

## ***Dossier Editorial (Special Issue: Space Syntax)***

### ***Ayşe Sema Kubat***

***(Professor (PhD) Architecture and Urban Planning)***

Space Syntax was developed at the University College London (UCL) in the late 1970s. It is best described as a research program that investigates the relation between human societies and space from a theoretical perspective based on the structure of inhabited space in its diverse forms: buildings, settlements, cities, and landscapes. The word “syntax” establishes a bridge between the dual motivations of Space Syntax; namely describing the built space and its occupancy and understanding how these patterns enable us to recognize and construct society and culture. The fundamental statement of Space Syntax suggests that it is possible to break buildings or built spaces down into their spatial components so as to analyse the interrelationships of these components and to yield information about pattern of space which is meaningful and functionally relevant. Over 40 years, Space Syntax has been applied with success for various purposes ranging from the master planning of entire cities to revealing the imprint of culture in domestic settings.

Today, Space Syntax is adopted and further developed in hundreds of universities and educational institutions as well as professional practices worldwide. Built on quantitative analysis and geospatial computer technology, Space Syntax provides a set of theories and methods for the analysis of spatial configurations of all kinds and at all scales. The Space Syntax approach was conceived to help architects, planners and urban designers to simulate the likely impacts of their designs on people who occupy and move around in these spaces whether they are buildings or urban settlements. Since then, it has been adopted around the world in a variety of research areas and practical applications including archaeology, criminology, information technology, urban and human geography, anthropology and cognitive science.

1

An impressive contribution comes from *Mark David Major, Raya M. Atour and Heba O. Tannous* by their work titled “Organized Complexity of the Urban Object” which covers a substantial amount of theoretical ground of the logic of space syntax concisely, including definitions of resilience in the field, the resilient nature of space syntax as a method, and the essential components of theoretical thinking to arise from the space syntax research program over the last forty years. On this basis, the paper offered a new hypothesis about laws of spatial conservation and optimization at work in the built environment by using the already established theories and works within space syntax literature. The hypothesis of conservation-optimization which defines the conceptual framework for the progressive and regressive practice of urban planning in settlements is also discussed. This theoretical discussion is illustrated by demonstrating the resilience or replication of previous space syntax findings, and by drawing on new research about the history, spatial structure, and neighbourhood logic of Metropolitan Doha. The original visuals from Doha effectively support and exemplify the previous theories/concepts of Space syntax.

2.

In their article titled “Association between Home Layout Connectivity and Cognitive Ability in Community Dwelling Older Adults: Implication for Occupational Therapy” *Sonit Bafna, Kinsuk K. Maitra, Yoonjeong Lim, Mansi Shah, Yi-An Chen* reports a quantitative study of the relationship between a characteristic of the physical home environment and the cognitive ability of adults. The authors believe that the specific aspects of the physical environment that matter and the extent to which they remain less understood underline that physical environment has long been recognized within occupational therapy as a key factor contributing to residents’ functional abilities. The authors put forward a study that examines the relationship between the elderly life and space, which is becoming increasingly important today. The focus is on correlation between the syntactic data, which provides an objective interpretation of the space and the cognitive data on how the space is perceived. In this context, the study has a potential to fill an important gap in the literature.

3.

Another fascinating article comes from *Frederico de Hollanda* with his work titled *Brasilia: Super blocks in Perspective* explains the superblock experience of Brazilian cities from the viewpoint of an expert who discusses the experience with reference to a virtuous circle of design process. Systematic comparisons are made between

the traditional superblocks that are strictly defined by planning codes and the design of the superblocks considering current urban lifestyles which are proposed by the author. An interesting comparison is made with the previous experiences of Lucio Costa's superblock design and the design for the SQN-109 through Space Syntax concept and principles.

4.

In his article titled "Relative rhythms, Urban Oases, and Spatial Resilience - Exploring Syntaxes of Seclusion, Solitude, and Tranquility", *Daniel Koch* investigates the spaces of everyday life in cities and adopts a multifaceted view of the concept of "resilience" and builds on existing knowledge about the relations that link configurational structures of space with emergent collective behaviour patterns. The fieldwork draws on Lefebvre's "rhythmanalysis" and makes use of his own experiences as a participant in urban life, addressing both events and everyday situations and the ways in which our understanding of spaces unfolds over time. The author supported his argument through recourse of repeated studies of Stockholm that have consistently demonstrated a strong correlation between movement flows at the observation locations and the syntactic properties of those locations. Although discussed in macro scale, this work of Daniel Koch that puts a new emphasis on resilience in minor fragments, can be accepted as a new and inspiring shift in resilience theory.

