Designing an Open System: Indeterminate Boundary for a University Campus

The phenomenon of 'open city' is built on the notion of diversity, heterogeneity and coexistence. The open city is proposed against the long-term and determinant design of cities. Open systems accept and tolerate change in urban development, whereas closed systems are change-resistant. In this study, the idea of an open city is argued from an architectural perspective by designing a boundary structure for a university campus in Istanbul, the biggest city in Turkey. In 1981, Istanbul Technical University (ITU) campus was settled in Maslak, an area out of the city. Throughout the decades, Maslak has changed dramatically, and today it is an important sub-center and CBD of the city. However, ITU campus remained as a closed system; unable to evolve as an open campus while its surroundings and the city were socially and spatially transforming. The campus and the city are now separated by a strict and crisp border.

The problem of the campus boundary in the context of an open city was the subject of one of the design workshops, held in the Faculty of Architecture, ITU, in 2014. The aim was to blur the boundaries between the campus and the city. Students were expected to interpret the campus fringe as an open system; where people could come together, and where resources and enterprises were available for everyone. The workshop was conducted in two different groups for a certain time; ten undergraduate students for eight weeks and ten graduate students from architecture, urban design and planning for four weeks. The workshop was organized as a multi-layered process, where each level is elaborated as a part of this paper. The theory of open city was explored through literature review, studio seminars and group discussions. The ITU campus and Maslak was analyzed by using qualitative and quantitative methods to comprehend the existing closed structure, also to reveal the potential of the site. Each student proposed a project for the campus border according to the design principles, elements, and the requirements of an open city.

THE IDEA OF AN OPEN CITY
The conventional planning of cities by using top-down rules and regulations exercises order and control, and causes isolation, mono-functionality, segregation

ASLI CEKMIS
Istanbul Technical University

ISIL HACIHASANOGLU
Istanbul Technical University

and homogeneity. Sennett (2007) argues that the over-determination both of the city's visual forms and its social functions results in the "Brittle City;" a closed system, which ignores the evolutionary growth and change in time. It is experienced in Le Corbusier's "Plan Voisin" for Paris where rigid images and precise delineations remove the urban imagery. However, the idea of "Open City," influenced by Jane Jacobs' urban studies, attaches uncertainty and complexity to the design of cities. Sennett describes the systematic elements of an open city as "passage territories," "incomplete form" and "development narratives" –which if those three are incorporated is "democratic". Referring to the first element, he states: "whenever we construct a barrier, we have to equally make the barrier porous; the distinction between inside and outside has to be breachable, if not ambiguous". The need for blurring boundaries is vital in open cities; enabling sides to penetrate each other, especially conflicting spaces such as public and private, formal and informal, nature and man-made; also different functions and disparate segments of society. The sides merge at indeterminate/intermediate boundaries -like grey areas between black and white- by gaining the status of in-between; becoming both of them, not either one or the other. Urban planners and architects are expected to ease the crisp borders in the city, which are the product of strict zoning decisions and exclusion policies.

Although not using the term directly, the new urbanism shares the conceptual frame of an open city. Sassen (2010) describes 'cityness' which is not a western notion of urbanity and refers to the intersection of differences that produce something new. Conceiving cities as fuzzy logic systems will reveal the possibilities of the juxtapositions of very different settings, which cannot be managed by applying the formal logic of planners. Cupers and Miessen (2002) stress that the urban public sphere is based on a model of confrontation and instability. Public spaces should be places where the individual and the community can openly and freely meet and interact. Highly structured, programmed, and controlled spaces in the contemporary city threaten the city's public connectivity; its openness and unpredictability. Batty (2007) says "the system of cities are no longer thought of as being 'complicated' but rather 'complex,' in that there is always uncertainty about the outcome of processes of change that originate from the bottom up". And, Hillier (2005) defines his theory of planning as the incorporation of "fragmentation, multiplicity, rupture, agonism, fluidity, transformation, transgression and undecidability: both/and", inspired by the geophilosophical work of Deleuze and Guattari.

