality suitable for walkways steps - platform in building design; coating of facade ceilings sun breaker fencing

New method of introducing new INTERPRETATION OF ARCHITECTURE. Analysing:

- articulation of spaces
- combination of spaces
- perception of habitats
- construction.

FROM SEMPER:

- "Concept of primitive architecture" (analysis on construction), based on findings that origin of architecture on construction, instead of space. common rules same in every nation.

"Four elements of Architecture" 1852

1. EARTHWORK (based on soil, inbetween elements)
2. HEARTH (fireplace, now diff. networks)
3. FRAMEWORK/ROOF (sheltering - construct. roof)
4. LIGHTWEIGHT (structure protecting between indoor-outdoor)

Process of building in two:

1. Tectonics: of the frame (referred to the assembly of light weight, linear components, juxtaposition of diff. elements concept of cave)

2. Stereotomics of the earthwork referred to the repetitive stacking of heavy-weight. Adding approach. Use of materials in different ways, considering loadbearing structure concept of providing shelter to primitive population.

Theories from:  
VIOUET-LE-DUC ; GOTTFRIED SEMPER

**FRAMPTON'S TECTONIC**

- Each architecture will choose materials and elements based on main characteristic of architecture

- TECTONIC: use different parts assembled to create construction: rules/organisation of assembly depend on logic

Similar approach to ANALYTIC/SYNTHETIC

TECTONICS based on juxtapos. of bricks

STEREOTOMICS light-weight assembly of framework

**CARLO SCARPA: CASE STUDY**

Construction as assembly of different elements

CHARACTERISTIC: Different ways of building construction:  
- load bearing principle different  
- frame, windows, door considered differently

Another concept: ATECTONIC: conveyed to play with tectonics. ATECTONICS: don't show how building is constructed elements used for decoration. Tell a "fake" story of how a building is built.

IN CONTEMPORARY ARCHITECTURE:

ABSTRACT: Lightweight applied on roof - ceilings SEPARATED FROM EARTH puts men closer to the sky

DIRECT CONTACT with earth. Intermediate element to connect artificial & natural

FOCUS 2

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Ceiling as architectural element has been investigated through history for its forms and functions.

Book: Elements of Architecture by Ram Casas: architecture change overtime make inhabitants understand how is built.

AS AUTONOMOUS or INTEGRATED part of buildings.

- There can be smooth ceilings, coinciding with the real structure of the building, such as load bearing beams transferring to vertical systems.
- There can be false ceilings: coinciding with a false finish.

## DETAILS & COMPLEXITY: CEILING

### TRUE CEILINGS:

- Structures where systems are visible, (ie. Centre Pompidou)
- Digital technologies, integration managements allow construction of 3D spaces and cooperation among architects, designers, engineers to control positioning of structures (such as pipes), its geometry. This allow the creation of true ceilings, as integrated with building services with AESTHETIC goal, aiming for final appearance.

GOOD FOR:

- AESTHETICS CONTROL
- SUSTAINABILITY. control allow efficient placement and maintenance
- ORGANISATION OF SYSTEMS more precise as are now visible, follow RYTHM, GRID, GEOMETRY
- CASE STUDY: Brossy & Associates Theatre National de Chaillet Renovation, Paris.

### FALSE CEILINGS:

- Two main typologies: 1. GRID; 2. GALVANISED STEEL PROFILE (suspended grid)
- Aim for structural function: structure can be a decorative element of the ceiling, allowing design interiors without thinking of load bearing structures, but as structural improvements of beams, using GRIDS.

#### SKULLFIT INTEGRATION:

- variable of ceiling design when coinciding w/ roof.
- Irregular, hexagon and columns structure made w/ visible wood, in 3D dimension (help acoustic control) ie. Trump campus Center, Stuttgart

#### STRUCTURAL GRIDS:

- used to create real structure for load bearing functions of flooring systems.
- Grids contribute to transfer loads to columns
- Geometry can be use for decorative effect.
- In big space there's probl. w/ acoustic: to reduce noise, harsh surfaces are used. 3D geometry ceiling above absorb sound waves
- In refurbishments (irregular) systems can be used to remark fundamental structures, also introducing other elements, such as artificial lights.

#### INTEGRATION OF SYSTEMS & DECORATION:

- Integrate building service in structure
- Triangle design: each triangle is slightly inclined: allow for horizontal distr. of ventilation; lighting; electricity; concealed and embedded.
- On site concrete structure

#### DECORATION:

- Linear elements of grid made w/ wood strips = irregular geom. of windows expand to ceiling
- complex & integr. of systems in hidden space, as storage

#### ARTIFICIAL LIGHT INTEGRATION:

- Carlo Koolhaas, Casa Miller, 37: integrate light, different function
- Created a decoration for focus point (problem)
- Dan Zurch, Terminal airport have false ceilings fabric panels to deflect light + absorb sound.

