Healing the Liminal Space: a student project on the Nicosia buffer zone

Authors

Professor Karim Hadjri

The Grenfell-Baines School of Architecture, Construction and Environment,

University of Central Lancashire, Harris Building, Corporation Street, Preston PR1 2HE, UK.

Email: khadjri@uclan.ac.uk

Dr Fevzi Ozersay

Faculty of Architecture, Eastern Mediterranean University, Famagusta, Via Mersin 10, Turkey.

Email: fevzi.ozersay@gmail.com

Dr Christakis Chatzjichristou

Assistant Professor, Department of Architecture, University of Cyprus, 68 Ledras street, Nicosia,

Cyprus.

Email: hadjichristos@ucy.ac.cy

1

Abstract

On 17th October 2008 twelve sixth year architecture students from the School of Planning, Architecture and Civil Engineering at the Queen's University Belfast were granted unprecedented access by the United Nations to enter the buffer zone of Nicosia's walled city. This was a unique opportunity to experience and survey the selected sites for their senior theses design proposals which targeted the liminal space contained in the buffer zone since its complete physical division in 1974 and aimed at reuniting the walled city through urban design and architecture.

This paper firstly explains the context of the study and the role of the Nicosia Master Plan in reshaping Nicosia's urban growth. It then summarizes students' experience conducting the two the field trips to Nicosia. And finally it presents the design contributions from the 12 students, the design challenges they faced and the important topics that emerged.

Introduction

Nicosia, the last divided capital in Europe, has been split since the war in 1974 by the 'Green Line', which separates the Greek Cypriots and Turkish Cypriots, and divides the island from east to west; a division that also cut through the heart of the old walled city of Nicosia. The impenetrable no man's land, administered by the United Nations Peacekeeping Force in Cyprus (UNFICYP), has kept a buffer zone in place, freezing the symptoms without ever resolving the conflict itself. The area known as the Green Line is experiencing decay and neglect. If and when Nicosia is reunited, it would require a coordinated effort in order to redesign its public spaces, rehabilitate the existing structures and create new facilities.

This paper presents a first attempt at revitalizing the buffer zone of the walled city of Nicosia. Nicosia was selected because of its ongoing physical division and similarities with Belfast in Northern Ireland. Northern Irish students, due to their background and experience of peace lines and spatial division, understood the Cypriot issues and were eager to offer bi-communal and integrated solutions through architecture and urban design. The aims of the students' proposals were not limited with the footprint of the buffer zone since the city on each side is currently a living entity.

This educational experience brought students and stakeholders closer to a complex inaccessible spatial context still displaying a layered history of architectural styles, and allowed students to experience the qualities but also the poor state of the existing buildings and the new natural landscape. Architectural and heritage diversity within the buffer zone is highlighted by ruins of historic value that include neoclassical, Turkish Ottoman and Venetian style buildings.

Nicosia, a Divided City in Waiting

Nicosia a city with an incredibly rich heritage has been the capital of Cyprus for the last ten centuries. The walled city which is the oldest part of Nicosia contains fine examples of Byzantine, French Medieval, Venetian, Ottoman and British colonial architecture.[1] The eleven bastions and the three gates were built by the Venetians to consolidate the town and protect it from foreign invasions. During the Ottoman period, Nicosia started transforming into a modern capital city through improved infrastructure, public amenities and housing. At the time the city started to show two distinct communities namely the Greek and Turkish, which were centered and developed around their religious buildings. The settlement of the Greek community in the south and the Turkish community in the north of the city, led to the establishment of two separate local authorities in 1958. During the British colonial period, empty land was increasingly used for new development and as a result the urban density increased noticeably. British rulers needed to expand commercial and administrative buildings which led to more growth outside the city walls, but more dramatic urban growth occurred after the Second World War. Since the independence of Cyprus in 1960, south Nicosia in particular went through rapid urbanization by clearing old buildings to be replaced by modern high-rise towers.

---

[1] Petridou, A. (2010) *Nicosia Master Plan: A bi-communal initiative to change the image of the divided city of Nicosia.* Nicosia, Cyprus: Workshop on sustainable and healthy urban transport and planning. Retrieved from http://www.thepep.org/en/workplan/urban/documents/NicosiaMasterPlan.pdf, (2003). Accessed June 6,.

