SPACE STRUCTURES: ARCHITECTURE AS STRUCTURAL INFORMATION

Martin SCHROTH1
1 Architekt M.A. (AAD), Klasse Digitales Entwerfen, Faculty of Architecture, Staatliche Akademie der bildenden Künste Stuttgart, Am Weißenhof 1, D-70191 Stuttgart, E-mail: m.schroth@abk-stuttgart.de

ABSTRACT

The use of computational tools such as for form finding and optimization design to explore digital methodologies in an efficient way allows us to simulate, analyze and iterate the impact of material information and fabrication conditions in design processes. The aim is to visualize and document our ideas more accurately than ever before. The shown project was an entry for the ideas competition of a campus building in Reykjavik/ Island. (http://www.vatnsmyri.is).

The paper is structured in the development of the structural systems influencing the architectural performance and spatial structure: architectural systems, structural unit, generative component.

ARCHITECTURAL SYSTEMS

The project in Reykjavik is part of a bigger campus organization and has the core function of a research library. The aim of this building is to build a new campus center for the extension of the University of Iceland as an architectural system, which supports the needs of different users.

The master planning of the former airport area raises the question of the future of educational and research institutions. This calls for a multi-use campus building, which revolves around the question of integrating and articulating new levels of organizational interaction enforcing the formulation and notion of fluidity, ambiguity and hybridity.
STRUCTURAL UNIT

Working with the performative capacity of the unit, the project encapsulates on a bigger scale the potential and variability of repetition through rule-set based on the design thesis content, which asks for an informal unit where boundaries begin to move and create new organizational principles.

Based on the material logic consisting of minimal distance and tension, the unit develop a building envelope that integrates various performative aspects: structural logic, light transmission and visual connectivity can now be tested through the manipulation of a series of system parameters such as boundaries conditions, and functional connectivity.

GENERATIVE COMPONENT

With parametric software one could unfold dynamically relational assemblages by programming various behaviors of spatial configurations. Digital geometry and parametric design allows information update and variation of performance. Geometric transformations are well defined and easily implemented in numerical form. Design Software takes advantage of the accessibility of geometric methods with material practice and fabrication processes.
MILLING TECHNOLOGY

In collaboration with the HFG Offenbach we produced this architectural model on a 5-Axis CNC Milling System. In order to make the engineering of the production data we have to face the fact that we divide the model into four parts because of the production limitations.
Name: Martin Schroth (M.A.)
Organisation: Städelschule Frankfurt / HFG Offenbach
Prof. Ben van Berkel, Prof. Johan Bettum
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Practice: Academic Assistent, Staatliche Akademie der bildenden Künste Stuttgart
Prof. Mark Wigley, New York