Courtyard Evolution in Contemporary Sustainable Living

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Abstract—The paper will focus on the strategic development deriving from the evolution of the traditional courtyard spatial organization towards a new, contemporary sustainable way of living. New sustainable approaches that engulf the social issues, the notion of place, the understanding of weather architecture blended together with the bioclimatic behavior will be seen through a series of experimental case studies in the island of Cyprus, inspired and originated from its traditional wisdom, ranging from small scale of living to urban interventions.

Weather and nature will be seen as co-architectural authors with architects. Furthermore, the building will be seen not as an object but rather as a vessel of human activities. This will further enhance the notion of merging the material and immaterial, the built and unbuilt, subject-human, and the object-building. This eventually will enable to generate the discussion of the understanding of the building in relation to the place and its inhabitants, where the human topography is more important than the material topography. The specificities of the divided island and the dealing with sites that are in vicinity with the diving Green Line will further trigger explorations dealing with the regeneration issues and the social sustainability offering unprecedented opportunities for innovative sustainable ways of living.

Opening up a discourse with premises of weather-nature, material-immaterial, human-material topographies in relation to the contested sites of the borders will lead us to develop innovative strategies for a profound, both technical and social sustainability, which fruitfully yields to innovative living built environments, responding to the ever changing environmental and social needs.

As a starting point, a case study in Kaimakli in Nicosia, a refurbishment with an extension of a traditional house, already engulfs all the traditional/ vernacular wisdom of the bioclimatic architecture. The project focusses on the direct and quite obvious bioclimatic features such as south orientation and cross ventilation. Furthermore, it tries to reinvent the adaptation of these parameters in order to turn the whole house to a contemporary living environment. In order to succeed this, evolutions of traditional architectural elements and spatial conditions are integrated in a way that does not only respond to some certain weather conditions, but they integrate and blend the weather within the built environment. A series of innovations aiming at maximum flexibility is proposed. The house can finally be transformed into a winter enclosure, while for the most part of the year it turns into a 'camping' living environment.

Parallel to experimental interventions in existing traditional units, we will proceed examining the implementation of the same developed methodology in designing living units and complexes. Malleable courtyard organizations that attempt to blend the traditional wisdom with the contemporary needs for living, the weather and nature with the built environment will be seen tested in both horizontal and vertical developments.

Social activities are seen as directly affected and forged by the weather conditions thus generating a new social identity of people

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where people are directly involved and interacting with the weather. The human actions and interaction with the built, material environment in order to respond to weather will be seen as the result of balancing the social with the technological sustainability, the immaterial, and the material aspects of the living environment.

Keywords—Building as a verb, contemporary living, traditional bioclimatic wisdom, weather architecture.

I. INTRODUCTION

THE way to achieve a contemporary sustainable living can be thought in relation to the climatic, cultural and social context. The engagement with the traditional wisdom which was developed through centuries can be the most appropriate departing point towards this exploration. In areas with a rich history such as the island of Cyprus, the necessity for incorporating the wisdom of the tradition is even more required. This understanding is used as the starting base for the exploration of the contemporary living towards a sustainable environment for inhabitation. The notion of the contemporary living immediately implies a constant changing process that engages the social, environmental, financial changes. Therefore, this exploration embarks on a direction where we will need to open the discussion of relevant issues such as the notion of place and the understanding of 'weather architecture', and the blending of the human and built topographies.

The paper will start examining the histories of the evolution of the courtyards and delve into its relationship with the notion of 'placeness'. It will then attempt to render the contemporary specific changes in the island of Cyprus seeing them as interconnected with the notion of 'placeness'. Finally it will return to the new attained identity of 'placeness' in order to delineate the attempts for proposing an evolution of the living environments towards contemporary sustainable living through case studies designed by the author.

II. HISTORY OF THE COURTYARDS

The rich Cypriot history of the 10000 years [6] evidently managed to forge an identity of the living environment that is inseparable connected with the climatic, social, and economic conditions of the island.

The wisdom of traditional architecture in these small, less-advanced places like Cyprus may be expressed by its organization around a courtyard [7]. This architectural development took shape down the centuries[8], relating to and reflecting the specific climatic and socio-economic conditions, the activities and culture of a particular community, and the levels of privacy and safety required, all of which were always

subject to the external conditions brought about by different historical moments [9].

The various stages in the development of this 'core' element of Cypriot architecture are, of course, interrelated with the relevant technology, materiality, and achievements of society. They can depict the level of development of its civilization and highlight the specificities of each historical period.

