LESS form, more performance

Holistic programming of climate responsive architecture

Prof. Jürgen Reichardt
MSA

Holistic design and engineering approaches offer the potential to realize strategies aimed at "form follows performance". Such strategies serve to integrate multiple component parameters, especially those oriented on climate responsibility. As a result, the focus widens, from individual requirements of a single building or structure to agglomerations of building structures, influenced by specific local climate and site factors. The basis for such strategies are synergetic programming approaches that encompass the resulting project life cycle in its entirety. The underlying programming "grammar" includes aspects of site, climate, design, construction, execution, operation, maintenance, renovation, reuse and others. We strongly suggest that the balancing of parameters (geography, ecology, technology, volume, energy, envelope, floor plan / section, material and ventilation) must be distinctively programmed, creatively designed, efficiently engineered and generally optimized. This systematically spans the very beginning of a project and the entire planning, building and life cycle process. The holistic aim is to achieve a comprehensively optimized solution that is practical, climate responsive and sustainable. Finally, the underlying programming grammar of the project should minimize the amount of disturbances to the existing ecology and the carbon footprint, based on a rigorous, yet responsive checklist.[1]

The call for papers was intended to motivate research in terms of better "balancing" these aspects of a programming grammar in architectural education. This includes, but isn't limited to questions as follows:

- Are holistic programming approaches already included in international architectural and planning curricula and what related teaching concepts and tools find use?
- What cognitive skills do students need to demonstrate in order to acquire network skills and teamwork ability?
- Does the aim of balancing art, beauty, programming and performance lead to confusion or even conflict?
- Which (digital) tools do students need to propose performance-based design and engineering solutions?
- Should we develop more „app-type" teaching methods for an increasingly integrated architectural and engineering education?

1 - Bhattacharya, I., Rajapakhsa, U., Reichardt, J.: Novel Concept of Technologies of Sustainable Building Design, Part of the Implementing the UN Sustainable Development Goals, Regional Perspectives book series, first online 30 August 2023