

Architecture Anthology I: Sustainable Design

Edited by

Fatih A. Rifki

Athens Institute for Education & Research (ATINER)

2015

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Preface

Stavros Alifragkis and Nicholas Patricios

The papers contained in the series *Architecture Anthology I* are selected from those presented at the Conferences in Architecture, Urban Studies & Planning, Construction and Civil Engineering organized by the Athens Institute for Education and Research (ATINER) held in Athens. The chosen papers have been divided into categories and published in five separate volumes: 1 - Architectural & Urban History & Historiography; 2 - Architectural and Urban Theory; 3 - Architectural Construction, Materials & Building Technologies; 4 - Architectural Education, Research & Practice; and 5 - Sustainable Design. Further series will be published from papers presented at future ATINER Architecture Conferences. The selected papers are those that have been peer reviewed and approved for publication by referees, editors of each volume, and the general editors. It is hoped that the series will be both of interest and of value to academics, scholars, researchers, and practitioners.

The work of the referees and editors is much appreciated for without their volunteer efforts and time expended on reviewing papers and the re-writes by authors the *Architecture Anthology I* series would not be possible. Sincere thank you to the editors of Volume 1: Arthur Chen & Stavros Alifragkis; Volume 2: Nicholas Patricios; Volume 3: Jamal Khatib; Volume 4: Judith Urbano; and Volume 5: Fatih Rifki.

Thank you also to the referees for Volume I: Stylianos Giamarelos, Mark Breeze, Simone Shu-Yeng Chung; Volume 2: Bahga Surinder, Amanjeet Kaur, Aarti Grover, Pankaj Chhabra; Volume 3: Marta Molina Huelva, Hugo Rodrigues, Elisabetta Carattin, Ksenia Piatkowska, Antonella Violano; Volume 4: Sergiu Petrea; Volume 5: Adrian Moleavin, Nirmita Mehrotra, Elham Madadi Kandjani, Christian Kersten Hofbauer.

The process of producing the volumes could not have been undertaken without the valuable assistance of Olga Gkounta, Research Assistant at ATINER.

General Editors

Stavros Alifragkis

Nicholas Patricios

Architecture Anthology I: Sustainable Design: An Introduction

Fatih A. Rifki

All the seventeen papers selected for presentation in this volume of ATINER publications focus on sustainability, which entered into humanity's consciousness as a goal to be pursued more than three decades ago. The papers were delivered at the combined Architecture Conference and the Urban Planning and Studies Conference held on the 10th – 13th June 2013 in Athens.

By mid twentieth century an awareness of environmental problems was ignited at the global scale, but the challenges these posed were not adequately and widely tackled until the 1972 Stockholm Conference on the Human Environment. The underlying problem of how to reduce poverty in low-income countries through more productive and industrialized economy without exacerbating the global and local environmental burdens remained unresolved. Critically, neither the high-income countries in the Northern hemisphere nor low-income countries in the Southern hemisphere of the globe were willing to give up the then prevalent economic development paradigm based on growth despite the environmental threats this posed. From pollution, acid rain, deforestation and desertification, to the destruction of the ozone layer and early signs of climate change scientifically linked to this paradigm were impossible to overlook and increasingly unacceptable. There was a desperate need for alternative developmental concepts that would facilitate the reconciling of economic development with environmental protection. However, for more than a decade after the 1972 Stockholm Conference, there was hardly any progress from awareness of global environmental challenges to solutions.

In December 1983, United Nations Secretary General appointed Gro Harlem Brundtland, former Prime Minister of Norway, as the Chairwoman of the World Commission on Environment and Development, which had the mission “to unite countries to pursue sustainable development together”. After three years of intense work, the twenty-two-member commission issued a report called “Our Common Future”. Also known as the Brundtland Report, it coined and defined the meaning of Sustainable Development*.

On the road to concrete answers to the environmental dilemma, Our Common Future was a major milestone as it showed the interdependencies between people, place and process by identifying Social Equity, Environmental Protection, and Economic Growth as the three “pillars” of sustainable development. However, more than two more decades would pass to achieve progress from theory to practice. In 2002, the Earth Summit was convened in Rio de Janeiro, Brazil and issued the Agenda 21 as the “plan of action” for solving the problems intertwined between the social, environmental, and economical issues.

Today the notion of sustainability is a significant driver in every sphere of human activity, profession, and discipline including architecture and urbanism.

Universally, many scholarly conferences, including many of the ones organized by ATINER, dedicate focus sessions on the topic if sustainability is not their main conference theme. The selected seventeen papers in this volume all were part of an ATINER conference.

