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6 E C O

Editorial

Aikaterini Chatzivasileiadi and Maria Voyatzaki

Already in the third successful year of the journal, it is with great pleasure that we present the sixth issue of archiDOCT. As with the previous issues, what is presented across these pages is a result of the fruitful collaboration among a number of contributors: the editors-in-chief Maria Voyatzaki and Constantin Spiridonidis, the scientific committee, the guest editor of this issue Aikaterini Chatzivasileiadi, currently PhD candidate at the Welsh School of Architecture, and above all, the enthusiastic and aspiring doctoral students around the world.

With growing concerns around climate change, as well as the economic and cultural instability of our times, sustainability has become the centre of many discussions around the Globe addressing the environment, economy and society in one way or another. This sixth issue addresses a variety of eco topics including Welsh policies on low impact development, sustainability from a mathematical perspective, building energy demand in China, vertical greening systems in Nigeria and building integrated photovoltaics. The variety of the topics highlights the diversity of the field of Architecture - even under a common theme. It therefore aims to initiate a conversation around sustainability-related approaches, research methods and research impact in architectural research and also to highlight its multi-disciplinarity.

The good practice example by Maria Voyatzaki draws on the convictions of ancient Greek philosophers on the solid or changeable state of the world around us. It is argued that an ethical basis exists in this particular relationship between the solid and the liquid; it is not hierarchical. It can therefore occasionally acquire different hues by different priorities, associations, gravities and magnitudes. The paper concludes proposing a sustainable way in environmental design education and invites us to contemplate the future together while critically considering the past.

The first doctoral essay of this issue by Mark Waghorn is a critique on the One Planet Development. This is a Welsh Assembly Government planning policy (2010) introduced to take forward Low Impact Development principles in Wales. The author analyses several real life examples in order to review the opportunities and barriers of the program. The focus is on the cultural differences between those responsible for enacting and enforcing regulatory systems and practitioners. Waghorn concludes with ways to bridge the identified gap.

The second contribution is made by Anthie Verykiou from the National Technical University of Athens. The essay analyses the concept of sustainability through a mathematic perspective; the model of the "Fold". The "Fold" model, introduced by R. Thom, indicates the emergence of a reality in continuous variable state, which is considered as the central ontological progress of our time. The author aims to contribute to an understanding of the concept of sustainability and its impact on the general contemporary cultural context. Moreover, the study highlights the interconnections among different scientific and artistic fields that ultimately converge to the notion of landscape through the contemporary ecological sense that points to energetic, metabolic approaches.

Xi Deng's research article explores the impact of microclimate change on the energy demand of buildings in Chengdu, China. The study has mainly touched upon air temperature change, compared against other neighbourhood morphology parameters. This is the only study of this issue where simulation tools have been used; namely tools that were developed in the Welsh School of Architecture, such as HTB2 and Virvil Plugin. Five different models were assumed considering the following four parameters on top of the standard model: building density, building compactness, building vertical layout and air temperature change. The results from the simulations, as Deng concludes, indicate a quantitative correlation between microclimate change and the energy performance of buildings at a neighbourhood scale. The study therefore provides several perspectives for architects and similar practitioners in the field to reduce the energy demand at an early planning stage.

The next doctoral essay is the third one in this issue presenting research undertaken in the Welsh School of Architecture of Cardiff University. There, Oluwafeyikemi Akinwolemiwa presents the development of a sustainable idea to combat the issue of global warming in Lagos, Nigeria, which has resulted into extreme temperature rise within the country. More specifically the effect of vertical greening systems on the occupants' thermal comfort was evaluated in a field study. The study also addressed the economic aspect of sustainability, as low-income residences characterized by overcrowding and overheating of interior spaces were investigated. A financially affordable, easy-to-erect-and-maintain vertical greening system was therefore set up and monitored for four months. The results revealed a significant reduction in the ambient temperature of the immediate surroundings of the vertical greening system setup as well as a reduction in indoor temperatures.

The last of the five doctoral essays, provided by Stefanos Gazeas from the Aristotle University of Thessaloniki, focuses on the architectural integration of photovoltaics in the buildings' envelope. As the PV integration encompasses both performance and design characteristics, the study presents the architectural criteria upon which an efficient PV integration is achieved. The main contribution of this paper is four architectural detail drawings in the form of typical construction sections, offering a clearer view of the building envelope which functions as a solar energy generator, by replacing conventional construction materials.

We do hope that the aforementioned papers will not only elevate your understanding about sustainability in architectural research, but also make you reflect on current situations or new concepts, stimulate productive conversations and inspire other doctoral students to participate. Enjoy!