5.

The fascinating piece of work comes from *Luísa Cannas da Silva and Teresa Valsassina Heitor* with their article entitled, "To Integrate or not to Integrate? A matter of Choice for Universities" which argues that universities are key elements in generating and enabling dynamic synergies, promoting the presence of students, academics, and learning spaces in urban contexts. Thus an analytical framework for university campuses within urban fabrics, is investigated by understanding the different types of urban insertion and connections established with local and regional players, and exploring the dichotomy between closeness centrality and betweenness centrality, as variables that can be used to balance the tension between integration and privacy which affects university campuses and academic communities. Syntactic analysis is used to provide deeper information and clarification on the university location and accessibility within the urban fabrics of Simon Fraser University in Burnaby, Canada; Aalto University in Espoo, Finland; MIT in Cambridge, MA, USA; and Yale University, in New Haven, USA, which host the similar functions. Space syntax has proven a valuable tool to provide insights into key aspects, such as the need to enhance visibility and improve integration, according to the Universities' strategic plans and positioning goals. Considering the analyses conducted and the purpose of the study; this article provides an original contribution to the literature of Space Syntax.

6.

In their article titled "Linking Space Syntax and Cluster Analysis to Design and Plan Temporary Housing Neighbourhoods: A Taxonomy of Sites in Norcia"; *Pezzica and Cutini* aims to uncover formal analogies between different TH (Temporary Housing) sites' layouts by linking Space Syntax and Clustering analysis within an unsupervised machine-learning pipeline, which can consider a virtually unlimited number of configurational qualities and how they vary across different scales. Linking Space Syntax and Machine Learning will increase possibilities for analysis automation, replicability, and flexibility, and can assist understanding of how local people perceive and interact within the spaces of the transitional city, and in particular its TH sites. The potential benefits of the proposal are illustrated through its application to the study of 20 TH sites built in Norcia after the 2016-2017 Central Italy earthquakes. The authors believe that their study will be a tool for administrations and professionals to develop audit proposals for temporary settlements to enhance their resilience after the disasters.

7.

In his article titled "Transformation of Urban Form in Shkodër during the Ottoman Period" *Ermal Shpuza* presents an attempt to reconstruct the historical urban form of Shkodër, which is the cultural cradle of Albania, during the last five centuries. The study employs the space syntax analysis of Shkodër's street network to shed light on the processes of urban transformation while the city changed from an important Venetian stronghold in northwest Albania to the prosperous centre of an Ottoman province. The work which covers Shkodër's unique urban form and transformative processes quantitatively through Space Syntax will shed light on the studies on historical preservation and urban design and will contribute towards comparative and historical urban studies in the region and beyond.

8.

The interesting article titled “Investigating Morphological Changes of a Capital City: The Case of Ankara” comes from *Melike Boz Günay and Ayşe Sema Kubat*. The authors contribute to this special issue by examining a unique capital city from Turkey which carries the effects of the historical planning periods on its urban structure from past to present. This study demonstrates Ankara’s morphological changing process through Space Syntax since the declaration of the Turkish Republic. By analyzing historical maps belonging to six different periods that played a critical role in the historical development of Ankara, the paper puts the differentiation of the symbolic and monumental city axis of the capital city in today from a quantitative perspective. This research emphasizes the importance of morphological evaluation in light of the Space Syntax approach by focusing on a particular capital city.

9.

The extent of the art in the urban space calls for morphological research to test the perceptual performance of the artwork in terms of the characteristics of the physical fabric in which the murals locate. *Cansu Demir and Olgu Çalışkan* in their paper titled “Mural as Public Art in Urban Fabric: A Spatial Analysis in The Case of Yeldeğirmeni, Istanbul” conducts a spatial analysis focusing on network integration, visibility, and townscape characteristics of the neighbourhood fabric. The findings of the analysis are correlated with the level of recognition of the murals by the public to reveal the conditional relationship between the spatial morphology and the perception capacity of the murals as public art. Their work suggests a framework for morphological analysis that involves both configurational and townscape characteristics of the urban form in relation to the location and spatial setting of the murals in urban fabric. For that purpose, Yeldeğirmeni, a neighbourhood from the Asian side of İstanbul, has been selected for the analysis. Following a brief information about the site, the findings of Space Syntax, visibility and townscape analysis are presented. Via the matrix involving the results of analyses, eventually, the key morphological aspects to ensure the perception capacity of the murals are discussed.