The theme of the 4th International Architecture Biennale Rotterdam (IABR) is the open city, asking how architects and urban planners can contribute to diversity, vitality and livability. The curator, Kees Christiaanse (2009a, 2009b) conceives 'open city' as a utopian term; the spatial reflection of an open society, where different social groups coexist; the inhabitants have access to all resources and are given equal opportunities. Highlighting that a project for an open city is not supposed to be a 'city,' he gives various examples differing in scale, including: MVRDV's recent proposal for Paris, which aims to enhance the city's accessibility; Prenzlauer Berg in Berlin five years after the Wall fell, where the city became a breeding ground for creativity when a younger population of students and artists moved into it; Cedric Price's Thinkbelt, which proposes reusing an abandoned railway track as the spine of a new kind of university with mobile classrooms and housing modules that are highly adaptable; and, Urban Think Tank's cable car project, which connects a poor Caracas neighborhood to the city's metro. Additionally, we can cite many others as proposals for the open city concept. For example, Ex Cárcel Parque Cultural by

HLPS in Chile once an old prison and impenetrable site has been transformed and is now an open space whose function has totally changed. The design of Open City School, Dame Street invites the city in and offers facilities that can be shared by all citizens. National Museum of China Competition Entry by MAD Architects is organized as an open city in three layers by a sequence of outdoor and indoor spaces intertwining both nature and function, instead of a functional agglomeration of pre-defined uses. And, Linked Hybrid by Steven Holl Architects promotes interactive relations and encourages encounters in the public space, managed by a three-dimensional urban space in which buildings on the ground, under the ground and above the ground are fused together.

From a wider perspective, we summarize the common spatial entities of an open city with nine quality elements and their associated concepts. "Flexibility" is one of them defining a project as adaptable to change, incomplete, responsive and open-ended. "Uncertainty" is supplement to flexibility together with complexity and unpredictability, also identifies imprecise and vague (or transparent and porous) boundaries for penetration, diffusion and overlap. "Accessibility" is an important parameter for open designs aiming to create a connection, engagement, visual integration and passing through. "Publicness" is the focus of openness for everyone; public space provides co-existence and encounters which brings democracy. "Heterogeneity" is fundamental for an open city; also means diversity, variation and dissonance –a hybrid mix of spaces, functions, and structures such as inside and outside. "Attraction" is another feature of an open-city proposal which aims to bring people together via a creative, imaginative and productive context. "Livability" is an aspect attached to an open city idea which supports natural and ecologically sustainable systems. "Association" is a broad term used here to express a participatory and collective design; for a make-able society and for an evolutionary growth. Finally, "Exploration" is a distinct attribute of an open city project which is discovered, experienced, sensed and felt by people as a living part of the city. These spatial properties of an open city are intended to be a starting point for designing the ITU Campus border.

THE ITU CAMPUS AND MASLAK

Istanbul changed dramatically in the second half of the 20th century as a result of the effects of globalization and neoliberalism. In the new political and economic environment, the middle-class began to disappear and the gap between rich and poor widened. Unplanned urbanization and industrialization prompted large migration flows and a rampant increase in population. So, the city sprawled around slums and squatter settlements. Meanwhile business centers, residences, gated communities and shopping malls emerged as the city became an international market. Today, Istanbul is a global city with more than 13 million residents. Is Istanbul an open city? The answer is both yes and no. First of all, in regards to its history and inclusion of numerous cultures, Istanbul is always a cluster of people of differing race and religion. For centuries, the traditional urban pattern of the Ottoman period maintained a high degree of diversity and variety. Specifically, in the last half century, some policies and implications made the city more open but also closed in some aspects. In recent decades, after the deindustrialization of the city center, both culture and art facilities have been incorporated into the city with successful rehabilitation especially on the Golden Horn. Additionally, the city is highly connected via its public transport network; subways, highways, also the Bosporus bridges and the Marmaray, the tube tunnel project. However, many other projects throughout the years have had a negative

effect on the openness of the city, including: many large boulevards going through neighborhoods and dividing the established urban fabric (like Tarlabaşı project). Also, some gentrifications have wiped out marginal and ethnic groups and given rise to a social homogenization through segregation (like the urban renewal project for Sulukule, inhabited by a Gypsy community). Many other projects have demolished public spaces and urban parks where people freely attended (like Gezi Park in Taksim, which is planned to be replaced by a shopping mall). Forest areas and water reservoirs close to the city have also been demolished and have deteriorated due to such rapid urbanization without any preservation strategies being put in place.

