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Cities as Assemblages

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Preface

by Nadia Charalambous, Conference Chair
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The 26th International Seminar on Urban Form Conference, *Cities as Assemblages*, hosted by the Cyprus Network of Urban Morphology (CyNUM), took place in Nicosia, Cyprus, July 2nd – July 6th, 2019. Three Conference Proceedings' volumes include the written contributions presented during the four-day conference.

ISUF's 2019 theme aimed to explore the embedding of different theories and approaches within methodologies analysing the urban form; theories which provide a relational perspective for the analysis of the physical and social processes underpinning the shaping of the urban form, aiming at addressing the inherent complexity in the emergence of cities and processes of persistence, growth and change.

Relational theories, such as assemblage theory as developed by De Landa (2006) and Actor-Network Theory (ANT) as developed by Latour (2005), point out and discuss key issues as regards urban development, highlighting the mechanisms for the emergence, growth and transformation of urban forms. The need to assess the relationship between the physical and human components of the city through the analysis of the processes of urban development that shape the city as a social entity, is proposed by both theoretical approaches. The power of connections between social entities at different scales in shaping the city as well as the relevance of the urban form to the construction and negotiation of the social, are highlighted.

Such theoretical perspectives are in line with Hillier's and Vaughan's (2007) proposal of the city as one entity, comprising both the physical city and the social city, where '*the physical and social cities act conjointly to produce significant outcomes*' (*ibid.*, p.205). Relational theories conceive the city both as a a material entity and as a system of social interaction and human activity. Such an understanding impacts to a great extent the ways we conceptualise and describe the emergence, growth and transformation of the urban form, as well as the ways we study the city, highlighting the need for methodologies that consider both the physical elements, and human groups and the connections between them.

However, despite the fact that the relevance of relational theories for the fields of urban studies and geography has been explored and discussed in a number of research studies, the theories have neither been reflected upon with great depth, nor have they prominently featured in discourses on their implications on the study of urban morphology (Charalambous and Geddes 2015).

ISUF2019 set out to explore and reflect on the potentiality of relational theories to provide a framework for the analysis of the physical and social processes that are involved in the shap-

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ing of the urban form, opening up new avenues for the study of urban morphology and for the development of multidisciplinary methodologies.

These reflections have been particularly relevant to the conference venue, the city of Nicosia, the last divided capital of Europe, with a prolonged history of tensions, internal displacements, migration and tourists' flows, economic fluctuations and rapid, often abrupt urban transformations, serving as an ideal laboratory to explore, unravel, and question urban form development in uncertain and contested contexts. They have also been particularly relevant to the focus themes which related to the location of the conference; group formations and negotiations within cities influencing ethnoreligious tensions, political movements, social segregation and urban conflicts more widely, as well as the particular status of port cities often in the past more linked to other port cities than their hinterland and, still to the present day, the first point of arrival of migrant groups and the city-location of choice for tourism.

48 parallel sessions of around 250 inspiring presentations addressed the conference's specific themes:

Theory 1: emergence, relational theories, the social sciences and urban morphology. Papers presented under this theme were about how cities come into being and transform. Subthemes included all elements of relational theories that relate to urban morphology: scales, historical processes, material and human components, capabilities and connections between components.

Theory 2: the scope and limits of urban theories. This theme was about the critique of application of relational theories to urban studies, fragmentation of methods, the attention to the particular and the need to bring specific research findings back to more general theories. Subthemes included the main theorisations of the city: cities as organisms, cities as artefacts, cities as machines, cities as systems of flows and networks, and how to take steps forward to build a more mature theory of the city.

Methods 1: embedding different approaches into the study of urban morphology. This theme was about the need to further develop multidisciplinarity within urban morphology, layering different perspectives applied to fringe belt analysis: spatial, social, economic and planning, and filling in gaps when practically applying methodologies.