#### NATURAL LIGHT INTEGRATION:

- For galleries + museums ceiling very important & general functions = light over artworks
- Renzo Piano plays with diff. types of modules + elements to control light in spaces, creating interesting features on ceilings
- Extreme = not existing only show sky = poetic element

#### "SEALING":

- steel columns + ceilings: typical warehouse, beams + mangle visible = appearance + character of space.
- building system found in false ceilings.

Yale Uni Art Gallery - space left free from columns & partitions for vertical axes of HVAC system. Prefabricated square grids, allow for cavity & horizontal passage of hori. network's distribution of building services. (Louis Kahn)

## 2) DETAIL AS A MOTIF.

- Geometrical elements solve problems of building
- Approach: based on shapes (used in dif. parts w/ dif. solutions)
- Shape = way of represent.
- Modern innovation
- Geometrical feature to solve dif. problems.
- PART that generates WHOLE
- Issues: inability to respond to scale, and failure to styling = rescaling plain

- CASE STUDIES
- \* Gullinan, St. John's collage Library (circle)
  - \* Fay Jones, Thronerum Chapel (geom. feature used to solve probl.)
  - \* Carlo Scapa, Tomba Britton (dif. joint, same shape window, single part gener. whole)

## 1) THERE ARE NO DETAILS

### 4) DETAIL AS ABSTRACTION

- Here details are not visible.
  - Physically they are there, conceptually no = abstract.
  - Origins in modern archt/mam. (concealing joints) are unnecess. ornaments that can be elimin. to achieve simplicity of imaginary
  - Not show joints to highlight abstract idiom of archt. = REAL CONCEPT OF ARCHITEC.
  - Special attention to detail.
  - suppression of info: what prevail, idiom prevail
- CASE STUDIES:
- > Future System Media Centre, London joints not visible, naval structure.
  - > Frank Furness, R. Lewis House: frame of window colored in red: window frame, intel treated for expressiveness
  - > Walter Gropius, Master's House: distinguish from window (black on black) + flush up on roof used as plain line. suppression of elements to highlight geometry of building

### 3) DETAIL OF CONSISTENCY:

- Analysed conceptually as consistency: extension of the idea of larger design into small
  - Small scale elements constructed in same way as building in large: only variation of scale.
- CASE STUDIES:
- > Bauhaus Building Dessau, W. Gropius pure geom. forms, simple elements = simple door handle. create consistency w/ overall building. detail absorbed to the same composition = use same language, geom. forms, concep. consistency
  - > Santiago Calatrava Milwaukee Art Museum: same elements in dif. scale = FORMAT CONSISTENCY.

### 3) DETAIL AS REPRESENT. OF CONSTRUCTION:

- Detail used as articulation of functions, conserve how is construc.
  - Detail becomes an order, process of architecture. + DECORATION
- CASE STUDIES:
- > Ludwig Mies van der Rohe IIT Alumni Memorial Hall, Chicago: famous negat. joint, use bricks to underline steel structure embedded in concrete pillar = show columns
  - > Detail use to tell how was constructed
  - > Lud. van der Rohe, 860/880 Lakeshore Apart + 900/910 Esplanade Apartm! 860/880 uses steel, embedded concrete columns = highly articulation. Detail is order because in 900/910 uses aluminium (no steel) as a reference to a dif. construction solution. Order because is process of classical architecture
  - > East Wing Expansion, KOMA suspended columns = pure decoration
  - > A. Reichel Resid. B. Kassel = SUSTAINABILITY control energy consumption (no masonry)

# WHAT IS DETAIL?

Different theories

## 4) JOINT:

- Assembly of dif. parts, materials, understand problems of joints
  - Reinterpret joints to give dif. EXPRESSIVENESS.
- CASE STUDIES:

-> Tribune Review Building Louis Kahn: solve problem of joint, highlighting it: column support load of post-tension beams, behind white piece there's a stub of steel, usually this is cemented. He closed this gap w/ marble parallelepiped = mean of expressiveness.

FUTURE: 3D Printing and graphic manufacturing free joints from constraining, no construction problems, but decorative.

## DEEP ANALYSIS OF DETAIL:

- From
- > EDWARD FORD (American scholar) wrote a book focussed on DETAIL ON PERCEPTION
  - Studies modern architecture from a dif. perspective
  - Reference to Frampton, technologies and relationships
  - Questions on:
    1. relationship between DETAIL & WHOLE
    2. Aspect + scale
    3. Dimensions of building
    4. Diff. functions of building
  - Other definition of detail categories of archt. + joints.

