

WHAT'S THE MATTER? MATERIALITY AND COMPUTATION IN A STUDIO AT THE AGE OF ENVIRONMENTAL ANXIETY.

An experimental approach to architectural education

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The stagnation of current architectural education is attributed mainly to two factors. On the one hand we have all embraced universality, and on the other we are all using the same tools. This is a new form of global modernity; the production of international and well-mannered architects. There is very little difference, variation and specialized focus that enable students to develop individual architectural approaches. The prevailing modernist heritage is prone to dogmatic attitudes of design and prescriptive teaching methods.

The second half of the twentieth century was a time of change marked by increased global mobility and the exchange of ideas; a context full of diverse approaches that occurred at the end of Modernism. The beginning of the twenty-first century was time to explore new perceptions and innovative technologies such as the micro scales, materials that perform, architecture that adapts and the environment as a dynamic agent; architecture is part of complex micro systems of ecology, chemistry and biology, and not only physics.

Architectural experimentation is conducted through representation and embraces estrangement, opposition and resistance that attempts to transgress boundaries. More than just a graphic device, the act of speculative drawing and representation is a form of architectural inquiry unto itself. Pedagogy becomes again a primary agent within architectural culture. Yet representation is now shifting from mere abstracted or figurative illustrations to simulations and a new form of procedural and volumetric growth. It is possible now to transgress the limits of architecture through replication, reproduction and time-based processes.

To provoke an even more challenging process of discovery, design studios of architecture can establish a starting point that is non-architectural. A project would then follow a specific design process, an incubator of ideas, which involves experimentation, intellectual rigor, precision, continuous testing and evolution of propositions. The first version of the students' concepts is prepared before considering the program or the site. We need more non-linear thinking systems that do not seek obvious and predictable outcomes. The notion of 'lateral' causes thinking 'out of the box'. Purely skill-driven design modes stand out, but this is not enough. In the ear of abstract technological influences, it is fundamental to maintain and foster a studio focused on culture as a basic pre-condition for learning and as a platform for experience and interaction.

The work of an architecture studio should investigate the impact of innovative technologies on current design practices. The process looks at advances in new digital media and materials or biotechnology within a design context that is increasingly more interdisciplinary, while simultaneously focusing on a new spa-

tial, programmatic and linguistic dimension of architecture.

The design of habitats today is being shaped by the outcomes of two key revolutions, material technology and computation, and our exposure to the long-lasting effects of climate change. Nature plays a central role that goes beyond being a simple environmental regulator or inspiration; it is a system of ecologies and complex, subtle behaviors. It is not organic or biomimetic but a new Avant Garde of expressions, efficiencies and impulsive simulations.

A discussion on aesthetics and the unpredictable dimension of nature and growth challenges our traditional preconceptions in favor of more a contemporary understanding of tectonics and new aesthetics, which includes more three-dimensional, complex and unique patterns and typologies of occupation.

The crucial motivation of this cross-disciplinary research is a new and holistic approach in design. This method involves an ecological understanding of landscape and urbanism in which the concept of sustainability is understood as a dynamic agent rather than an outcome to satisfy green ratings. The influence of local traditions, the research of socio-economic conditions, and the role of digital design is complemented by a coherent employment of innovative technologies in the field of energy and materials. This research focuses on new experimental design solutions that are anarchic, formal, material and with a spatial three-dimensional complexity. A major area of research is the architectural, urban and environmental strategies in extreme rural (desert) and urban environments.

Paradoxically, the research-driven approach makes projects unique. Material and fabrication studies and spatial iterations (programmatic possibilities and user experience) are then transformed into systems (typological variations) that are subsequently interrogated, adapted and applied to unpredictable sites and contexts. Issues of program and site are components to define a project rather than to generate it. The discomfort and rawness of the architectural project could work in opposition to a site, a 'lateral' thinking approach that generates a discourse. It is more meaningful to make architectural spaces of quality, open and pure, (referring here to the modernist dogma) that can adapt to time and transformations rather than offer a quick solution to solve a site problem which, by default, is temporary and fake. Abstraction here supersedes figuration.

The sequence of operations in the process follows a logical structure: concept, narratives, tools and machine, physical modeling, digital modeling and scripting, simulation, systems and iterations, representation, prototyping and detail and ultimately a fabrication. It is a sequence of continuous and rigorous transformations.

The studio progresses in a series of stages, with each stage corresponding to an increase in complexity, scope and scale. The quality of both the process and the outcome are equally important. By adopting contemporary practices such as modeling in physical and digital form, the work of the studio attempts to go beyond some of the preconceived limitations of architecture, notably that of the traditional sequence of site, program and solution. We like the incomplete, raw, crude, unpolished and endless potentialities of architecture; atmospheric than glossy. The studio is interested in questioning as to what architecture might be—not what architecture is already understood to be, or how it is already created and practiced.

Studio projects develop an architecture that is built up by many different layers of applied scientific knowledge, software-based morphologies, micro-worlds and intelligent environments such as physical and chemical forces, gravity, fluid dynamics, particles and temperature. This is a type of performative application rather than aesthetic composition. Dynamics, topology and systems then become tools that pertain in large degree to the control and manipulations of formal strategies.

The studio reconsiders architecture as an eco-system that mediates between environment and inhabitation. We look at the new challenges posed by climate change and how this thread can recondition architecture and its materiality. Climate change offers an opportunity for creative architectural interventions more than solely policies. There are opportunities to include changes in cultural and social behavior. The challenge is to engage with an architecture that renegotiates the boundaries between the natural, the artificial and the visionary.

The studio seeks intense design experimentation for ambiguous proposals situated at the intersections between technology, landscape and art. Students are encouraged to develop individual research themes, narratives and manifestos. They are asked to imagine a fictional construct and present it through a series of intricate (small and large) drawings. We combine disruptive technologies and experimental materials with hybrid drawing and modelling techniques.

Architecture is liberated and it starts as an open field. Projects describe narratives and time-based concepts. They include scientific research on found, natural or artificial material, its behavior, its application and its imaginary projection.

The studio encourages digital and analogue making, shifting quickly between the hand and the computer. We juxtapose organized and spontaneous systems and arrive at hybrid structures and programs. We begin by selecting themes that will explore the potentials of formlessness and experiments with appearance that cannot be reduced to a singular figure or shape and maintain a

tendency towards change, transformation, openness and ambiguity. We reimagine architecture as the link between the real and the imaginary.

Architecture is drawing, making and simulating space. We think through seeing and doing. Doing can also be seen as a ritual act analogous to everyday habitation, the rhythms, cyclical repetitions and irregularities that determine the social life of buildings. Historically, architecture begins with a concept, an overall strategy and a pre-meaning that justifies the design of buildings. This studio proposes a re-examination of design as an autonomous act influenced by selected parameters to inform a form-generation process and outcome. These parameters can be internal and external, programmatic and behavioral.

The challenge is to engage with an architecture that renegotiates the boundaries between the natural, the artificial and the visionary. And the glossy object becomes experiential.