Methods 2: combining Conzenian, typological and space syntax approaches. This theme was key to understanding the development of urban morphology and the potentialities of combined studies. Papers presented under this theme described the latest research done in combining different approaches and suggested how further developments can be made.

Focus 1: urban conflict and divided cities and **Focus 2:** Mediterranean port cities in a global context. Both focus themes were strongly related to the location of the conference and both were extremely topical and relevant to contexts of increasing migrations flows within the Mediterranean. Subthemes of Focus 1 included issues of segregation and cohabitation, issues of public space use, comparative analysis of divided cities and a special subtheme dedicated to design and architecture on regeneration projects. Focus 2 was broadly about the Mediterranean as a sea of unity and division. Subthemes of Focus 2 included comparative analyses of Mediterranean cities and comparative analysis of port cities and a further special subtheme dedicated to design and architecture on waterfront developments.

The present volume includes 44 contributions from the themes: *The scope and limits of urban theories, Combining Conzenian, typological and space syntax approaches, Urban Design: Urban morphology, building typology and design* and *Urban conflict and divided cities.*

The papers within the theme of Theory discuss a number of urban theories in the light of urban development and regeneration, explore urban evolution mechanisms as well as urban and building typologies in various cities of the world.

Under the theme of methods, the papers highlight the potential of combining different analytical approaches, including a methodological comparison between Muratorian and Conzenian urban morphology and Space syntax; transitional morphologies and the exploration of urban form through functional and configurational typologies.

In the urban design theme, the papers in this volume are varied and focus on issues of environmental performance, including soundscape, air and noise quality as well as urban health through the lens of urban morphology; participatory practices and integrated intervention design frameworks; and the relationship between urban morphology research and planning practice, politics and policies.

Finally, in the focus theme, Urban conflict and divided cities, most papers explore the local urban context of the divided city of Nicosia while one paper focuses on Palestine's Spatio-Temporal Fragmentation.

This volume presents the variety of issues, explorations, and insights pertaining to the field of urban morphology, that fruitfully inform timely discussions on the challenges and opportunities related to the study and understanding of the urban form.

There are a number of people who have made this conference possible and whom I would like to warmly thank: the International Seminar on Urban Form Council, and especially the President Wendy McLure and the Secretary General, Vitor Oliveira, for the support, guidance and advise during the preparation of the conference; the four distinguished keynote speakers who kindly accepted our invitation to share their research work with us, Prof. Wendy McClure, Prof. Ann Vernez Moudon, Prof. Alan Penn, and Prof. Giuseppe Strappa; the dedicated ISUF 2019 Organising Committee; and finally all the participants who joined us and who have contributed to the fruitful discussions that took place in Nicosia.

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The Morphological Side of University-City Interaction

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Keywords: University-city interaction, University typology, Urban form.

Abstract: University campuses are place-based large institutions which create a direct interaction with their surrounding urban setting. Universities are shaping and being shaped by their urban context. They are influential actors in urban dynamics of their territories. Considering universities' third mission, they are key urban development elements in terms of social, cultural, economic, environmental, and physical aspects.
The spatial organization and morphological characteristics of universities demonstrate the extent and type of their interaction with their urban context. Within a long course of the history of higher education institutions, they have expressed various types of integration or separation in relation to their surrounding urban space. The kind of this relationship influences their mission, function, form, and character and have an impact on their internal organization.
This paper focuses on the university-city interaction. It explores the physical features and morphological characteristics of university campuses and urban form of their surrounding context. It examines the fundamental architectural and urban elements as the bases of this interaction and analyzes various types of university insertion within the urban fabric. Subsequently, the six typologies for university campuses have been identified as Detached campus, Attached campus, Rurban campus, Gated campus, Integrated campus, and Scattered campus. The second step of the methodology encompasses a multiple case study analysis and spatial analysis of selected university campuses addressing the six campus typologies. Based on the spatial analysis of campus morphological dimensions and the produced analytical maps, the paper develops A Campus Morphological Atlas. The Campus Morphological Atlas provides the opportunity to have a critical reading of the morphological dimensions of campuses in relation to their campus typology. It attempts to demonstrate the morphological side of the relationship that different university campus typologies create with their residing cities.