## 5) DETAILS AS AUTONOMOUS DETAIL

- Interesting in expressiveness and critics
  - Single parts/elements of building are chosen, these follow a completely free rational geometry/materiality from whole building.
  - Definition: SUBVERSIVE ACTIVITY in contrast w/ overall building. Architect free elements from general design.
- CASE STUDY:
- > Alvarez Saito Tawibu Saynatsalo (1949) door handle different from whole building

Lesson 7 Prof. Daplio

# LESSON 8A - Doglio. - TECHNO-TYPOLOGICAL EXPERIMENT. IN COLLECTIVE HOUSING

Focused on role of team in arch. design: analyse structure + spaces (or plans) observed but rebuilt: ut structure + built. sens

Focus on multi-family collective housing.

Introduction of concrete structure in 3 PARTS: **FIRST PART REINFORCED CONCRETE**

## FRANSE STRAURE

The innovation cross each other, creating myths: - myth of individual multi-family dwelling - myth of self-constr. - myth of customic.

**4 STEPPED CONSTRUCTION** where each floor has a smaller plan than the floor underneath. MULTIFAMILY HOUSING FACT: provide private gardens.

**2 INFILL DOUBBLE LAYER FACADE** using the facade of building to separate in roof-outdoor + give more space to flats.

**CASE STUDIES:**  
- Louis Khan, Norman Fisher House, " -  
- **FLAT CENTRAL PLAN** = flats organized in central plans, reducing distribution of corridors. All private spaces, face common central area, ut direct access. Problem: if flat not reach all spaces of house. Alvaro Siza - Transavirtelet - Berlin.

**3 FREE PLAN** Separation of walls ut single pivars = free space (thanks to loadbearing wall replacement ut "wall ut single pivars). Separation of interiors, movable walls + change set-up. Can allow free organization according to family needs, NOT successfull = too free, no privacy now rediscovered = modern family composition (+2 pax), requires good structural building services and spaces (can't recognize function of space) + CUSTOMISE anti e dispense per superare i tuoi esami universitari

## CASE STUDIES:

1. Henri Sauvage - Immeuble Rue Des Amiraux - Paris: intention to improve living standards of inhabitants, with height of buildings in relation to road + illumination problems. Problems ut construction: dimension from bigger to smaller, making lighting problems and loss of space in the centre = solved by creating common areas (with pool). Balconies allow to be open and give air to people. 2. Jean Renaudie - Housing Complex: similar to Sauvage, interested in giving a private garden to inhabitants.

## CASE STUDIES:

1. Giovanni Broglio - Tipo Ultrapiopolo - Quart. Regina Elena (MI) He was committed to enhance quality of public housing. Project made for low income family, to provide them private services (kitchen + bathrooms). Thanks to ~~free~~ structure of concrete ut pivars, had infill walls (double layer wall two layers of brick wall + air cavity for insulation). Broglio used these cavity 30-40cm on larger of them, adding kitchen + bathroom. The structure is free of organization, pivars can be demolished and walls can be moved creating dif. layouts + dimensions. 2. In Renowned buildings: use prefabricated modules (supported by steel pins) juxtaposed on the facade -> PLUS Meth. by Drullo, location + vessel: improve quality of public houses, introduce new fence + open spaces

## CASE STUDIES:

1. Manifesto by Le Corbusier - Pierre Jeanneret, Houses 14-15, 1927 - Ludwig Hies van Delve, House 1-4, 1927
2. Ludwig H. U. Lake, Lake Shore drive Apart. Chicago: used free plan without walls.
3. BIG + JDS - IM HOUSING, Copenhagen, 2005 (Contemporary) no interior walls of cabinets + bedrooms.
4. Kuhn + Fisher, Überbauung 1991, Flat can be separated in 2 single flats or one big flats.

# LESSON 8B Dąblio - TECHNICAL TYPOLOGICAL EXPERIMENT IN COLLECTIVE HOUSING

## SECOND PATH

### INTEGRATION BETWEEN

### STRUCTURAL BUILDING SERVICES

1. **HOLLOW STRUCTURE**  
**CASE STUDY:**  
 Studio Fassafelli - Multifunction building 'Lame'.  
 Stopped construction around flats to have balconies. Unhappy.