Maslak is a district on the northern inner part of the city on the European side, which also provides a silhouette when viewed from the Bosporus. The main Büyükdere Avenue goes through the area and forks towards the Bosporus neighborhoods; İstinye and Sarıyer. The Maslak of today started to appear after the 1980s. Before this it was very much on the periphery of the city and almost vacant since it was planned that the auto service and repair industry would locate in Maslak. ITU's main campus was one of the first larger settlements to be built in Maslak in 1981 on the southern side of the avenue, with high-rise offices on the other side. Today, Maslak is an important sub-center of the city and CBD as it is home to more than 20 large corporate headquarters. Maslak is also comprised of a military zone, auto service and repair shops, high-rise residences (Mashattan), the Istanbul Stock Exchange building and facilities, sports clubs, a shopping mall, a five star hotel, schools and a hospital. All these functions were developed throughout the years within a zoning system; adjacent but not having contact (Figure 1). The main trouble in Maslak is the lack of publicness. The public space only consists of narrow pavements along the Büyükdere Avenue and also includes bus stops, pedestrian bridges and light posts on the sidewalk. The avenue is a dividing border in the middle of the district (Figure 2). There are two pedestrian bridges and one underground passage between two subway stations to connect each side of the avenue. The avenue is also a major noise source. Without a vibrant street life, people quickly and directly head toward their intended zones or buildings from the transport nodes, and vice versa. As a result, different users' groups, such as university students and business people, cannot come into contact with each other. The population in Maslak enormously decreases at night after work hours; the streets become deserted and the campus and military zone shut down. Additionally, the large green areas in Maslak are in the military zone and campus, thereby not open to the public. In 2010, the current main subway line of the city was extended to Maslak. Also, Büyükdere Avenue has become more accessible with the building of new roads, bridges and tunnels throughout the years therefore making Maslak more open. Still, the heavy traffic causes congestion at peak hours.

ITU was founded in 1773 during the Ottoman Empire as the Imperial School of Naval Engineering, and until 1934 it had only the faculties of civil engineering and architecture housed in two monumental buildings in the city center. As new faculties and institutions arose in the following decades, the need for a campus was clear, which would house all the education faculties, research centers, administration units, also other facilities including sports, culture and accommodation. In 1981, ITU moved to Maslak on 610 acres of land, being bordered by Büyükdere Avenue on the north, the military zone on the east and the Istanbul Stock Exchange on the west. The southern part of the campus where the

elevation dramatically decreases faces a low-income residential neighborhood. The campus gate here is a back entrance and rarely used. The other four of the five entrances to the campus are from Büyükdere Avenue, Maslak. At the time the campus was built, it was in the outer area of the city. In a suburban setting, it was designed to have all required activities inside the borders of the university campus. The self-enclosed structure of the campus was due to political and security concerns, also to the traditional formation of higher education in Turkey. However, the campus today lies in the heart of the city, next to the CBD, as Maslak has changed a lot since the 1980s. Nevertheless the campus still keeps its closed state by having no relation with its surroundings and the city.