1. Introduction

University education is tightly linked to the concept of place. University's mission and its physical form are interwoven issues. The physical environment of a university not only addresses the institutional demands but also bears its community spirit and identity (Kenney *et al.* 2005). The location of a university campus is a critical aspect in defining its relationship with the hosting city. Any university exists within its surrounding urban pattern and in direct interaction with it.

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This interaction is inseparably associated with the concept of place. University encounters with its context in the interface space and within this space, their needs and aspirations confront. This encounter influences the social, cultural, economic, and physical attributes of both domains in a micro and macro scale. The university campus is the urban development engine. It influences the shape of the urban fabric of its adjacent context, attracts people and generates activities, and forms the urban identity.

Universities have had particular architectural typologies during their history which has resulted in creating specific spatial relations with their hosting urban milieu. Universities interact with their surrounding place not only through their architectural elements but also they express their intellectual, physical and civic relationship with their urban context through the visions, missions, and attitudes (Haar, 2010). The physical organization of the university demonstrates the extent of its interaction with urban context; socio-culturally, economically and physically. Bender (1988) refers to the European university as "a semicloistered heterogeneity in the midst of uncloistered heterogeneity" and emphasizes on the notion of campus as place and as locus.

Within the long spectrum of higher education history, from the medieval period to present day, university education and university form has altered radically according to philosophical, social and cultural forces of each era but universities always were in a kind of interaction with their context (Bender, 1988; van der Wutsen, 1998; Wiewel and Perry, 2008).

In the present day, universities are more considered urban entities regarding their function and identity. They are in a relationship with their urban territories. Their physical space is the main ground that they demonstrate this association. Their mission, vision, and character are expressed through their physical features, activities (e.g. urban outreach) and the ties they are trying to create with each other.

Clearly, the physical setting of a university expresses its mission, vision, and values convey a message about the institution.

2. The Typology of University Campuses in Relation to the Urban Context

Within their long history universities have been fluctuated between being open or closed to the external world (Giliberti, 2011). The extent of this closure or openness vary regarding many factors and according to Van der Wusten, it is difficult to understand the optimal degree (Van der Wusten, 1998). Currently, there is a variety of campus typologies regarding their location and the way they interact with their surrounding urban fabric.

Van den Berg and Russo (2004) addresses two typologies as: (a) formal, which has conservative attributes and isolated from the urban context and (b) informal that is situated in downtown areas and offer many chances for interactions. Den Heijer (2008) through studying Dutch universities categorizes university campuses to three types, considering their real estate value: (a) campus as a separate city (b) campus as a gated community within the city but with or without gates and (c) campus integrated with the city. Den Heijer (2011) in another study, but similar to her previous work, proposes a scheme for the campus that assume three spatial configurations: (a) outside of the city; (b) within the city and (c) integrated into the city.

One of the most influential works for the sake of this research is the categorization done by Pablo Campos Calvo-Sotelo (2014). He emphasizes on the importance of university morphology and spatial organization as a key factor in achieving excellence and optimizing the urban and architectural dimension. In this respect, he categorizes university campuses in different types according to territorial distribution, location model and internal organization. He classifies

university campuses due to their distribution within territory as: (a) Territorial; is polycentric with no central seat, (b) Local; with polarized central seat with respect to a specific city, and (c) Associate; with a strong tie to a moderate-size urban space and proximity to another larger urban center. Moreover, universities territorial structure can be (a) Mono-site or (b) Multi-site.