Due to its strategic location - as the confluence of the three continents of Europe, Asia and Africa – Cyprus attracted a series of invaders that conquered and occupied the island [6]. In the last 2,000 years, Cyprus was under permanent occupation by successive kingdoms, empires and cultures, such as the Romans, Byzantines, the Francs, the Venetians and the Ottomans. Cyprus only gained its independence from British rule in 1960. Each conqueror left his mark on the traditional architecture of the island and consequently on the typology of the courtyard. Apparently, the British influence was the most radical and significant that formed the current built environment: it helped to modernize the planning of the island's settlements, as well as its essential services, for example health, road-building, and construction technology. On the other hand, these changes, together with the introduction of new planning regulations, forced the traditional architectural element of the courtyard, and the way buildings were arranged around it, into extinction. It not only stifled any sort of development or evolution of traditional architecture but it abruptly disrupted the continuity from tradition to contemporary urban-scape. Unfortunately, these new regulations implemented by the British were adopted by the young Republic of Cyprus, and they are still in force. As a result, the merits of traditional wisdom were lost, and the new planning system, together with modernization, brought about new typologies and spatial conditions largely irrelevant to the local climatic, cultural, and social circumstances.

III. 'PLACENESS' WITHIN THE COURTYARD

The core of the living environment is expected to be tightly connected with the notion of 'Placeness'. It starts of course from the very indisputable function of the architecture itself which is the primary human need for a shelter.

Pallasmaa points out that 'the origin of architecture is about to provide a physical shelter … however the primary task of architecture is to create the experience of 'placeness'…' [2].

Similarly Heidegger, in his 'Building Dwelling Thinking' [10]: stated the distinction 'between space and place, where spaces gain authority not from 'space' appreciated mathematically but 'place' appreciated through human experience'.

Randall Teal [11] argues that in order to discover the richness of ''place'' through architecture, the designer must engage with the specificities of culture, location, and experience that make up everyday existence. The courtyards which are defined by these geometrically organized spaces serve from the old times till today as the vessels of the everyday activities in various regions of the world. The human interactions are formed within their boundaries and also they

define the required spaces. Consequently, the various social, cultural, climatic, and financial conditions define the uniqueness of the courtyards developed in far away from each other regions such as in Mexico, China and Cyprus. What is mostly significant in these examples is the everyday human presence that eloquently renders their prevailing parameter, the notion of 'Place'. This everyday life within the courtyards is forged by the inherent notion of the sustainability in the traditional living, which was always seen as indispensable parameter of the courtyards. Thus, the climatic conditions, the occupations of the inhabitants and the social specificities of the people determined the character of the courtyards.

IV. CYPRUS - CONTEMPORARY 'PLACENESS'

Due to the rapid changes derived from the spheres of the environmental, social, financial crises affected by the technological advances, the contemporary living has been tremendously affected. It altered in various ways expressed in its architectural presence and the identity of its 'place'.

In Cyprus, the alienated town planning regulations as a haunted reminiscence from the British colonization era and the current political situation resulted to the abolition of the courtyard organization as the main living core for the residents of the island, and consequently its inherent qualities and merits of 'Placeness'.

In general, the violent changes in the island due to the military war in 1974 resulting to the division of the island and the formation of the only divided capital in the world, Nicosia or the financial war of 2013 with devastating social consequences, caused the foundations of the identity of this 'placeness' to alarmingly be shaken. This dividing 'Green Line' still dictates a geographical, political, and cultural dissection of the island. The situation in the capital is eloquently rendered by [12] in his introduction to the Aga Khan awards: 'What was once a central and commercially vibrant quarter became, at a stroke, an uninhabited no man's land. The adjacent areas to the north and south also deteriorated as the organic links between neighborhoods were abruptly severed'.

The no-man's land is defined by [13] as 'the place which joins and divides presumed oppositions such as those between Greeks and Turks, Christians and Muslims, East and West…'

In the light of de Certeau's and Auge's understanding of places, Papadakis [13] embarking on a tour of Hora- the intimate name of Nicosia, the capital of Cyprus puts the question: 'Hora is –or is not-constituted as a 'place''. He concludes the former's definition of 'place: the reinterpretation of proper place by acting local agents as they fill the landscape with personal, familiar, or generally local meanings and stories' and the latter's: 'places: are linked with history, ancestors, the recently dead and ritual timetable'.