Figure 1: Maslak in Istanbul, Turkey.
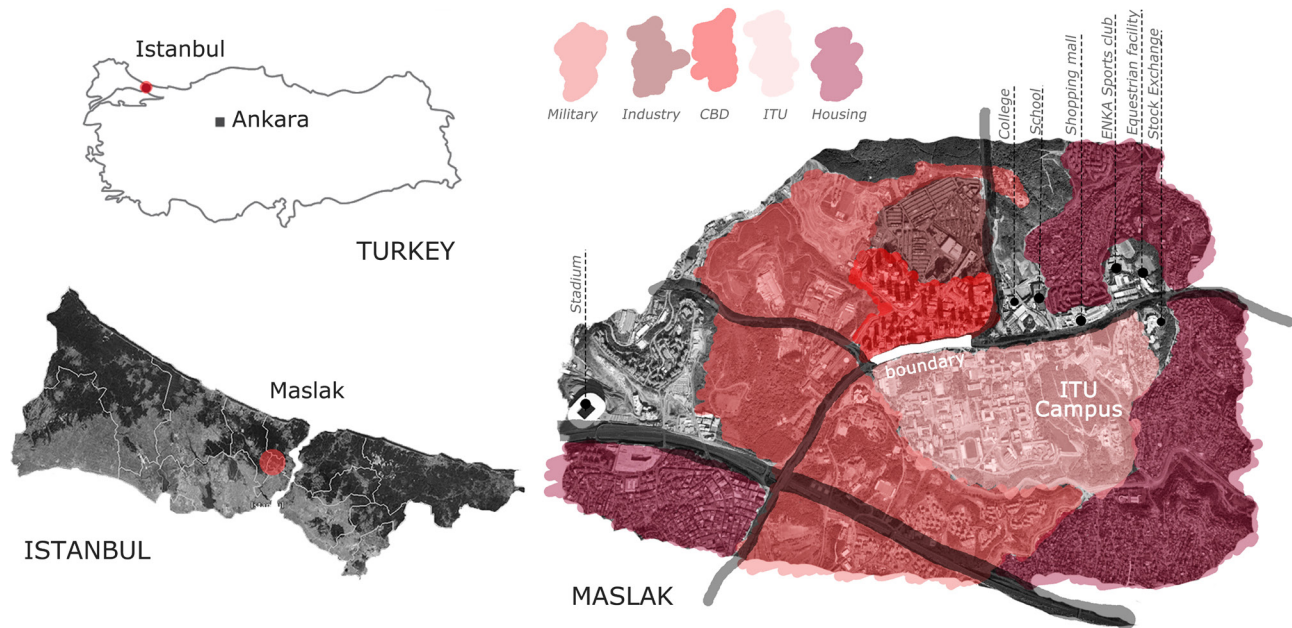
DESIGNING CAMPUS FRINGE AS AN OPEN SYSTEM

Recently established universities accept the contemporary notion that they should be welcoming and inclusive for everyone as well as the public and private sector. Thus especially new inner-city campuses in Istanbul are more open to the city at both an academic and corporate level. In the last decade, to change its closed and private nature, ITU has also attempted to foster direct exchanges with the surrounding neighborhoods and the city by building "Teknokent" (science and technology parks in cooperation with industry), establishing knowledge and communication hubs, and by also organizing culture, music and art events open to the public. In 2012, the ITU rector held a competition aimed at redesigning the Maslak campus to create a more sustainable, flexible and holistic environment. In regards to the pursuit of creating a more open campus, the design workshop presented in this paper aimed to develop ideas for the campus boundary.
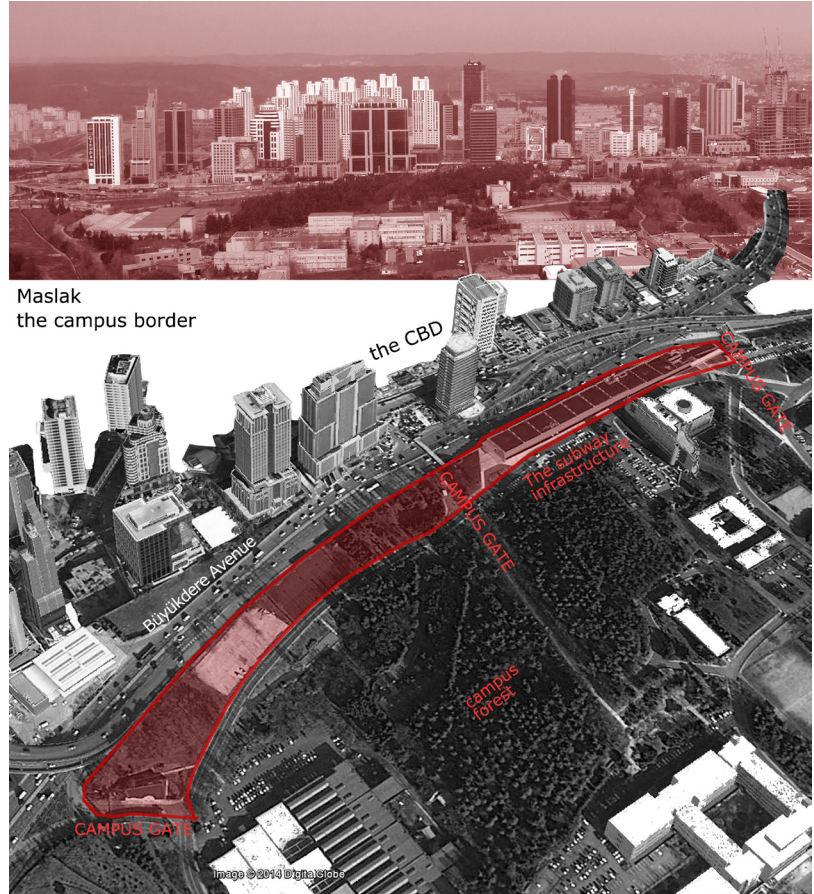
The linear stretch of land along the campus fringe (seen in Figure 3) was the area of study, which needed special attention as the main face and front entrance to the university, meeting the busy Büyükdere Avenue and the CBD. The continuous wall blocks the physical and visual connectivity between the city and the campus. Entry to the campus from the gates at both ends and also in the middle of the study area is restricted. The crisp border separates inside and outside; city and campus. The left part of the area is not occupied except for a dispersed group

