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A Venn diagram illustrating the intersection of three quality dimensions: **USABILITY QUALITY** (purple oval), **ECO-SYSTEMIC QUALITY** (teal oval), and **MORPHOLOGIC QUALITY** (orange oval). The central intersection of all three is labeled **GLOBAL QUALITY** in red text.

- **Usability quality** which mainly concerns the quality of housing, functionality and space;
- **Ecosystemic quality** *which includes the themes of eco-sustainability, strategies and technologies related to architecture capable of reducing environmental impact;*
- **Morphologic quality** which concerns mainly perceptive aspects and leads back to the concept of aesthetic-formal quality;
- **Global quality** and the 'quality system' which, encompassing most of the above aspects, evaluates the processes.

FUNCTIONAL AND SPATIAL UPGRADING

ENERGY-ENVIRONMENTAL AND ECO-SYSTEMIC UPGRADING

MORPHOLOGICAL UPGRADING

BUILDING AND CONTEXT

ENVELOPE

FACADE

IMPROVEMENT ACTIONS

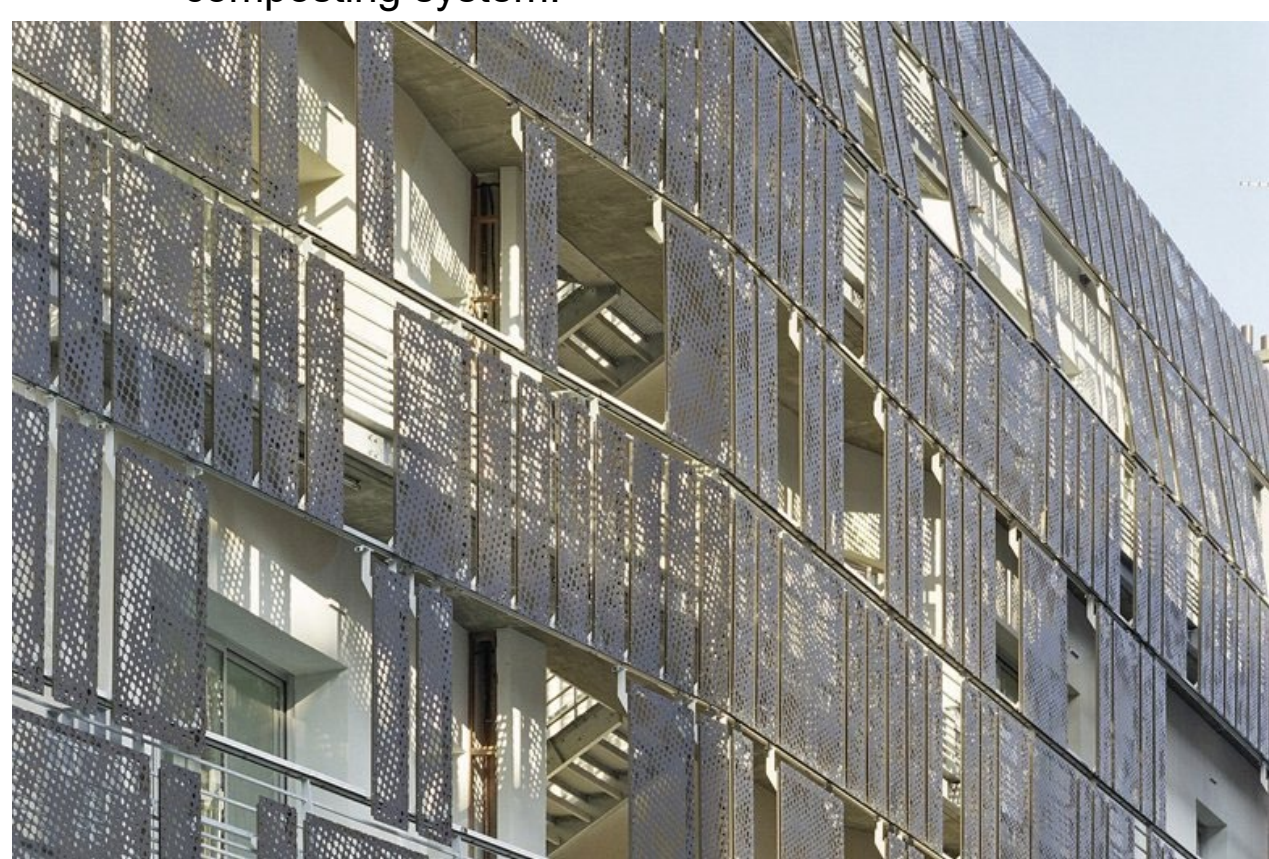
- Demolition, densification and infilling (urban stitching)
- Radical remodelling of the entire settlement with slat cutting;
- Cuts and caesuras (total or partial) in the 'slats/barriers' to break the monotony;
- Selective volumetric cutting and subtraction, localised only in certain points of the buildings;
- Reduction of heights, selective volume reduction;
- Compensation of the reduction in the number of dwellings with new building insertions with collective functions;
- Creation of new duplex dwellings between existing top floor and superelevation;
- Small top-floor attics with terraces (town-houses);
- Extensions with full-height volume increases on building facades;
- Interruption of long galleries with the insertion of stairs and lifts and the creation of lobbies with lifts and stairwells to encourage socialising;
- Residential mix (private and social housing and insertion of offices, shops, restaurants and other services);
- Improvement of the urban and landscape context and urban connections;
- Use of outdoor spaces with common and social functions and creation of new green areas, productive greenhouses in the common courtyards, with composting system.