In this respect, he makes specific emphasis on the morphological characteristics of university campuses in association with their hosting cities. In terms of location, he identifies four models as: (a) Dissociated; located in a sufficiently remote area, (b) Polarized; separated from the urban fabric but does not embrace extra-university component, (c) Super-peripheral; it can be a specific case of polarized model as separated from the urban fabric but it has linked to smaller satellite of the main city or a small locality, (d) Urban; are directly connected to the city fabric and has four sub-models as: (1) Peripheral; situated on the urban periphery in a contact with urban structure, (2) As urban fabric; has a form of aggregate organization and dissolved in the form of blocks within urban fabric, (3) Isolated within the urban interior; embeds in a zone incorporated to the urban fabric but has a sharp form distinct from surrounding urban tissue, (4) Diffuse within the urban interior; located in several isolated buildings sprawled around the urban fabric which do not make a compact and unified entity. University campuses in relation to their urban context can be (a) Integrated; inserted in the urban fabric and its dynamics or (b) Segregated; unconnected to urban space and its functional dynamics. Considering the spatial layout of university campuses within their internal space, the author analyzes universities' internal structure, typological elements, and relations with the external context. In this respect, universities may be (a) Extroverted; openly oriented towards surrounding urban space or (b) Introverted; structured inward-looking. In terms of planning of physical organization, universities have been classified as: (a) Symmetrical; on an axial or central symmetry, (b) Balanced; configured with a symmetrical pattern and have a balanced arrangement of volumes and voids, (c) Unbalanced; does not contain any balance of mass or space. Furthermore, the internal organization of university campuses can convey six types as: (a) Mesh (b) Reticulate in general (c) right-angled reticulate (d) Grid (e) Linear (f) Central; which itself can be divided as Concentric, Eccentric, Multi-central, (g) Radial (h) Organic (i) Irregular geometries which can be emerged generally from unplanned processes or in adaptation to the natural or urban context.

Based on the literature review, this paper identifies the six typologies for university campuses including (1) Detached campus, (2) Attached campus, (3) Rurban campus, (4) Gated campus, (5) Integrated campus and (6) Scattered campus. Considering their urban location and campus physical features, each of them are assumed to have specific morphological characteristics.

Detached campus typology encompasses out-city campuses which are separated from their urban space. It refers to a university campus model which is located remote from the neighboring city and creates very few morphological connections with the city and functions autonomously.

Attached campuses are out-city campuses which have been located in the outskirt of mainly an important city and establishes physical ties with the adjoining city in spite of being self-contained.

Referring to initial planning intention, Rurban campus typology can be considered an out-city campus. It indicates a model that the campus has been initially founded in the proximity of small town or in rural areas but during a course of time, the urban area has been developed and spread out towards the campus. Thus, currently, they have an urban location and are connected to the city.

Gated Campus typology comprises in-city campuses where university precinct has been located within the urban fabric. In spite of being an urban campus, it has clear and distinguishable boundaries with external urban space.

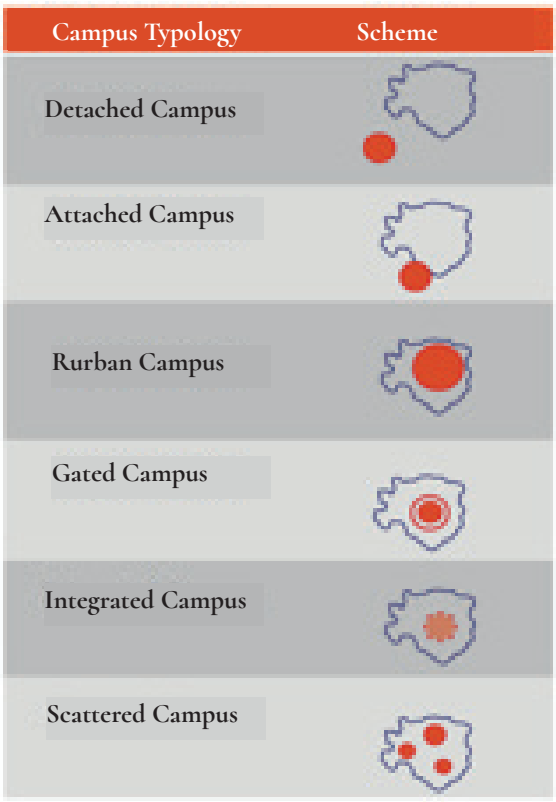

Figure 1. *The Scheme of University Campus Typologies (Source: Authors).*

Integrated campus typology is a sub-category of in-city campuses which has been located within the urban context and integrated with the surrounding urban area with very permeable boundaries.