This approach is aimed at architects, urban planners and urban designers and this dossier investigates the “Space Syntax” concept through nine articles and reviewed by a number of most known referees from Turkey. As a guest editor of this special issue on SPACE SYNTAX, I would like to express my deepest gratitude and sincere thanks to the referees of this special issue; *Ayşe Özbil Torun, Dalya Hazar, Demet Yeşiltepe, Emrah Şikoğlu, Eren Kürkçüoğlu, Fitnat Çimşit Koş, Hasan Serdar Kaya, Kerem Koramaz, Kıvanç Ertugay, Mehmet Emin Şalgamcıoğlu, Meisam Soleimani, Müge Özkan Özbek, Nevset Gül Çanakçıoğlu, Nevter Zafer Cömert, Özlem Özer, Tolga Ünlü, Yasemin İnce Güney and Yener Baş*.

My hope is that the articles provided in this issue of DRArch will bring the field of research on technology, design and planning a little further ahead and will give you novel thoughts and insights. In this regard I want to express my deepest appreciation to the experts who served as authors of the articles. I would like to thank Mehmet Topçu and Havva Alkan Bala, the editors of DRArch journals, with whom I have been working productive and gracious collaborations for most of my recent journal works, and the editorial team of this issue. To conclude, I can proudly say that the articles published in this special issue of DRArch on “SPACE SYNTAX” address not only the state-of-art in the field, but also the most recent methods and implementation tools.

Best regards...



Cover photo: Image copyright © Sena Özfiliz, İstanbul, (2021).  
Cover and logo design: Mojtaba Karimnezhad

## **DRArch's objectives are:**

- to question how future building technologies are revolutionizing architectural design, city planning, urban design, landscape design, industrial design, interior design and education,

- to catalyze the processes that lean on interdisciplinary and collaborative design thinking, creating a resilient thinking culture,

- to improve the quality of built environment through encouraging greater sharing of academicians, analysts and specialists to share their experience and answer for issues in various areas, which distributes top-level work,

- to discover role of the designers and design disciplines -architecture, city planning, urban design, landscape design, industrial design, interior design, education and art in creating building and urban resilience,

- to retrofit the existing urban fabric to produce resilience appears and to support making and using technology within the building arts,

- to discuss academic issue about the digital life and its built-up environments, internet of space, digital in architecture, digital data in design, digital fabrication, software development in architecture, photogrammetry software, information technology in architecture, Archi-Walks, virtual design, cyber space, experiences through simulations, 3D technology in design, robotic construction, digital fabrication, parametric design and architecture, Building Information Management (BIM), extraterrestrial architecture, , artificial intelligence (AI) systems, Energy efficiency in buildings, digitization of human, the digitization of the construction, manufacturing, collaborative design, design integration, the accessibility of mobile devices and sensors, augmented reality apps, and GPS, emerging materials, new constructions techniques,

-to express new technology in architecture and planning for parametric urban design, real estate development and design, parametric smart planning (PSP), more human-centered products, sustainable development, sustainable cities, smart cities, vertical cities, urban morphology, urban aesthetics and townscape, urban structure and form, urban transformation, local and regional identity, design control and guidance, property development, practice and implementation.

## **Editorial Team**

### **Special Issue Editor**

Ayşe Sema Kubat (*Prof. Dr.*), *İstanbul Technical University, Turkey*

### **Co-Editors**

Havva Alkan Bala (*Prof. Dr.*), *Çukurova University, Turkey*

Mehmet Topçu (*Assoc. Prof. Dr.*), *Konya Technical University, Turkey*

Sayfa | v

### **International Editorial Board**

Yasushi Asami (*Prof. Dr.*), *Tokyo University, Japan*

T. Nur Çağlar (*Prof. Dr.*), *TOOB ETÜ University of Economics & Technology, Turkey*

Nuran Zeren Gülersoy (*Prof. Dr.*), *Işık University, Turkey*

Hakan Gürsu (*Assoc. Prof. Dr.*), *Middle East Technical University, Turkey*

Mattias Kärholm (*Prof. Dr.*), *Lund University, Sweden*

Stanislaw Korenik (*Prof. Dr.*), *Wroclaw Economy University, Poland*

Katarzyna Miszczak (*Assoc. Prof. Dr.*), *Wroclaw Economy University, Poland*

Akkelies van Nes (*Prof. Dr.*), *Western Norway University of Applied Sciences, Norway*

