

MATTER IS DESIGN

The growing complexity of transformation processes of built environment has increased the attention to the project's immaterial dimension and its "invisible components", while the careful control of its physical and material components seems to be less relevant. This is happening despite the growing requirements needed and the increased levels of building performance to be provided -especially those imposed by environmental issues- are accelerating techniques innovation and modifying the contents and practices of the project.

The many needs to be met and the overwhelming availability of new technical options push on established paradigms and arrangements, demanding the project to recreate coherence between the constructive principle and the authenticity of the material. A coherence being able to meet the challenges of contemporaneity, by fully synthesizing its many instances (environmental, social, cultural, technical, expressive), without any media exhibition of the innovation, nor renouncing to use materials as a vehicle – and, together, as content – of the quality of space and architecture.

Some trends highlight with particular intensity the effects that innovations in this area lead to project practices. Among them, emerge as a possible topics of greatest interest:

1. the availability of materials and components incorporating adaptive behaviours -macro, micro and nano-scale- introduces elements of dynamism in the architectural artefacts that make it changeable over time (component automation, functional coatings, self-cleaning, self-adjusting, self-repairing, energy collecting materials, etc.). At the same time, the diffusion of parametric design, along with the development of computer-aided production techniques, the rapid evolution of 3D printing/prototyping, the ever-expanding range of diversified and on-demand customizable products, allow to obtain materials with designed features that allow both new applications and changes in traditional ones, but need to find a complex equi-

ilibrium, within the project, between "showing" and "hiding", between congruence and dissimulation, between functional performances and figurative and perceptive features;

2. performance enhancements allow for reinterpretation of traditional stratigraphy or configurations (e.g.: monolayer masonry in rectified clay blocks, x-lam walls, etc.), at the price of significant changes in operation and organization of the building site, which is involved with intense hybridization of construction techniques (co-existence of mono and multi-layered elements, traditional and innovative materials, dry and wet assembling, off-site prefabricated components and on-site craftsmanship works, etc.), whose heterogeneity is still an obstacle to the digital modelling of the process and, in general, it requires to seek new and effective forms of integration and complementarity between the different elements and arrangements in the project;

3. the need of reducing environmental impacts and carbon footprint invests the whole building process and especially the material supply chains, inducing the use of environmentally sustainable products (renewable, made with recycled waste and easily recyclable at the end of their life, etc.). These dynamics open up challenging issues regarding the material suitability, effectiveness, durability, end-of-life management, with reference to both the performance assessment and the design control of the formal and expressive results as well as of the adequacy of the assembling of which these materials are parts. These issues are even more critical when observed within the target of the recovery of existing building, where the interaction between obsolescence processes of existing and new materials and the compatibility issues (chemical-physical, perceptive and in terms of relationships with places and contexts) must be considered, as well as of their interactions with the formal and expressive aspects that the project is called to manage.



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