Scattered campus model includes in-city precincts and has been formed as an aggregate configuration of different independent buildings or small precincts that sprawled around the urban fabric.

3. Morphological Features of University Campuses

The quality of a university is related to the quality of its architectural and urban models (Campos Calvo-Sotelo, 2014). The campus morphological dimensions encompass various features in a micro and macro scale including the elements that shape the campus internal spatial layout and the items that define the form of the precinct in relation to its urban context. These features reveal the campus mission, function, and identity and are expressed through the campus plan. Main components of a campus plan are built spaces, open spaces, and the circulation network. The shape, type, and organization of these elements define the kind of connection between different parts of the campus and also its relationship with its hosting urban context. These elements comprise campus land-use layout, open space arrangement, greenness, compactness, the spatial structure, the development directions, landmarks and focal points, campus boundary type, the connectivity between campus and the surrounding urban environment, and the movement network. The morphological dimensions are defined through the campus planning and design strategies and are demonstrated through campus architectural and urban qualities. The campus morphological components are important items in creating vitality and homogeneity within the campus setting space and in fostering synergies with the surrounding urban space.

4. Methodology

The applied methodology is twofold. In the first step, the literature review was done on the subject of university's morphological attributes and the university campus design principles. Subsequently, based on the morphological characteristics of university campuses and their type of insertion within the urban setting, the six typologies of university campuses were defined. These campus typologies include Detached campus, Attached campus, Rurban campus, Gated campus, Integrated campus, and Scattered campus.

The second step followed a multiple case study analysis. In this respect, fifteen university campuses were selected which addressed the defined six typologies. The selected university campuses are among the best representatives of their typology in terms of campus design principles and creating a specific relationship with their hosting urban environment.

An in-depth study was carried out for each case study and analytical maps were produced. To get an accurate result, the Campus Masterplan, Google maps, Openstreetmaps, and Google Earth maps were analyzed and the campus spatial analysis maps were re-developed. The spatial analysis maps illustrate the various under study morphological aspects of university campuses including the morphology of residing urban context, land-use organization, green space, spatial structure, development axes, boundary permeability and entrances, and pedestrian and vehicle movement network. Grounded on the produced analytical maps, *A Campus Morphological Atlas* was developed.

5. Analysis

This paper attempts to understand how various morphological dimensions differ in different university campus typologies. For this purpose, a multiple case study analysis was carried out. In this respect, fifteen university campuses were selected from around the world, representing the six identified campus typologies (Table 1).

Table 1. *The Case Study University campuses referring to six typologies (Source: Authors).*

Campus Typology	University Name	Location
Detached Campuses	Simon Fraser University	Canada
	Universiti Teknologi Petronas	Malaysia
Attached Campuses	EPFL	Switzerland
	ETH Zurich	Switzerland
	Utrecht University	The Netherlands
Rurban Campuses	UC Berkeley	United States of America
	Stanford University	United States of America
	University of Virginia	United States of America
Gated Campuses	Trinity College Dublin	Ireland
	Santralistanbul, Bilgi University	Turkey
Integrated Campuses	Harvard University	United States of America
	MIT	United States of America
	Free University Berlin	Germany
Scattered Campuses	University of Bologna	Italy
	Uppsala University	Sweden

A spatial analysis was carried out for each university campus. To do so, Campus masterplans, development reports, Google maps, Google earth maps, Openstreetmaps are used to achieve more accurate maps of the current situation of each campus. Primarily, the campus insertion within the immediate urban environment was examined and then the type of morphological relationship between campus and the surrounding urban context and their morphological continuity and homogeneity were analyzed. Subsequently, the internal organization of each university precinct was analyzed and campus spatial analysis maps were produced. These analytical maps examine the various morphological dimensions of university campuses. The studied morphological dimensions include the morphology of residing urban context, land-use organization, green space, spatial structure, development axes, boundary permeability and entrances, and pedestrian and vehicle movement network.