Antony Vidler [14] discusses the notion of boundary in relation to its attractive quality for the minorities. He refers to the return of 'migrants, the minorities, the diasporic' to the city and the space in which emergent identifications and new social movements of the people are played out'. He continues with the comprehension of how that boundary secures the

cohesive limits of the western nation may imperceptibly turn into a contentious internal liminality that provides a place from which to speak of, and as, the minority, the exilic, the marginal and emergent'. These understandings of the emergent identity of 'Placeness' along the dead zone of island and its capital, with all these radical changes of the contemporary living triggered the experimentation with proposing new sustainable ways of living.

V. EVOLUTIONS OF PLACENESS AND COURTYARDS

This experimentation towards new typologies of contemporary living in Cyprus followed a path to link the traditional wisdom of the courtyards with current, ever changing needs of the human inhabitation. The traditional ways of living, with the courtyard typologies and their inseparable connection to the notion of 'placeness' had an ultimate aim: they did apparently seek a way to achieve the optimum living environment for the specific conditions.

Juhani Pallasmaa [2] [18] emphasizes Aalto's understanding on the issue [17]:

'Architecture …has an ulterior motive …the idea of creating paradise. That is the only purpose of our buildings. We wish to build a paradise on earth for man'

Adam Sharr [4] discusses Heidegger's understanding of dwelling that it 'involved somehow being at one with the world: peaceful, contented, and liberating'. Then, he adds: 'oneness shows that black and white are indistinguishable from each other…they are part of the same totality from which individual parts can't be extricated and known in isolation'. It, therefore, attains the qualities of the 'oneness' as stated by Julio Bermudez [3] referring to Ken Wilber: ''my experience of a building (it) must shift from 'me' and 'it' as a duality, to just an experiential oneness where subject and object are merged. This kind of architectural approach that the human and the material space tends the merge on one entity leads to notions of the living environments that are interwoven with the human activities, and of the material environment which are blended with the immaterial world.

Jonathan Hill understands 'Immaterial Architecture' as 'advocating an architecture that fuses the immaterial and the material, [15, p.1] and considers its consequences, challenging preconceptions about architecture, its practice, purpose, matter and use'. He concludes that 'Immaterial–Material' weaves the two together, so that they are in conjunction not opposition' [15, p.16].

Parallel to the notion of the Material-Immaterial, Jonathan Hill continues and discusses the nature-weather interrelationships and concludes that, natures produce cultures and cultures produce natures [1, p.321] He states that 'as architecture and the weather are each a product of nature-culture relations, they inform, affect and alter each other in a complex process. He finally coins the notion that 'weather and nature become co-authors with architects'. 'Weather' is seen by Hill as a main architectural author, determining a new social and cultural built environment. This notion challenged further the exploration for an innovative contemporary, sustainable way of living where the conventional way of a static building is turned into a malleable built infrastructure functioning in constant interaction with the human behaviors, yielding to a direct correspondence to the weather needs. The notion of this kind of built and unbuilt fluidity, renders an approach where architecture and urban environments are thought to act as verbs: Pallasmaa [2] argues that 'a building is not an end itself; it frames, articulates, restructures, gives significance, relates, separates and unites, facilitates and prohibits. Consequently, elements of an architectural experience seem to have a verb form rather than being nouns'.

The 'verbal behavior' of the built environment was the decisive factor to open an architectural discourse about the malleability of the buildings. The innovative approach of this malleability is opening new horizons for architectural investigation when it starts linking the spatial experimentations with the traditional wisdom.

Thus 'Malleable courtyards' [5] typology for living environments suggests a contemporary answer of the evolution of the sustainable living incorporating the various aspects of sustainability such as the environmental, social, financial etc.

VI. MALLEABLE COURTYARDS

New approaches of the courtyard as the generator of innovative spatial conditions will be examined in this paper through a series of projects executed on the island of Cyprus.
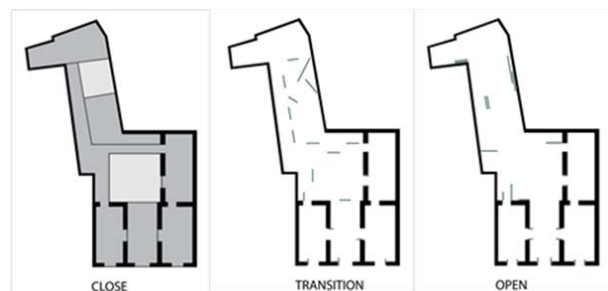

Fig. 1 Malleable system of courtyards in the Kaimakli house

An essential extension of a 'truncated' traditional house in [5], Nicosia regenerates the amputated original 'milieu' of the tradition and establishes new typology of the system of courtyards (Fig. 1). Through this system, the mechanism of 'movable' surfaces constantly transforms, incorporates the internal places, mingles the public and private areas, the movements and pauses, open and close, until finally it completely 'opens up' and becomes itself a 'multi-layered' courtyard.