- Thermal and acoustic insulation;
- Insulation of roofs and ground floor/basement with mineral insulation, insulation of envelopes from inside;
- Sound-absorbing wall towards the motorway as a ventilated wall and creation of service spaces;
- Diversified strategies for acoustic insulation of walls and ceilings;
- Thermo-insulating and acoustic insulation of walls, floors at 1st level and roofs with internal "counter-wall or false ceiling";
- Creation of a second skin on a wooden structure for thermal insulation purposes;
- Insertion of three-dimensional punctual shells, anchored on a wooden structure, for thermal and acoustic insulation purposes;
- Innovative double chamber solar envelope system useful for pre-heating and air heating (through balconies/greenhouses and cavities);
- Total replacement of envelopes, insertion of thermal break glazing and balconies;
- New envelope of brick and mineral insulation (48-44cm thick, Passive House);
- Refurbishment of all curtain walls and total replacement of windows and doors;
- Replacement/integration of windows and doors with more efficient low-emission and thermal break glass (including PVC).

RADICAL INTERVENTIONS

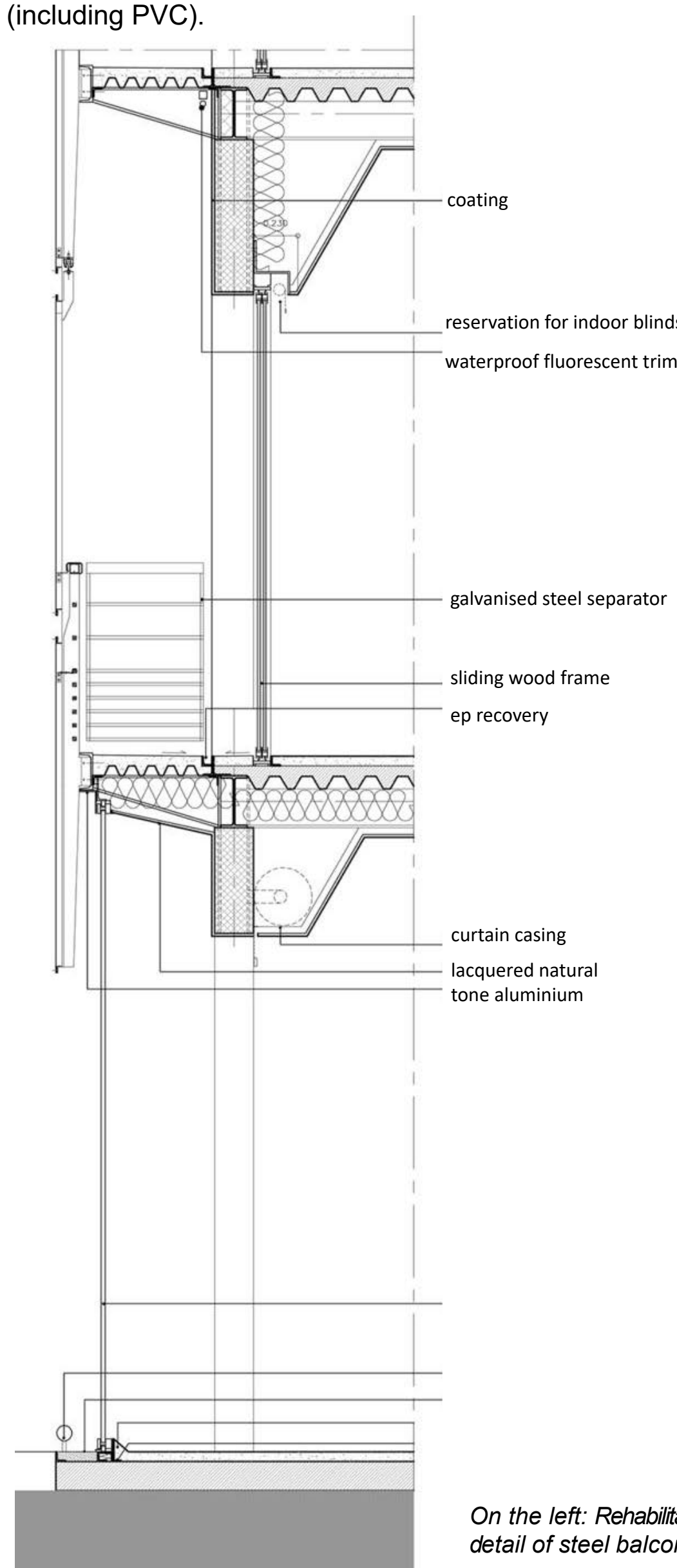
- Transformation through a system of encapsulation by means of a two-dimensional/three-dimensional skin with a "chameleon" effect on the surfaces with the insertion of new finishes;
- Transformation of the elevations through the total replacement of the envelopes with a "chameleon" effect on the surfaces with the insertion of new finishes;
- Transformation of the surfaces with the use of traditional materials such as brick and stone;
- Transformation of the external surfaces with effects due to the insertion of new windows, opening and closing of loggias and balconies, within the same existing volumetry;
- General or localised (hermit crab) transformation through 3D shells, with aesthetic/colour references taken from the contexts;
- Transformation of elevations with insertion of ventilated and sound-absorbing walls;
