

Investigative Environments

Theoretical Frames, Shared Concepts and Research by Design

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This article demonstrates initial outcomes of a recent investigation on a series of theoretical concepts originating from variable sources and trying to formulate a relevant, contemporary discussion on architecture. At the same time, it is attempting to connect to respective academic versions of informing this discussion, by designing experimental structures, spaces and environments, through the use of advanced design tools and methodologies. It tries to draw lines and connections between an ongoing theoretical research and a parallel design research through a highlighted academic course, taking place at the School of Architecture, Aristotle University of Thessaloniki¹.

Theoretical Frames and Concepts

A first area of theoretical research is focused on concepts regarding density and resolution in design. Density and resolution are perceived here as a methodological and composing tool. They root back to the practice of cutting and observing as a century old tradition of understanding matter. It presupposes the analysis of a bigger entity into smaller particles, in order to understand their attributes, through these resolving procedure.

¹ Design course titled '08EX12 Spatial Investigations', (Greek: 08EX12 Χωρικές Διερευνήσεις). Course coordinator Dr. Anastasios Tellios, Associate Professor, School of Architecture, Faculty of Engineering, Aristotle University of Thessaloniki

Then density occurs as the opposite procedure of seamlessly connecting and combining sometimes compatible but otherwise distant and sometimes unfriendly elements.

This generates an elaborate bottom up way of designing, which essentially challenges and defies established hierarchies and priorities. It provides a design canvas, open to interpretations for the talented hand and the rigorous mind. It allows for broader understanding of design, as a creative act across the scales, joining the object to the building, to the city and the environment ahead. It allows for constant rearrangements of elements, promoting the designing, redesigning, undesigning and the avoiding of visible joints or ruptures. This procedure is practically tracing the essence of space as a combination of particles and components, thus a unique spatial mixture.

Available technologies and tools today have liberated an array of design capabilities and narrative capacities for designed environments, whether physical, natural or virtual, i.e. conceived and spatially experienced through advanced means. This has initially generated a sense of defiance towards the norm and aspiration for a new paradigm (Tellios, 2014). Constant repetition and spreading of technologies, though, has counter-created a new shared culture, which sometimes conveys the air of a newly defined 'norm'. This shared culture is evident through a series of concepts that relate to the way one can understand space, matter, architecture and design

I. The concept of discrete elements and the flexible assemblage of greater versatile aggregations that can provide for architectural space and structurally autonomous articulations. This relates directly to the notion of resolution as described previously and it includes the cutting, observing and reassembling procedure towards complex, open-ended architectural settings (Retsin, 2019).

II. The concept of establishing a new form of integration with the natural world. This integration goes beyond formal imitation as it has been documented in art and architecture throughout the centuries, whether it has been the marble Corinthian capitals in ancient Greece, or nature-inspired ornamented staircase railing in early 19th century Art Nouveau buildings in Brussels by Victor Horta². It aims to reach a more intrinsic level of natural wisdom, that of the inner logic of ‘natural design’, as it can be observed on the ultra-lightweight bone structure of flying birds, or the semi-arbitrary weaved bird nests in Kalahari desert, South Africa, structured upon an ingenious aggregation of lightweight branches and leaves.

III. The concept of abandoning an ‘international style’ approach when it comes to applying new tools and methodologies in architectural design and the development of a culturally and contextually sensitive agenda. This might inform the design outcomes with a redefined sense of ‘genius loci’, qualities which have long been nurtured in local contexts and societies, including materials, techniques and decorative styles. It could establish sometimes shattered bonds between architecture and architects with place and identity and it can essentially enhance the computational tools used and the assets they operate with.