Since the city's division and the introduction of the buffer zone in 1974, Nicosia expanded dramatically along the north-south axis, although the pre-1974 urban growth trend was east-west.[2] After 1974, Nicosia witnessed 'sporadic and disorderly development' that was costly and prevented social cohesion. The walled city in particular experienced socio-economic decline and deterioration of its physical environment.[3]

During the last two decades considerable development has occurred on both sides of the border, but the complexity of the city's history and ongoing division meant that there is an imbalance in the level and quality of developments within the city. Apart from a survey carried out in 2001 by the Nicosia Master Plan (NMP) team in order to record the physical state of buildings found in the buffer zone, no actions have been taken to safeguard these buildings due to the restricted access to this area. As a result, the city continues to suffer from neglect in some parts, particularly those bordering the buffer zone, which caused two distinct urban growth patterns on both sides of the dividing line and beyond the city walls. This situation has encouraged developments away from the buffer zone effectively creating new centers of population growth. This is illustrated by the increase in the amount of vacant housing in need of repair within the walled city.[4]

Currently the walled city is experiencing dramatic changes. While considerable efforts are being invested by the Cypriot and the international community to improve infrastructure and restore historic buildings particularly in the historic centre, foreign workers continue to be attracted by low

[2] Oktay, D. (2007). An analysis and review of the divided city of Nicosia, Cyprus, and new perspectives. *Geography*, 92 (3), 231-247.

[3] Petridou, A. Op. Cit.

[4] Hadjichristos, C. (2006). Cyprus: Nicosia and its d-visions. *Architectural Design*, 76 (3), 12-19.

rents in the southern part of Nicosia, and by the ease of access to derelict or poorly maintained buildings in areas adjacent to the buffer zone on both sides. Further, a large number of recently restored buildings remain unused due to lack of cooperation from the owners who prefer to wait for a political settlement, and then decide on the future of the properties. This has been one of the stumbling blocks towards a more comprehensive conservation of the walled city. However, recent developments such as the opening of the Ledra street/Lokmaci crossing in April 2008 offer opportunities for urban regeneration along and within the buffer zone (Figure 1).

Figure 1: A view of a street in the buffer zone

Source: Authors, 2008

The Nicosia Master Plan - NMP

In October 1968 the Greek Cypriot Municipality of Nicosia initiated a project for improving the sewerage and drainage systems for the whole of Nicosia, and, two years later, the implementation of this project started. However, after the division of the city in 1974, the systems could not work without cooperation between the two sides.

As a result, in 1979 the two Municipalities started an implementation project for a shared sewerage and drainage systems. But, during this process it was found out that a Master Plan was inevitable for Nicosia as a whole. In addition, there were no talks between the politicians at the time. The Nicosia Master Plan became a reality thanks to the efforts and close working relationship of the two mayors at the time, Lellos Dimitriades and Mustafa Akinci.

Only a few months after, an agreement was signed and a report on the project was produced by the adviser of the United Nations Centre for Human Settlements (UNCHS - HABITAT). The development objective of this report was "the improvement of the existing and future habitat and human settlement conditions of all inhabitants of Nicosia".[5]

The Project had an emphasis on "pragmatic planning approaches" rather than lengthy and complex data collection procedures and analyses. This was due to the lack of human resources, and the fact that Nicosia presented a unique urban setting because of its physical division and the existence of the buffer zone.

The final report for the first phase of the Nicosia Master Plan (NMP) was published in 1984, and that of the second phase was completed in 1985. The planning horizon of NMP extended to 2001, when the thoughts for a "New Vision for the Core of Nicosia Project" (NVP) were established to evaluate the implementation of the NMP and to update the plan to meet current and future challenges.[6] One of the main issues was the historic core of the city which needed special treatment through the formulation of preservation and rehabilitation policies, which were concerned with

---

[5] Nicosia Master Plan. (2004). *New Vision for the Core of Nicosia Project – NVP.* Nicosia Master Plan, Nicosia, October.