of trees belonging to the small forest in the campus, but on the right, there is a concrete subway infrastructure in the shape of a rectangular box (also seen at the right in the Figure 2). Since the buildings are centrally located in the campus area, the border zones touching the city are left deserted, ineffective and unengaged without imparting a campus identity to the city. The main goal of the workshop was to solve the current social and spatial division by designing an indeterminate and intermediate border between the campus and city; thereby enabling a smooth and soft gradation.


The projects varied in regards to degree of detail, scale and progress. The most varied five projects from the undergraduate students (No 1-5, in Figure 4) and five projects from the graduate group (No 6-10, in Figure 5) are presented here. No 1 is a continuous structure with a tunnel shaped like a snake, ingeniously placed in Maslak to create an uninterrupted urban path. It can rise up or sink under the ground, and bulges to house functions inside. It may also become transparent or porous in patches. No 2 focuses on the entrance of the campus by designing a public square and a symbolic campus tower, which tries to shift the pivot of the campus to the boundary and city. The area is accessible by bridges and passages, where the functions are open to the public, including a library and units for performance arts and sports. No 3 is comprised of four detached buildings placed on a base (one theatre hall, two apartments, and one both the info hub of the university and the campus entrance). Although the project seems static and monolithic, the idea refers to the individual buildings on the opposite side of the avenue, and aims to insert a middle step between the high-rise blocks

Figure 2: The Büyükdere Avenue; CBD at the left and the campus at the right.

Figure 3: The study area.