With Tom Blender's words [16], 'this house started with a love of camping, of being open to life'. This "living architecture" dissolves the demarcation between architecture and landscaping, between building and "nature".

The combination or overlapping of activities creates various unexpected relationships that can be enhanced by the rearrangement of the mobile constituent elements of the courtyards. The static and otherwise traditional centralized courtyard system may indeed fall into an inanimate state in

relation to the contemporary needs for flexibility. In this case, however, it succeeds in being transformed into a playful environment with unanticipated surprises that keep creativity alive and the mind free. These flux quality spaces endlessly open up the desire for exploration and curiosity that, like a living entity, keep company to any user of the house, generating an unexpected and playful living milieu.

Randall Teal [11], in relation to Heidegger's notions, refers to the 'immaterial structures of human existence that link our ''everyday'' activities to those moments that are extraordinary. Architectural design activates these relationships when a designer welcomes the uncertainty, contingency, and vulnerability that is fundamental to one's being'.

In Jonathan Hill's discourse on weather architecture, he states that "weather makes architecture more ambiguous, unpredictable and open to varied interpretation" [1, p.320] Referring to Pallasmaa he continues: ''Instead of mere vision . . . architecture involves realms of sensory experience which interact and fuse into each other.' He talks about 'The appreciation of immaterial architecture is especially complex, and a challenge to the familiar experience of architecture. In order to accommodate all these understandings, the malleable courtyard typology implemented in this house, provides a wide range of interactive arrangements of the house by its users. It manages to response to the climatic conditions by providing a south orientation, shading devices and cross ventilation, various densities of light conditions by the actual involvement of the inhabitants for the alteration of the living environment due to their ever-changing needs. The adopted spatial system enables the users to create the desired ambience and atmosphere of their physical oasis, the process of which yields unexpected and not conventional spatial relationships.

The ultimate malleability and flexibility of the house allows the user to constantly alter the spatial conditions, merging himself into unison not only with the built part of the dwelling, but with the equally constituent element of nature and weather.

Fig. 2 Network of central and peripheral courtyards

A couple of case studies deals with housing units: A family project consisting of three housing units and the working space in a new neighborhood is organized around a central courtyard and a network of peripheral courtyards (Fig. 2). The 'envelope' of the main courtyard vanishes outside of the structure–its limits are expanded inwards, while the unexpected peripheral networks of courtyards act as the facilitator between the built environment and the natural environment.

Two houses on the outskirts of the small rural town of Dali were the starting point for an investigation into how the surrounding landscape redefines the main architectural element of the courtyard:. A courtyard, flanked by the two elongated parts of the house and studio (Fig. 3), or surrounded by the private spaces is organized as clusters of independent volumes. In these examples the aim at arriving to a fusion of built and unbuilt environment, of immaterial and material worlds is the driving force of the architectural approach.
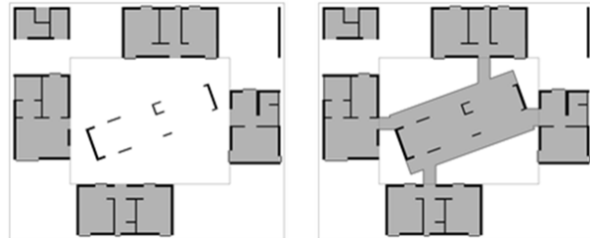

Fig. 3 Multi-shaped courtyard system

The experimentation and research done for these realized case studies is rich material for pursuing this almost endless voyage of quest into the local architectural identity, focusing on the significance of the courtyard as the main spatial compositional element. The exploration continues on different scales and nature of use. The understanding of the courtyard spatial organization can be seen as an urban feature pattern in horizontal and vertical development, continuously transformed in order to adjust to the natural, cultural, and social environment.

VII. CONCLUSION

The journey of the architectural explorations for a sustainable way of livings might be the first priority of the architecture and urban design. This entails the wise integration of the wisdom gained through the centuries by the evolution of the built environments, into the emerging state of the art technologies and the search for new ways of thinking and of course of living.

The core of the investigations should be the human itself. The human topography is expected to be blended with the built topographies, leading to merging of the immaterial with material and the built environment with its surrounding the weather environments. Contemporary living with its rapid advancements needs to follow innovative sustainable ways, where the conventional presence of the buildings seize to be mere objects but are merged with the human activities and cultures. This approach may start the triggering of the mechanism for the emergence of sustainable unprecedented living and urban conditions.

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