[6] Guralp, A. Interview by Design tutor and students. *The Nicosia Master Plan.* (April 9, 2008).

recognizing the value of its architectural heritage, the planning challenges caused by land use, density of development and vehicular traffic, social aspects related to housing rehabilitation and the provision of community facilities, economic programs to revitalize the core of the city and increase employment, and finally, the protection of natural resources and the city's environmental wealth.

The NMP proposed two scenarios for growth due to the peculiar conditions of the city and the presence of the buffer zone, which was viewed as the most important zone where 'gluing areas' can be created to improve the functionality of the city. The uses to be located in these areas must serve revitalize the area and connect the two sides by introducing facilities to enhance tourism and bi-communal cultural activity. However, the NMP team had to propose a scenario with the buffer zone and another one without. The final scenario would depend on whether the city is reunited or not.

The New Vision for the Core of Nicosia Project final report was published in October 2004. The area covered by the NVP consists of the Central Area of Nicosia including the walled city and the Business/Commercial area around it. Within this plan, six priority project areas were identified; one of them was the buffer zone (the Green Line) Project. (Figure 2)
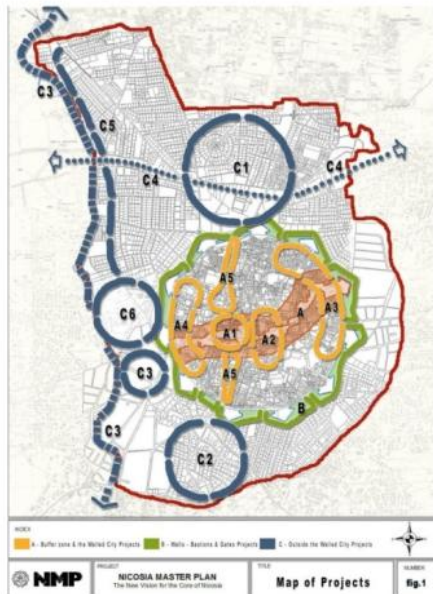
Figure 2: The New Vision for the Core of Nicosia Project.

A: Buffer zone projects; B: Walls, Bastions and Gates projects; C: Outside the Walled City projects.

Source: Nicosia Master Plan, 2004

The NMP continues to play a key role in reversing the decay of the walled city by adopting a strategy that is focused on urban heritage-based regeneration, which uses cultural tourism and education as the 'prime movers' to stimulate future residential and commercial activity. The NMP is in fact "the basis for evaluating the concept of 'design as reconciliation' in the capital city of Cyprus".[7]

---

[7] Charlesworth, E. (2006). Nicosia – reconstruction as resolution. In *Architects without Frontiers: war, reconstruction and design responsibility*, 85-98. Oxford: Architectural Press.

The NMP efforts have been recently recognized by winning the prestigious Aga Khan Award for Architecture in 2007.[8]

The experience of the field trips

We organized the first field trip to Nicosia for students attending the first year of the Master of Architecture course in April 2008. A subsequent field trip was conducted in October 2008 for a smaller number of students of the same cohort attending the second and final year of the same course and who opted to design their senior thesis projects in Nicosia. (Figure 4)
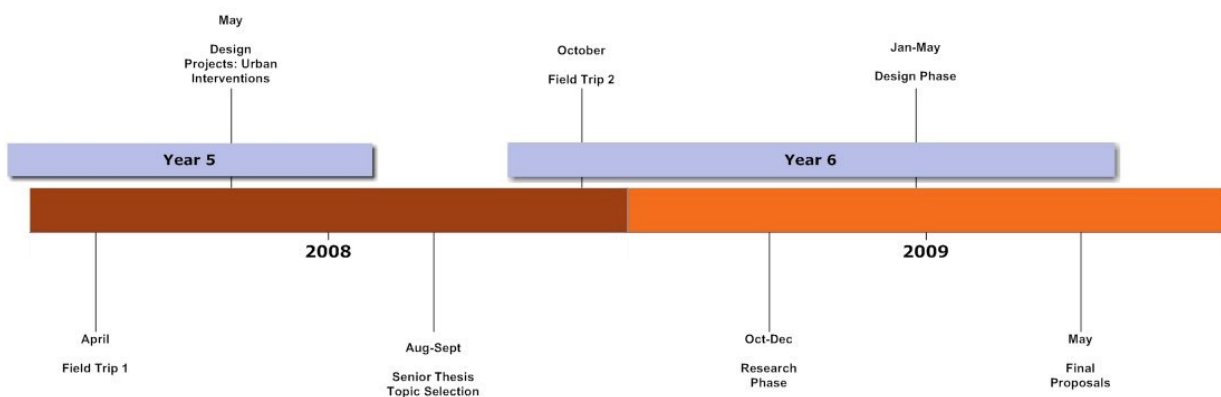