and flat campus area. No 4 superimposes three deformed-stretched U shaped plans of which the ends reach the CBD at different levels; underground, above the ground and at ground level allowing an underpass for traffic. So, the proposed system is a hybrid mix of public space and infrastructure. No 5 is a reaction to the vertical development on the other side of the road, by designing a horizontally folded surface, where the spaces flow from one end to the other.
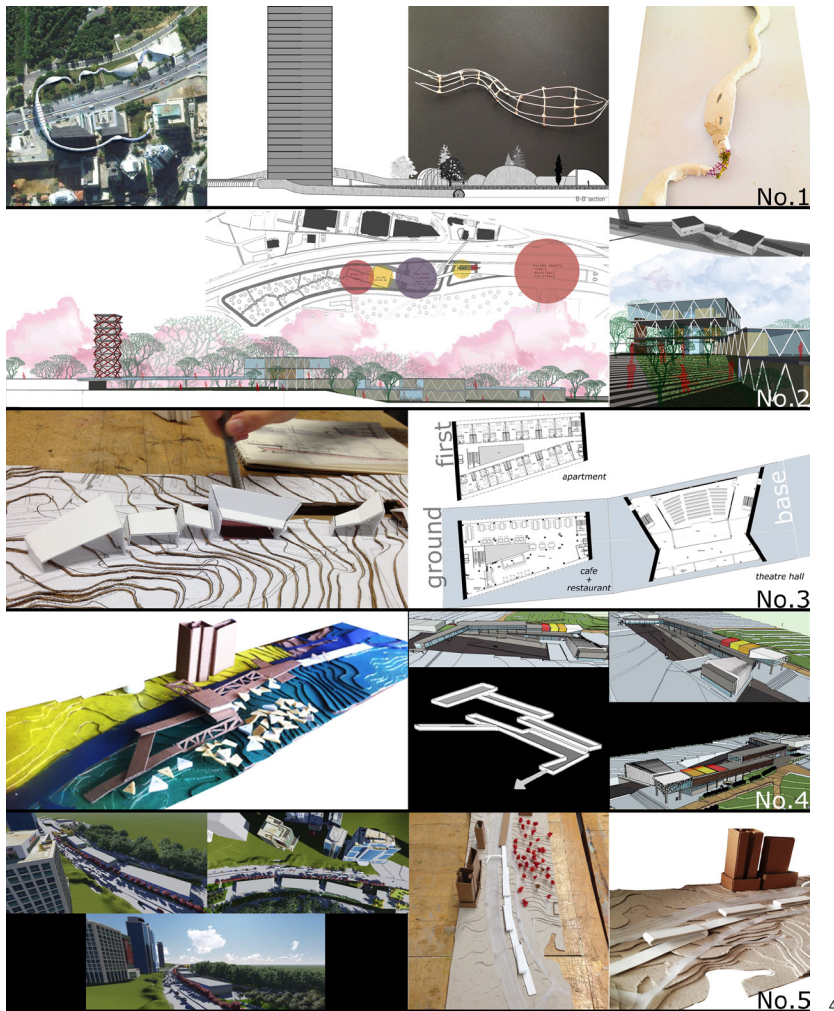
Continuing with the graduate students' projects, No 6 devises an intermediate boundary by using moveable, transparent balloon-like tubes, which are sensitive to human behavior. To reconceptualize the idea of a campus border, an illusion of a wall made of tubes is created, which appears like a continuous thick barrier, but allows passage at every point as if it is absent. No 7 proposes an evolutionary and generic design in Maslak, where a single module multiplies through moving, rotating, merging and intersecting into a topological pattern of space and landscape. The fluid layout represents an imprecision between inside and outside, up and down, nature and man-made. No 8 introduces a green tower in a futuristic aesthetic with a plantation at the base, while the bridges connect the surrounding green areas for a unified ecological system. The vegetation is sustained by the city dwellers as a type of community shared garden. The tower is also storage for water, soil and seeds. This concept aims to improve the quality of life of future communities in dense metropolitan areas. No 9 is a parametric bone-structure as

Figure 4: Proposed projects No 1-5.

if combining many footbridges above Buyukdere Avenue. The structure not only provides a connection between the campus and the CBD, but also creates an open space for people passing through by containing mobile and temporary functions for the public to engage in. No 10 proposes a spatial infrastructure rising above the ground to create multi layered, open, semi-closed and closed public spaces at several levels, as well as connections where necessary. Modular container units with various functions would be placed on that flexible skeletal grid frame.
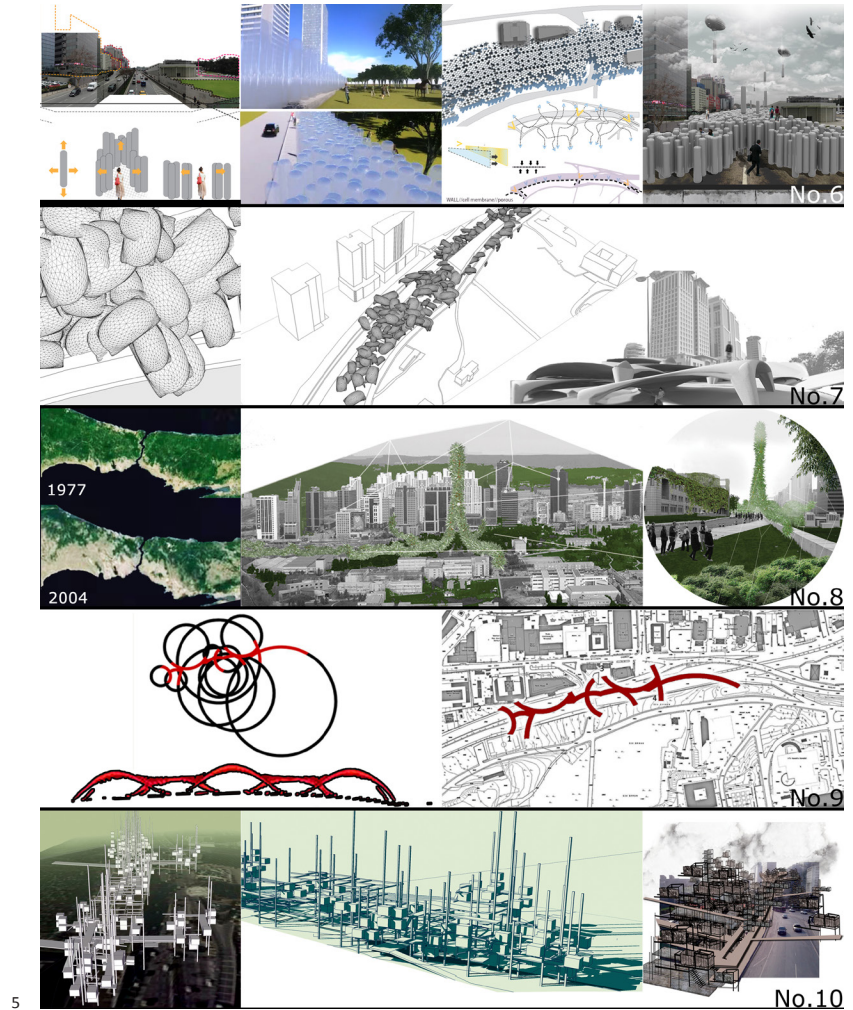