IV. The concept of matter and materials not just as structural elements that can be of use by the architect or the engineer, but as a dynamic field of natural resource, with qualities and attributes that include density, resolution, tactility, temperature and haptic experience. This sense of new materialism seems to be directed by the need of computational design tools to adapt to a tangible material reality and matter, natural and manufactured. Materiality acts as bidirectional interface between a set of overlaying worlds, natural and digital, human and virtual. If one might need to summarize this under a current, broader theoretical envelope, Zygmunt Bauman’s ‘liquid modernity’ (Bauman, 2000) directs to the ‘amplification of modern capacity for constant change’ and might be offering a valuable transcription. It aligns this discussion with an always relevant discussion on modernity. Bauman’s aspect about being modern

meaning «to modernize, compulsively, obsessively; not so much just ‘to be’, let alone to keep identity intact, but forever ‘becoming’», avoiding completion, staying underdefined’ opens up a spectrum of definitions on advanced tools and methodologies

At the same time, Mario Carpo (Carpo, 2011) distinguishes modernity as related to ‘the mass production of identical copies from mechanical master models’, to a current digital turn, when ‘everything digital is variable’, offering an oblique view on modernity. One can easily overlap Bauman’s ‘liquidity’ to Carpo’s ‘digital’ and offer a new adaptation of the spirit of liquid modernity, as a demonstration of a constantly forward-looking prism. ‘Liquid’ reflecting the polyvalent, ubiquitous nature of advanced design capabilities today and ‘modernity’, describing an essential faith in human tendency towards progress and perfectibility. This frame can simultaneously embrace Leonardo Da Vinci’s advances towards the devise of a flying machine³, Hans Hollein’s operational speculations on his mobile office⁴ and Kengo Kuma’s ingenious floating tea house⁵.

Research by Design

The observations above, define a certain frame of research, which has been providing input for design experimentation at academic level. This has been applied to theory and design courses, as well as to diploma level approaches. A design-based version of this research is documented in the work of an elective design course, focusing on experimental compositions at School of Architecture, Aristotle University of Thessaloniki,



Figure 1. 08EX12 Spatial Investigations, Arcadia II, 2018-2019, Restructuring the “Samothrake Nike” using advanced documentation and fabrication techniques, School of Architecture, AUTH. (Image © Anastasios Tellios)

³ Leonardo Da Vinci (1452-1519), *Codex on the Flight of Birds*, 1505.

⁴ Hans Hollein (1934-2014), *Mobile Office*, 1969.

⁵ Kengo Kuma (1954-), *Floating Tea House*, National Building Museum in Washington DC, 2007.

² Victor Horta (1861-1947), *The Tassel House*, Brussels, 1893

Greece. The course's title is 'Spatial Investigations' (Greek: Χωρικές Διερευνήσεις) and it has been operating since 2009. The course's object is the research on the procedure of architectural design and the investigation of its origins and its limits, following the agenda presented in previous paragraphs. The course has been attempting to connect architectural design, as a deep, creative procedure with broad fields of innovation, study of structures (typological, formal, technological, ecological, etc.), documentation, as well as other scientific and creative fields, using advanced methodologies for design, spatial representation and fabrication (Figure 1).

The aim of this course is to understand the dynamics of space, place and its qualities, the challenging of established building schemes, the experimental process of complex and sometimes unexpected alternative functional programs (Figure 2). The purpose has been the final proposal of innovative spatial situations for the human-made environment and landscape, through coherent, compositional, architectural narratives.

Particular emphasis is placed on encouraging the development of personal design vocabularies and contextually sensitive environments, portraying flexibility and resourcefulness in responding to complex spatial requirements. Students are challenged to a continuous processing of their design proposal through the use of advanced spatial documentation and representational tools, digital and physical models, which may be conceptual, diagrammatic and not necessarily representational. During the years, the course has focused in various scientific

fields such as physics and biology, structural schemes, design-based criticism on architecture and extensive use of research loans by other disciplines. The last years it has framed the topic of cultural and contextual adaptation, initially through the very experimentation of Greek locality (Figure 3), through an extensive agenda titled 'Arcadia I'. Selected design and fabricated outcomes of this agenda have been exhibited and discussed within international events, such as the "Thessaloniki International Fair" in 2017 and 2019 (Figure 4) in Thessaloniki, Greece, the "Tallinn Architecture Biennale" in 2017 in Tallinn, Estonia and recently "Tirana Design Week", in 2019 in Tirana, Albania, in September 2019 (Figure 5).