Figure 3: Timeline of the fieldtrips and design process

Field trip 1:

Twenty-eight postgraduate students from the 5th year in architectural studies visited Nicosia for a field trip during 7-12 April 2008.

---

[8] Aga Khan Award for Architecture. (2007). *Intervention Architecture: Building for Change. The Aga Khan Award for Architecture, 10th Cycle.* London: I.B.Tauris & Co Ltd, pp. 130-145.

The purpose of this field trip was to introduce students to the realities of a divided city and the ongoing bi-communal and international efforts to protect its architectural and urban heritage, and revitalize its neglected areas.

The objectives of this field trip were to:

1. Introduce students to a complex urban location;

2. Introduce students to the diverse social, cultural, political, and environmental context;

3. Identify potential sites for new developments or potential derelict buildings/areas for architectural/urban heritage conservation;

4. Participate in a design Charrette with local students.

During the field trip students met the Nicosia Master Plan teams, the United Nations Development Program agencies, local architects-academicians, undertook walking tours of the city and along the buffer zone, visited various buildings of interest both historic and newly built, and took part in a one-day design Charrette with local students in architecture. After returning to Belfast, students had four weeks to develop individual architectural proposals for their segment of the buffer zone.

This trip provided an opportunity to our students to explore post-conflict scenarios and potential intervention schemes along the buffer zone. Students proposed a variety of schemes which included a peace and reconciliation centre, a reunification and reflection park, a museum, a culinary school, art galleries and schools, a tourist exhibition centre. Some of these projects targeted adaptive reuse while others proposed new contemporary urban interventions.

Field trip 2:

Twelve students of the cohort that took part in the first field trip decided to base their senior thesis project in Nicosia during the second year of the Master in Architecture. This required an additional field trip in order to carry out thorough site selection and surveys, conduct interviews with potential clients, and discuss their proposals with our academic partners in Cyprus. The field trip took place during 12-18 October 2008.

Prior to the visit, students were allocated areas within the buffer zone, and were required to produce an overall urban design strategy and to continuously inform each other's design developments. (Figure 4)

An important aim of the field trip was to negotiate access to the buffer zone within the walled city which would be a challenging site for the twelve students, but this was not an easy undertaking as this area is only accessible to the military. Thus, the group had to explore other alternative sites available north and south of the green line in case access to the buffer zone was not granted. Several meetings took place between the studio tutors and the UN civil and military staff in order to explore the possibility of visiting the buffer zone and conducting a site survey. In the meantime students were collecting information on the walled city, interviewing residents and visitors, and discussing potential sites with tutors and the Nicosia Master Plan team. Permission to access the buffer zone was granted on Friday 17 October 2008, and an escorted tour was organized by the UN. Students had a relatively short amount of time to collect as much data as possible on their respective sites. (Figures 4 & 5)

Travelling through the ruins, the devastation of the war and the uncontrolled new landscape was a surreal experience... an eerie and chilling one. It became evident that there are numerous buildings

of architectural value and significance which should be restored. The combination of drive and walk along the buffer zone from east to west allowed the group to comprehend the level of decay and the challenge of stitching the city together.

Quite interesting was the use of symbolic naming by the UN soldiers to refer to specific locations within the buffer zone. These are Annie's house, the blue tractor, the yellow car, and OK Corral (Figures 6 & 7). Each of these locations has a story to tell, which were explained in great detail by the UN soldiers who patrol the zone. There was also an improvised museum displaying objects collected by UN soldiers from the ruins, in addition to a car showroom with cars that were never sold.