- Transformation through three-dimensional skin, with so-called "residual" and impure language, which recasts modernity and simultaneously contains it in the limbo of transition;
- Transformation of external volumes and surfaces with full/empty effects and transparencies.

CASE STUDY



widespread extension		punctual extension		extension for filling	

Classification of interventions on the façade, roof and footing, in M.C.Frate, Riprogettare l'esistente secondo una matrice di sostenibilità: Interventi di riqualificazione ambientale dell'edilizia residenziale pubblica in Europa, 2019



FRAGMENTATION OF ORIGINAL VOLUMES

- Volumetric transformation through additive and/or subtractive operations of existing volumes;
- Overall transformation through selective and punctual demolition of volumes;
- Punctual elevations, even of two storeys, often set back with respect to the line of the building;
- Transformation through functional three-dimensional insertions (lift towers and terraces);
- Overall remodelling of the building structure through volumetric characterisation of corners, entrances and other parts;
- Remodelling through volumetric expansion in the form of a self-supporting shell (montage and decollage);
- Remodelling through new self-supporting "exoskeleton" insertions;
- Remodelling through new cantilevered insertions, with a light metal structure anchored with inclined tie rods to the prefabricated walls;
- Volumetric transformation through three-dimensional insertions, even non-functional, on the facades;
- Insertion of technological elements of contemporary design (mini-wind turbines, heliostats, brise-soleil, photovoltaic panels).

SURFACE EFFECTS

- Use of colours, differentiation of the various elevations with contrasting colours;
- Use of traditional and contemporary materials;
- Characterisation of the building heads with artistic insertions or murals.

On the left: Rehabilitation of Building 76, Rue Saint-Antoine - Paris : detail of steel balcony addition