The present year's (academic 2019-2020) topic is titled 'Far East' and it connects concepts such as Asian locality through calligraphy, the cultural expression of detail through intricate etchings, with advanced design and visionary proposals. Thus, it is linked to the initial issues of density and resolution. It is consequently raising architectural design as a prominent bearer of new meanings and encoded cultural load. 'Far East' is conceived as a regional focus and yet highly universal, simple and vernacular and yet intricate and avantgarde. Responses by students are expected to address a foreign locality and context, using universal, broadly available tools.

The design course will be adjusting its activities in the implementation of a research program within the Horizon2020 frame, funded by the European Commission, titled 'V4Design', which is investigating the field of repurposing of visual mate-

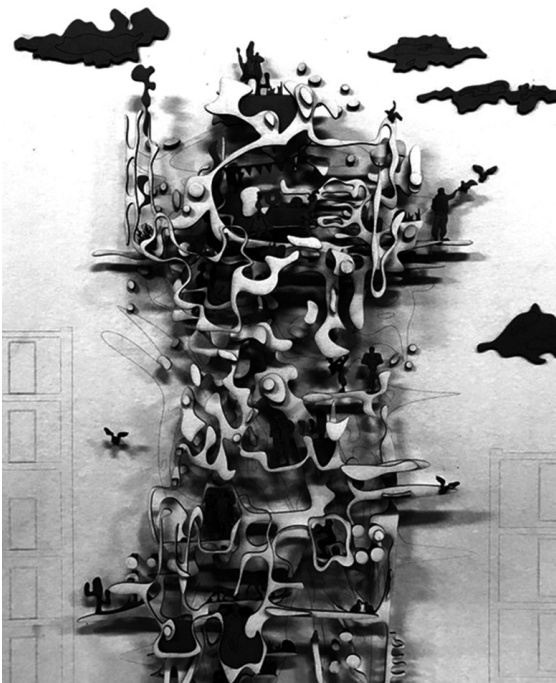


Figure 2. 08EX12 Spatial Investigations, Arcadia I, 2016-2017, Alternative housing section arrangement, School of Architecture, AUTH. (Image © Anastasios Tellios)

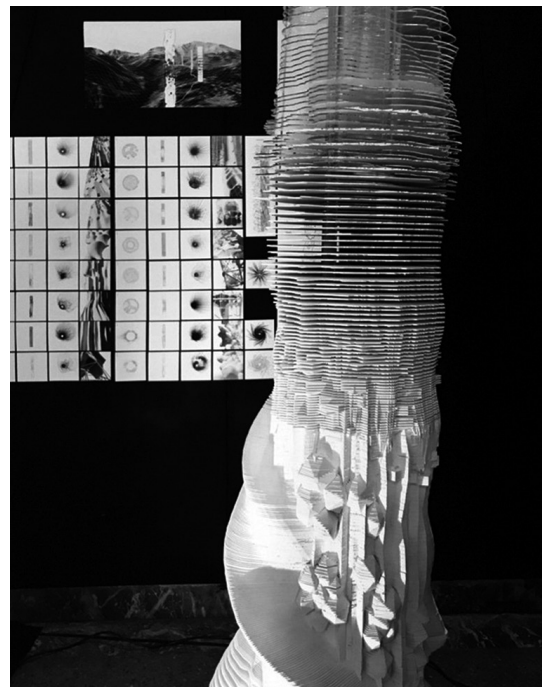


Figure 3. 08EX12 Spatial Investigations, Arcadia II, 2018-2019, Team student project "Nymphe", School of Architecture, AUTH. (Image © Anastasios Tellios)

rial and its reuse in order to create an advanced design platform and assist architects and designers, among other professionals, in designing proposals for architecture and landscape. During the course previously mentioned, operating modules are tested, provided for the V4Design research project and short seminars and workshops are organized on experimental architectural design, advanced documentation and modelling and spatial organization. Design research findings produced within the ‘Spatial Investigations’ activity frame, will be used to design and fabricate collective, three-dimensional spatial arrangements. Produced outcomes will be incorporated in the development of the ‘V4Design’ research project and selected student projects will be presented in international scientific conferences and proposed to participate in exhibitions internationally.

Reference List

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