With the help of the UN soldiers, students were able to record some of their spatial experience that was necessary to support and illustrate their design proposals.
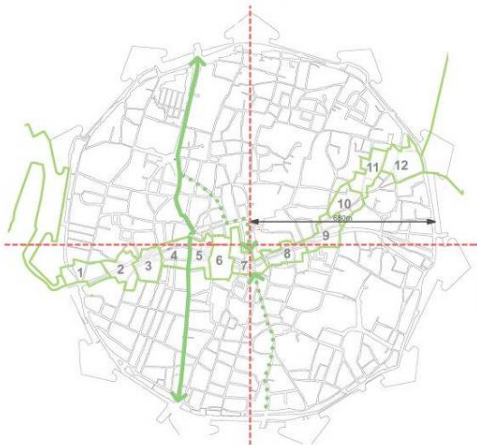

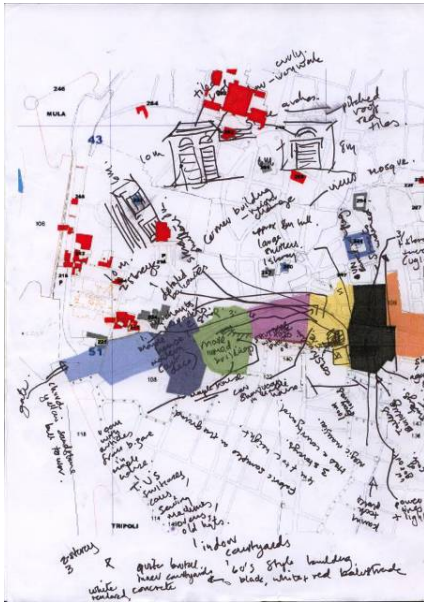Figure 4: The twelve designated areas within the buffer zone

Figure 5: Student Laura Martin's Field trip notes

Figure 6: Yellow car, a landmark used in military negotiations.

Source: Authors, 2008

Figure 7: Annie's House, a landmark used in military negotiations.

Source: Authors, 2008

Students were also asked to summarize their experience of entering the Buffer Zone. These are some of the quotes:

1. Cormac Maguire: On Friday 17th of October 2008 a group of Architecture students from Northern Ireland were granted access to the buffer zone area of Nicosia, Cyprus. It was an unprecedented move. I was one of those fortunate enough to be among that group. The United Nations controlled barrier is referred to by many names, "The Buffer Zone", "The Dead Zone", "No-Mans Land", "The Green Line". It has existed for 35 years with the sole purpose of keeping the Greek Cypriot and Turkish Cypriot communities separated. It is difficult to describe such a space. As architects we learn to understand the emotional power of space, and consequently we aim to create spaces that resonate on a more poignant level. An architect did not design the Buffer Zone, it was not created to illicit emotion, yet as a space it has a power that would be hard to equal anywhere else in the world. In a way, it was like moving through an alternate reality, a liminal space that does not belong to one side or the other. Reminiscent of finding a secret passageway at the back of the garden as a child, being in a forgotten place, untouched and silent but also strange and tinged with menace. As

15

military personnel monitored from both sides of the divide we passed among buildings that had not been disturbed in almost forty years. Unused and uncared for, the abandoned streets were suffering from decades of dilapidation. With windows of shattered glass and facades of broken stucco, the built fabric of this 'no-mans land' appeared strangely macabre. An anthropomorphic skeleton of built form.

2. Edelle Henry: The journey through the buffer zone was quite surreal. 'Dead man land' really felt dead. It was silent, other than a slight hum of background noise, yet you still almost hear the firing of guns, the screaming of people, the shouts of women and children. The signs of troubled times were all around; the area has virtually been untouched since 1974. Bullet holes in walls, partially collapsed buildings, graffiti and items left behind tell visible tales of the people who once lived there. The UN have labeled several areas or items which tell particular stories, 'Annie's house', 'the blue tractor' and the 'car show room', all reminders of past events in time, a person or a place.

