**CELLULAR COMPLEXITY “EVOLVE”**

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Cellular Complexity “EVOLVE” is an installation, which exhibits the potential of cellular geometries at a spatial architectural scale. The complex, twisted geometry was generatively designed and digitally fabricated and stands out for cutting edge digital design concept and strategy.

The installation was developed through the research of cellular geometries and translation of their performative and spatial qualities to an architectural scale. Cellular systems exist within the organization of biological systems in a multitude of scales from the nano to the micro and macro; they embody performative properties structurally, thermally and acoustically. This installation rethinks the scale at which these systems organically exist, pushing towards an architectural scale that can be re-organized to a diverse range of applications and performative parameters. The installation capitalizes on the potential of computational algorithmic design methods and the ability to generate complex geometries, which address specific contextual parameters.
The design developed for the EVOLVE exhibition is inspired by these cellular systems. They offer the potential of efficient gradient differentiation through porosity, within a unified space-packing geometrical system. The exhibit design consists of 264 cells varying in size, porosity and twist; they are algorithmically generated and organized along two opposing surfaces which transition in orientation through a smooth twist.

The twisted surface geometries redefine the traditional relationship of horizontal ground planes towards vertical wall planes by creating a transition that blends both planes within a three dimensional system. The transitional dynamic of the design creates enticing intermediary spaces, both between and along the two opposing surfaces. The developed system inherits design adaptability towards various spatial arrangements and constraints through the generative algorithmic design process. The exhibit is entirely composed of standardized sheet materials which themselves hold a cellular structure (Expanded PVC) and were fabricated utilizing digital CNC fabrication technologies. The assembly starts from entirely flat-packed parts, and requires no mechanical fasteners or adhesives and is easily reversible and transportable.
Cellular complexity “Evolve” Exhibition - System - Assembly of one single cell

Detail, exhibition perspective

Exhibition perspective
MARIE BOLTENSTERN is a Berlin-based Architect. Born in Vienna, Austria, she is a graduate of University of Technology in Vienna and the Emergent Technologies Masters program at Architectural Association in London. For the last year she has been working with Bollinger & Grohmann Engineering in Paris within the 3D development department and currently she is finishing her second Masters degree at Berlin University of Technology. Marie is specialized in parametric design processes and is particularly interested in the convergence of architecture and structural engineering through complex structures.

KAIS AL-RAWI is a registered architect (JEA). Born in Amman, Jordan. He holds a Masters Degree in Emergent Technologies & Design from the Architectural Association in London and Graduate Degree from Ryerson University in Toronto. He is currently based in Los Angeles, California and has recently joined Walter P Moore & Associates’ Envelope Design Practice. Prior to that he has been working with award-winning practices including Synthesis Design + Architecture. Kais specializes in generative design methodologies involving computation, investigating the potential they hold within Architecture and Urbanism. He also directs and teaches at the Architectural Association’ Visiting School Program in Jordan.