Based on the produced campus analytical maps, *A Campus Morphological Atlas* was developed. The Campus Morphological Atlas is a model to investigate the performance of morphological dimensions in relation to campus typology. The developed model reveals that how different morphological attributes differ in different campus typologies. This Atlas is a matrix in which the first column demonstrates the case studies for the identified six typologes of the campuses and the first row exhibits the defined campus morphological dimensions (Figure 2).

Some morphological attributes are mostly related to campus internal organization while some are influenced by campus location and its relationship with the surrounding urban context. Though being inserted within urban setting provides a higher possibility of integration between campus and the adjacent urban space, the campus internal layout has a critical role in strengthening the university-city interaction.

The context of urban morphology is a significant factor in the association between campus and the adjacent urban space. The high level of morphological similarity enhances campus-city connectivity. The issue is more comprehensible in Scattered, Integrated, and Rurban campuses. The land-use organization is highly related to the campus planning principles. However, a type of planning which emphasizes the interactions and exchanges make an attempt to create mixed-use and interchange spaces particularly in campus-city interface areas. In this sense, Detached, Attached and Gated campuses are to a large extent incapable of addressing the issue and conversely Scattered, Integrated and Rurban campuses have more potentials to provide a transitional interface space. Considering the green space, Detached, Attached and Rurban campuses contain larger green spaces. The spatial structure of the campus is more dependent on the type of campus internal organization and less related to the campus-city relationship. However, the higher degree of homogeneity between campus and the surrounding urban context increases the level of their connection. The type of campus boundary and its permeability is an important determinant in creating an interaction between campus and the immediate urban space. A campus with permeable boundary and a larger number of entrances is more connected to its urban context. In this sense, Scattered and Integrated campuses display a high level of permeability. Though Vehicle and pedestrian Circulation Network is more related to campus internal arrangement, it is a critical factor in creating a connection between campus and the surrounding urban context. The circulation network may have diversified types including organic, grid, orthogonal, or radial system. The higher degree of internal and external circulation network continuity enhances the campus-city connection. The campus organization axis also is the issue more related to campus spatial layout and its historical development phases. However, it may carry some traces from the surrounding urban space development as well. For instance, in Rurban and Integrated campuses which have been developed with their surrounding urban context, it can be in accordance with the urban space development grids.

Figure 2. *The Campus Morphological Atlas (Source: Authors).*

6. Final Remarks

University campuses are place-based entities which are shaping and being shaped by their urban context. They are critical actors in urban dynamics of their territories. Considering universities' third mission, they are key urban development elements in terms of social, cultural, economic, environmental, and physical aspects. The spatial organization and morphological characteristics of universities demonstrate the extent and type of their interaction with their urban context.

In this respects, this paper studies the university-city interaction through exploring the physical features and morphological characteristics of university campuses and urban form of their surrounding context. Considering the different forms of campus insertion within the surrounding urban setting, six typologies of university campus have been identified. Through a comprehensive investigation of university campus architectural and urban qualities, the morphological dimensions of a university campus have been analyzed.

The paper provides a methodological framework to examine the campus morphological attributes and propose *A Campus Morphological Atlas.*

The developed Campus Morphological Atlas is a tool which enables a critical reading of the relationship between identified campus morphological dimensions and the identified six different campus typologies.

The carried out analysis makes it possible to have a better understanding of what type of relationship the university campuses create with their immediate surrounding urban context and how various morphological characteristics perform in relation to campus urban location.

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