3. Paul Toal: Negotiating the fortified city's narrow streets and randomly woven barrier within, it is possible to capture only glimpses of the 30 years of decay and trapped memories that lie dormant in this lifeless scar that divides the living city. A meandering path littered with outposts reinforces the interface between locals and tourists and emotionless sentries stare but no photographic record of the experience is permitted. Soon after on a humid October afternoon my curiosity was to be satisfied, via the gates to Ledra palace and a UN escort that waited on the other side. In anticipation I made my way through a group of photographers who were reporting on a high profile political meeting of representatives from the Turkish and Greek communities that day. Entering the UN controlled buffer zone only sandbags and collapsed ruins pay testament to a distant life torn brutally from reality and existence. This

place of memories is littered with the remnants of everyday life and the heavy dust and dense vegetation shows little remorse. Although life is gone I was being watched, by two armies. The abandoned houses, shops and streets that once formed the backdrop for social activity now portray a theatre of death and decay. The biographic stories of past inhabitants told by UN soldier's fuel my imagination; a spectacle for me.

The student proposals

Following months of design development and debate, the twelve students produced an urban and landscape strategy for the buffer zone in line with their individual schemes by proposing facilities that can be shared by the two communities (civic, cultural, community and educational). This overall strategy aimed to maintain the existing buildings footprint, proposing adaptive re-use and restoration to significant buildings, inserting new ones, and strengthening the links between east-west and north-south.

Research and Programming

During the period October to December 2008, students were required to complete a research phase that included development of a design program for their area based on the interviews conducted with their respective Cypriot clients. Students were also required to review design theories that could inform their particular design objectives, carry out a detailed site analysis, and produce physical site models. A presentation by students for this stage took place in December 2008.

Design development

Following on the research and programming phase, students had about four months to develop their design proposals. Design reviews were programmed every month and critics including the authors actively contributed to these sessions.

The twelve students had to agree on an overall urban design and landscape strategy aimed at using the east-west landscape corridor created by the buffer zone in order to facilitate the reunification of the two halves of the walled city. Themed squares and open spaces that link and identify the twelve schemes were some of the tools used (Figures 8 & 9). Overall the urban design strategy was having a two leveled approach; the north-south flow in general and the east-west promenade axis in conjunction with the neighboring proposals.

The proposed schemes were: a theatre of memory, an archive, a centre for the built environment including a school of architecture and offices for the Nicosia Master Plan, a school of dramatic art, a school of art, a library (Figures 10 & 11), a craft academy with an open market, a thalassaemia research and patient support centre, a sports' institute, an integrated school and community centre, a language centre, and an academy of applied environmental research.

The irregularity and compactness of the existing urban grain was a determining factor influencing urban and architectural proposals. It should be highlighted that the students had to deal with a considerable amount of complex data from the field (cartography, surveys, interviews) that needed to be analyzed and synthesized in order to reach meaningful and fitting design proposals.
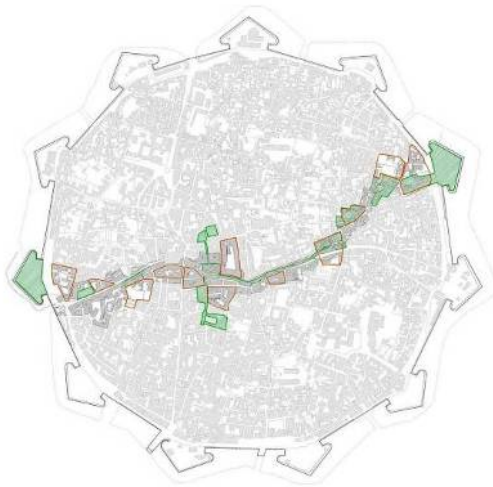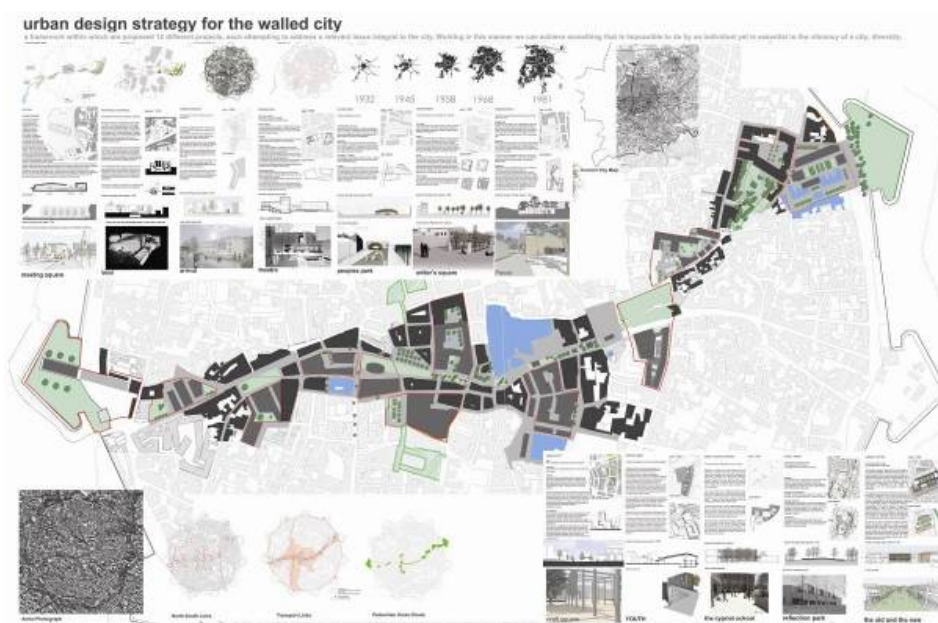
Figure 9: Overall urban design and landscape strategy