The taxonomy on which the process of selecting the papers to present here has been inspired by the three pillars of sustainability, i.e., Social Equity, Environmental Protection, and Economic Growth, identified in Our Common Future. Each part of this volume addresses one of the three dimensions of human affairs, particularly architecture and urbanism: People, Place and Process. That is, each paper's emphasis is on one of these three focuses.

Place

The eight papers in this section share a common focus, which is on specific locations of the subject being researched, be it housing, transportation, urban spatial components, or natural areas. Their pursued methodology, however, varies where the case study dominates in half of the papers. Below are the main essences of each paper:

In the paper, *Implementing Inclusionary Zoning into Canada's Affordable Housing Market*, the researchers investigate, through three case studies, if housing stock is improved when local governments require a given share of new construction be affordable by people with low to moderate incomes and come to an affirmative conclusion. In a theoretically inclined paper, the author of *Eco-logics: A New Paradigm for the Design of Urban Environments* elaborates on "a new paradigm" for urban design that is built on Ian McHarg's renowned analytical understanding of environment, and the sub-disciplines of landscape urbanism and Ecological Urbanism. The scale of attention is narrowed in *Environmental Airport Design: Towards a New Design and Urban Approach* when the author puts forth a number of criteria to be taken into account in the design of airports as they have evolved from a simple transportation nodes to a new urban typology. In the last four papers the focus is on a particular city. In *Fragmentation of Land: Urban Transport Perspective* the focus remains on transportation and the question asked by the author centers on its effect of urban fragmentation and dispersal. In *Walkability and Attachment to Tourism Places in the City of Kuala Lumpur, Malaysia*, the city is analyzed in terms of pedestrian friendliness with a "place-attachment" lens. The city of Abu Dhabi serves as a case study for the scholar of *Sustainable Architecture in Rapidly Developing Gulf Cities: A Search for Identity* to study building skins inspired by the traditional patterns while in *Optimisation of Infrastructure Systems for Melbourne* the authors focus on the city's infrastructure in its current state and the needs for maintaining and rehabilitation. Lastly, in the case study of *Eindhoven as an Example of Pragmatic Sustainable Design: Preparing the Period of the Post Carbon City*, the role of sustainability is studied.

People

In this section, there are four papers and they all focus on the users of the urban areas (public space) and building type (housing). Here again the research methodologies utilized vary from case study to observation and survey. Below the essence of each paper is briefly articulated:

The case study approach to scholarship is continued in the first paper of this section, titled: *Liveable Public Open Spaces According to Users and Professionals: Case Study of Muscat, Oman*. The researchers focus on users' perception to evaluate the "success" of four selected open urban spaces in the city. In the paper *Influence of the Regeneration of Large Housing Estates on Sustainable Urban Living Conditions -Benefits or Threats?*, the scholars attempt to disprove the mid twentieth century postulate that large housing estates would be the solution the urban housing needs. By looking at urban contexts at the eye level of individuals instead of on plans as if viewing the same from an aircraft, the authors of the paper titled *City Scans. For an Emotional Survey Formula: Walking, Stumbling, Detecting, Drawing, Measuring and Mapping* posit that urban analyses would be much improved. Lastly, in *Proposals for Designing Chinese Open Spaces Attracted by Different Age*, the scholar's focus is on the ageing population as he outlines design strategies for open space.

Process

Perhaps the most eclectic collection of papers is included in this section. Nevertheless, they all share a common focus: a significant human activity and engagement, i.e., process. The methodology utilized by each is also very eclectic, as it ranges from policy to academic paradigms. Here the theme of each is outlined:

In this part, the first paper is *Addressing Food, Water, Waste and Energy Locally Yields in Urban Regenerative Environments*, where the author posits that decentralized food, water, waste and energy systems would improve urban quality. In *Effect of Nature Protection on Urban Planning in the Protected Landscape Areas*, the scholars' focus is on the influence of the administrators of these areas on the "socio-demographic and socioeconomic characteristics" of the settlements located within these territories. Next, teaching of sustainability in academia is evaluated through three case studies in the paper titled *Academic Development and Sustainability Education within Higher Education: Case Studies of Practice*. In the next paper, *The Field in the Object: Three Case Studies on Interactive Assemblies* the place of "Computation in Design" is evaluated in three case studies that focus on "a new type of architectural object". Last is the paper *Can Sustainable Housing Construction be Affordable?* The question is answered by suggesting the "double skinned facades and energy saving appliances" in addition to "smart design and building orientation" as significant aspects.

I trust that you will enjoy and benefit from this eclectic selection of seventeen papers as much as I did in choosing them for this volume of ATINER publications.