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Figure 5: Proposed projects No 6-10.

All these projects are evaluated in Figure 7 according to the open city concepts addressed in the last section. Accessibility was a main concern to a degree that would become the main objective of the proposal such as in No 1 and 9. Publicness was also applied successfully in every project. All students agreed that a novel idea at the campus fringe should be avant-garde and visionary, thereby transforming it into a focal point in the city. In addition, heterogeneity was cited in many projects as a crucial parameter for an open city. However, almost all of the students ignored livability and association, which are fundamental for an open system. There are also differences between the proposals devised by the undergraduate and graduate students. The graduate students used flexibility, uncertainty and exploration more in their design idea. They could also adapt the other concepts to their projects more successfully. Additionally, the gradu-ate projects were manifested at a conceptual level; rather abstract, fictional and

hypothetical, whereas the undergraduate projects were more realistic and pragmatic. The subway infrastructure in the study area was rejected as a part of the project, except for No 2, which proposes open courts on the roof. The top of that huge concrete box would also be an electricity supply using photovoltaic panels; or an open-air activity place such as a cinema. The structure itself could be turned into an art object in the city which attracts attention (like the wrapping works by Christo and Jeanne-Claude, or the façades for street art).

NO:	1	2	3	4	5	6	7	8	9	10
FLEXIBILITY						/	///	/		///
UNCERTAINTY				//		///	///	///		///
ACCESSIBILITY	///	//	/	///	//	///	///	///	///	///
PUBLICNESS	///	///	//	///	//	///	///	///	///	///
HETEROGENEITY	///	/	/	///	/		///	///		///
ATTRACTION	///	/	//	///	///	///	///	///	//	///
LIVABILITY								///		
ASSOCIATION						///		///		///
EXPLORATION	///			//		///	///	///		//
LEGEND:	/// High // Middle / Low **Blank** means 'Unspecified' or 'Not'									

1

Figure 7: Level of satisfaction.

CONCLUSION

This paper contributed to the open city idea by examining the border of a university campus in the Maslak district, which was once out of the city, but has developed enormously in parallel with economic growth in the last decades. While it's surrounding and the city has evolved, the campus has remained as a closed system as when it was first built. The campus border facing Büyükdere Avenue and the CBD in Maslak was redesigned by ITU students during a workshop asking which spatial qualities could eliminate the current disconnection. Besides their interest in the subject, students raised valuable suggestions. This educational experience showed that studying this border using the theory of open city improved students' awareness and sensibility about city planning as well as architectural design. It is clear that the conceptual frame of the open city will help architects and planners to comprehend social and spatial sustainability of cities, and query their role in the design process.

ENDNOTES

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WORKSHOP

1. Tutors: Işıl Hacıhasanoğlu, Prof.Dr. and Aslı Çekmiş, MSc. Research and Teaching Assistant.

2. Projects designed by (No 1-5) Su Kapkın, Ayten Karadeniz, Zeynep Hira Oğur, Furkan Canpolat and Serkan Doğan; (No 6-10) Simge Sürücü, Furkan Balcı, Gözde Temiz, Sercan Bahalı and Hatice Işıl Uysal.