Figure 10: Urban design strategy for the buffer zone with the twelve schemes and open spaces

Design challenges and topics raised

A number of issues were immediately identified as important by the students themselves, while others were brought up by the tutors and external critics, stimulating quite fruitful and educational

discussions which, while having the specific case studies as their context, they did touch upon much broader issues faced in architecture today. These are summarized below:

1. **Defining and intervening in an urban entity:** the divided city, the medieval walls with the moat, and the growth of the city before versus the growth of the city after 1974, presented a complexity which rendered necessary an investigation on what was the entity which should be considered as an urban whole. It was here that the use of the theoretical framework as well as the applied methodology of the syntactic, configurational analysis of space proved quite informative. The projects were seen as interventions or transplants in an injured yet living urban organism. 'Joining' rather than 'gluing' thus became a consciously aimed target so that the new spatial entities proposed would not be rejected by the existing urban fabric.

2. **Understanding the parts that make the whole:** In a smaller scale, the concept of the neighborhood was also addressed, developing a more sensitive attitude towards fine yet important differences between parts of the nucleus of the walled city.

3. **Erasing or preserving the marks of the wound:** Should the buffer zone be allowed to remain as an identifiable zone even if, in case of reunification, it will not serve to buffer, or should the goal of the proposals be to eventually make its marks disappear?

4. **The old texture and the new inserts:** That the proposals should 'respect' the nature of the existing fabric. What was discussed were the possible ways this could be achieved. For example, how does one insert relatively larger open spaces within the medieval city without ruining its character? How are the contemporary notions of permeability,

20

visibility, or privacy and public life achieved within a socially and culturally dated urban body?

5. **The meaning of preservation, memory and history:** These notions clearly acquire a new meaning in such a context. And since erasing and forgetting are obviously not the answer, how an architectural proposal deals with these issues is quite a challenge. The city layers, which are in many cases quite literal and concrete, demand an engagement with one of architecture's oldest challenges: how does one deal with the idea that only one physical entity can occupy a specific space at a time.

6. **Reusing the existing buildings:** Even a seemingly simpler task such as deciding on a new program for an existing building is here rendered complex because of its history. For example, how does one deal with the problem of restoring a structure which was at different times a church as well as a mosque?

7. **The notion of Neutrality:** The desire to achieve neutrality in a place ravaged by the conflict between two communities may naturally, at first glance seem appropriate. Problems arise when one attempts to give it physical presence, either through form or space. The strongest danger is to eliminate or disrespect the differences, cultural and other, of the parties involved, creating an environment which does not cater for the needs of either but addresses a third non-existent society which is naively expected to occur due to the architectural proposal itself. The challenge then is: how does one create the possibility of a common ground without ignoring what makes each party different?