**Pillar & Column** of vertical structure.  
 have a flat shape section, creating a cavity where pipes can be hosted. Allow different sizes of flats (on regular structure), columns have cavity hollow columns, including beams w/ S shape. Each horiz + vert. structure can now host pipes, leaving space, many places of the plan can find pipes = FLEXIBLE PLAN. Ordinary design find construction in ~~existing~~ pipes position. \$8 in construction.  
 Focus: part of inhabitants in design flat.

### 3 BUILDING SERVICES (SEPARATION OF STRIPS)

Popular in the 90's. Starting point: separation of space + organization. Provide flat w/ services, where strips are cabinets. All elements fastened together, conceive a cabinet.  
**CASE STUDY:**  
 - Smiguru Ban a Square yards house, Kanopwio House!  
 walls, made roomy cabinets and storage also for structural elements of roof. Uniform space where panes can slide to open/separate spaces.

### 4 BUILDING SERVICES SEPARATION IN CORE

Focussed in centering all elements together at the centre of the space. Elements left completely free to organise.  
**CASE STUDY**  
 - BDP Architects Apart Manchester: all elements in one single unit. actual storage, perceived bigger space (seen from outside) project about perception.  
 - Diener e Diener Reinventing Bariera: elements at the centre of the room, easy access to maintenance, separation of space per superare i tuoi esami universitari

### 2 BUILDING SERVICES INTEGRATION IN THE FACADE

**CASE STUDIES:**  
 - Vico Rastrelli, Regid. Building, Porta Ramonoulli: hab. could be any and decide design before construct. He uses shape of beams of facade behind horiz. line of build services) adds vertical passages, so that all passages are on the facade (not embedded) as in house R129, Werner Seber: built w/ no walls, vertical pipes part of the facade

### 5 BUILDING SERVICES INTEGRATION

Concept developed by Daniele Chenut in 60's, 'Ipotesi x un habitat contemporaneo', who suggest using steel constructions w/ open joints w/ trusses, which allow integr. of structure and pipes. Here pipes can be crossed, and moved in years. This can be conceived in a false ceiling, or elevated floor system. Very common now.  
**CASE STUDY**  
 - Breda (DK), Nieuw Australe, vertical pipes in hollow space, near corridor, elevated floor, HPVC system along perimeter, allow accessibility. Extensive use of pipes, w/ tech innovation.  
**\*INNOVATION:** using DRY CONCRETE SCREENED (leaver below pavement made w/ mortar + concrete) w/ purpose of passage of pipes under floor.  
 - 2024 construction = change in things without demolish structure  
**\*INNOVATION:** Position of toilet + single pipes = need to be inside 1% to allow flow. New innov. flat pipes can be replaced (NO FOR TOILET)

# LESSON 8B - TECHNO-TYPOLOGICAL - EXPERIMENT IN COLLECTING HOUSING

1. + SIZE FINISHES QUALITY

Idea that people could have more space but poor quality elements. Reduce quality of finishes using diff. materials = same cost = bigger space

CASE STUDIES: ~~Public housing~~ Jean Marc Nime: Public housing. High cost of building, so lower quality of elements to cope with all costs. Double height living room, 3 floors w/ staircase (unusual for public housing) + balconies. Doors of warehouse used 4 windows. Resident could choose cheap material

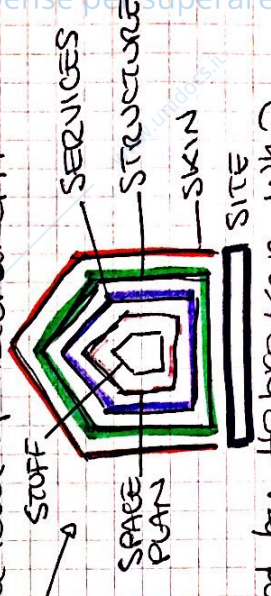
2. INFILL & SUPPORT THEORY by HABRAKEN

Provide main structure and allow inhabitants to finish the home = Concept later applied for specific purpose. Concise building in diff. layers and durability. Concept also for tenants not only for home owners.

## THIRD PHASE CONSTRUCTION PROCESS INNOVATION

3. SHEARING LAYER OF CHANGE THEORY by BRAND

Based on diagram developed the idea of Habraken: he introduces different layers: where the lowest element has more durability, instead the highest structure needs to be changed in future. Flexible structure allow many changes: installation, space, perception up to requirements.



CIRCULAR ECONOMY = developed by Habraken who found many problems in old constructions, develop idea to reduce costs and eco-friendly admin line w/ life-cycle control

4. EXPANDABLE HOUSES

Allow expansion of existing foot: CASE STUDY:

DOMM X - Naked house London: reduce cost, double height walls, similar to loft, allow the construction of a new room thanks to a ring beam, where wood pannels, joist can be placed.