Taner Oc (*Prof. Dr.*), *University College London, UK*

Sevil Sarıyıldız (*Prof. Dr.*), *Delft University of Technology, NL*

Michael Southworth (*Prof. Dr.*), *University of California, Berkeley, USA*

Guiseppa Strappa (*Prof. Dr.*), *Roma University, Italy*

### **International Advisory Board**

Hakan Anay (*Prof. Dr.*), *Eskişehir Osmangazi University, Turkey*

Kerem Yavuz Arslanlı (*Assoc. Prof. Dr.*), *İstanbul Technical University, Turkey*

Burak Asiliskender (*Prof. Dr.*), *Abdullah Gül University, Turkey*

Suzie Attiwill (*Assoc. Prof. Dr.*), *RMIT University, Australia*

Tüzin Baycan (*Prof. Dr.*), *İstanbul Technical University, Turkey*

Suha Berberoğlu (*Prof. Dr.*), *Çukurova University, Turkey*

Alper Çabuk (*Prof. Dr.*), *Eskişehir Technical University, Turkey*

Olgu Çalışkan (*Assoc. Prof. Dr.*), *Middle East Technical University, Turkey*

Fehmi Doğan (*Prof. Dr.*), *İzmir Institute of Technology, Turkey*

Ervin Garip (*Assoc. Prof. Dr.*), *İstanbul Technical University, Turkey*

Kağan Günçe (*Prof. Dr.*), *Eastern Mediterranean University, N. Cyprus*

H. Emre Ilgın (*Dr.*), *Tampere University, Finland*

Yasemin İnce Güney (*Assoc. Prof. Dr.*), *Balıkesir University, Turkey*

Feray Koca (*Assoc. Prof. Dr.*), *Mugla Sıtkı Kocaman University, Turkey*

Esra Kurul (*Dr.*), *Oxford Brookes University, UK*

Ozan Önder Özener (*Assoc. Prof. Dr.*), *İstanbul Technical University, Turkey*

Maria Rita Pais (*Prof. Dr.*), *Universidade Lusofana Humanidades e Tecnologias, Portugal*

Nikolas Patsavos (*Assoc. Prof. Dr.*), *University of Ioannina, Greece*

Ali A. Raouf (*Prof. Dr.*), *HBK University, Qatar*

Fazilet Duygu Saban (*Prof. Dr.*), *Çukurova University, Turkey*

Tasleem Shakur (*Dr.*), *Edge Hill University, UK*

Todor Stojanovski (*Dr.*), *KTH Royal Institute of Technology, Sweden*

Asuman Türkün (*Prof. Dr.*), *Yıldız Technical University, Turkey*

Tolga Ünlü (*Prof. Dr.*), *Çukurova University, Turkey*

Derya Yorgancıoğlu (*Assist. Prof. Dr.*), *Özyeğin University, Turkey*

### **Language Editor**

Mehmet Ulu, *Selcuk University, Turkey*

### **Publishing Coordinator**

Abdulkadir Saday, *Selcuk University, Turkey*

### **Graphic Designer**

Mojtaba Karimnezhad, *Eastern Mediterranean University, N. Cyprus*

\*sorted by last name

## Table of Contents

Sayfa | vi

<b>Research Articles</b>	<b>Pages</b>
<b>Editorial and Contents</b>	i-vi
<b>Organized complexity of the urban object</b> Mark David Major, Raya M. Atour, Heba O. Tannous	01-17
<b>Association between home layout connectivity and cognitive ability in community dwelling older adults: Implication for occupational therapy</b> Sonit Bafna, Kinsuk K. Maitra, Yoonjeong Lim, Manasi Shah, Yi-An Chen	18-33
<b>Brasília: Superblocks in perspective</b> Frederico de Holanda	34-55
<b>Relative rhythms, urban oases, and spatial resilience / Exploring syntaxes of seclusion, solitude, and tranquility</b> Daniel Koch	56-73
<b>To integrate or not to integrate? A matter of choice for universities</b> Luísa Cannas da Silva, Teresa Valsassina Heitor	74-88
<b>Linking space syntax and cluster analysis to design and plan temporary housing neighborhoods: A taxonomy of sites in Norcia</b> Camilla Pezzica, Valerio Cutini	89-114
<b>Transformation of urban form in Shkodër during the Ottoman period</b> Ermal Shpuza	115-128
<b>Investigating morphological changes of a capital city: The case of Ankara</b> Melike Boz Günay, Ayşe Sema Kubat	129-146
<b>Mural as public art in urban fabric: An attempt to link configurational approach to perceptual morphology</b> Cansu Demir Türközü, Olgu Caliskan	147-170