8. **Transference of knowledge:** How can lessons from other conflict zones such as Ireland, the country of origin of the students, be helpful without ignoring the specificities of the new area?
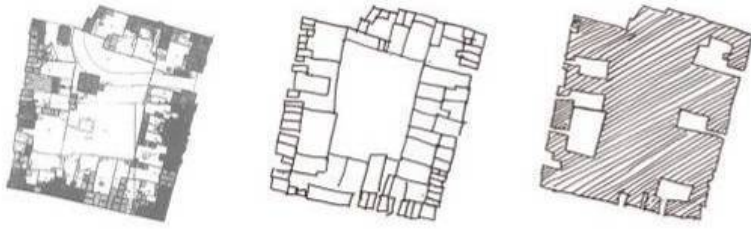

Figure 10: Contextual design development

Proposal for the library (Winner Irish OPUS Awards 2009; Royal Society of Ulster Architects Silver Medal 2009; School Nomination for the RIBA President's Medal 2009) by Laura Martin

Figure 11: Internal view

Proposal for the library (Winner Irish OPUS Awards 2009; Royal Society of Ulster Architects Silver Medal 2009; School Nomination for the RIBA President's Medal 2009) by Laura Martin

Conclusion

If for nothing else, the presented educational experiment could be seen as rather peculiar if one considers that an Algerian born professor, in collaboration with two scholars, one Turkish-Cypriot and the other Greek-Cypriot - all three from countries that were until relatively recently colonies, bring a group of British and Irish architecture students, to study and comment on the divided city of Nicosia. Our answer could be: and why not an initial argument in support of 'it takes one to know one', or one could cite a more structured response as in the following quote:

> Post-colonial thinkers accuse Orientalists of stereotyping the other so as to fit the matrices of their own preconceptions. Orientalist endeavors, in this view, are merely expressions of self-serving prejudice. From a hermeneutical perspective, however, this accusation must be approached with caution. It presupposes that there exists the possibility of an unprejudiced understanding, and for hermeneutics such an untainted understanding is unattainable, an impossibility. [9]

The goal was to encourage students to critically reflect on their assumptions, and to acknowledge and examine their prejudices and all these by going through the process of understanding the 'Other', in this case, the divided city of Nicosia, and community needs on both sides of the divide. The proposals were thus informed by the experience of being there and talking to the local people and stakeholders but also by students' judgments and know-how, which were informed by their life experiences having lived on the island of Ireland and their architectural education as well.

---

[9] Snodgrass, A. and Coyne, R. (2006). *Interpretation in Architecture: Design as a way of thinking.* New York: Routledge, p. 176.

The twelve proposed projects offer a vision for 'gluing' the walled city by designing a diverse range of schemes, and in line with the Nicosia Master Plan new vision for the core of the city. Apart from the educational benefit the students had, we ultimately hope that their proposals could contribute to the bi-communal debate on how to go about reuniting the last divided capital in Europe.

This educational exercise that was based on real needs has enabled this group of students to be truly immersed into the Cypriot dynamics, to understand the needs of stakeholders, and to address effectively complex socio-cultural and political issues through urban design and architecture.

Acknowledgments

References

Aga Khan Award for Architecture. (2007). *Intervention Architecture: Building for Change. The Aga Khan Award for Architecture, 10th Cycle.* London: I.B.Tauris & Co Ltd, p. 130-145.

Charlesworth, E. (2006). Nicosia – reconstruction as resolution. In *Architects without Frontiers: war, reconstruction and design responsibility*, 85-98. Oxford: Architectural Press.

Hadjichristos, C. (2006). Cyprus: Nicosia and its d-visions. *Architectural Design*, 76 (3), 12-19.

Nicosia Master Plan. (2004). *New Vision for the Core of Nicosia Project – NVP.* Nicosia Master Plan, Nicosia, October.

Oktay, D. (2007). An analysis and review of the divided city of Nicosia, Cyprus, and new perspectives. *Geography*, 92 (3), 231-247.

Petridou, A. (2003). *Nicosia Master Plan: A bi‐communal initiative to change the image of the divided city of Nicosia*. Nicosia, Cyprus: Workshop on sustainable and healthy urban transport and planning. Retrieved from http://www.thepep.org/en/workplan/urban/documents/NicosiaMasterPlan.pdf.

Snodgrass, A. and Coyne, R. (2006). *Interpretation in Architecture: Design as a way of thinking*. New York: Routledge, p. 176.