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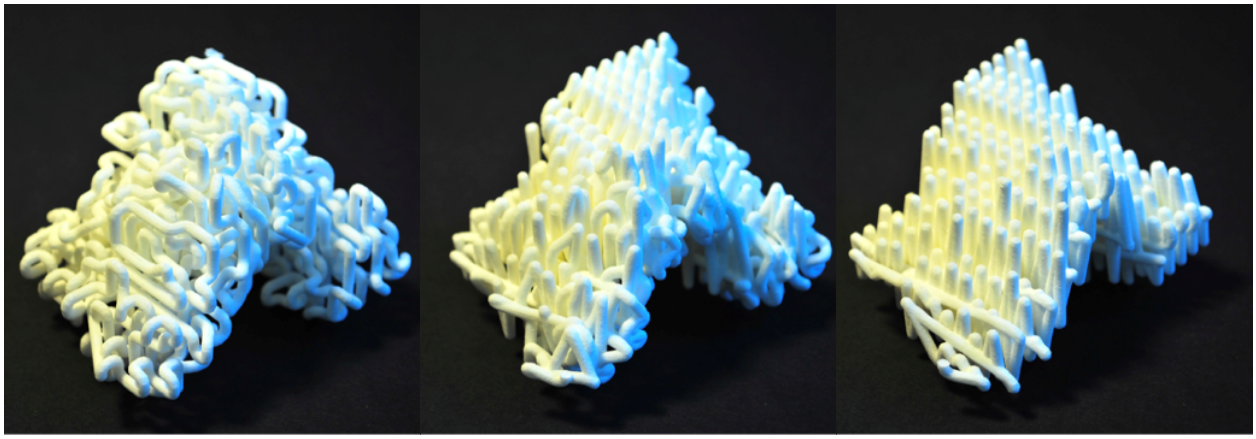
Cellular Architecture

From Discrete grids to a High-Resolution Space



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Cellular Architecture is a research that seeks to investigate the application of Cellular Automata simulations in new ways to develop architecture, as a growing design process in contrast to the top-down design methods that we applied in the architectural field. For that purpose the focus of this research by design is to explore different ways of Cellular Automata, from digital models to physical simulations, using coding as reader from real context and translators of new programmatic and spatial solutions for architecture.

Architecture has been the foundational cell of our cities, as a building block ruled by human rules that transformed our natural environments in the physical manifestation of our cultural evolution. These blocks of architecture are governed by constraints that, in different ways, are synthesising fundamental rules in artificial new shapes. In that sense, architectural space (from private to urban) can evolve from an initial state as a living organism: reading, learning and applying from its context, growing from new inputs as self-replicating logic. Over this, they can rebuild a unique geometry, highly coherent from the beginning to the end, layer by layer, rule by rule. The frontier between Cellular Automata, Architecture and Nature is an opportunity to be used as a design approach, firstly understanding the area in which both worlds are in contact In this digital era (micro and macro scale). Information is the standard field from where all these three elements are in a constant dialogue, producing exciting results. Cellular Architecture as design approach can learn from contextual data and from itself, during the beginning to the end of the generative process, delivering answers about coherence inside/outside the architectural proposal. Finally, Cellular Architecture can redefine how architecture and context are booth related? Can this relation create a different typology in architecture?

Alberto Fernández González is Architect UCH, MArch UCL, PhD Student at The Bartlett School of Architecture, Academic at UCH-FAU and RIBA Chartered Architect. His career has been developed between academia and professional practice, exploring the "form" designed from the local perspective as a contribution to Global issues applying BIM, Generative Design and Digital Fabrication in different scales, recognized internationally by HOLCIM Awards, Archiprix International, UIA-La Biennale di Venezia among others. He is part of UCH since 2006, in where he leads Design Studio 6, Research Seminar and Graduation Projects design studio. His MPhil/PhD studies are focused on the application of Cellular Automata in architectural design processes, funded by ANID and UCL.