

PUBLIC SPACES FOR COMMUNITY CAMPUSES AND UNIVERSITIES

Edited by
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Forewords

Marichela Sepe

This volume stems from a deep interest in a topic that, in recent years, has gained increasing importance in urban and architectural design: the role of open public spaces within university campuses¹. These places are not merely accessory settings for academic functions but are vital elements contributing to the quality of life for the entire community that studies, works, or simply passes through these areas. The open spaces of campuses thus become arenas for relationships, informal learning, and physical and mental well-being, acting as true extensions of the city itself.

My personal interest in this subject developed during periods of study, visits, and research across numerous university campuses, in Europe, the United States, and Asia. On these occasions, I observed how the quality

¹ This volume was realized within the framework of the research projects *"LOVE Sapienza: Livable, Enjoyable, and Attractive Spaces for the Community"* (under the author's responsibility) and *"University and Urban Regeneration: Redesigning Neglected Spaces and Routes with Sapienza as a Driver, NARRATES"* (under the author's responsibility for the Architecture and Urban Regeneration research line), both funded by Sapienza University of Rome. The contributions contained in the volume relate to the conference I organized as part of the *LOVE Sapienza* research, which was held at DICEA-Sapienza University of Rome, on July 3, 2025, in partnership with the GUDesign Network (www.gudesign.org), founded by Heleni Porfyriou and coordinated by me since 2022.

of open spaces directly affects the experience of those who frequent the university: students, faculty, researchers, workers, and visitors. These are not merely green areas or transit zones, but welcoming environments, carefully designed to encourage pause, outdoor study, and spontaneous socialization. In particular, it became clear how the presence of spacious, well-equipped areas with a thoughtful focus on environmental and architectural quality significantly enhances the overall livability of campuses.

At the same time, another compelling aspect is the connection between the campus and the surrounding urban fabric. In the best examples I visited, permeability and accessibility were ensured by a range of sustainable mobility options: bike paths, efficient public transportation, and safe, pleasant pedestrian routes. This network of connections not only facilitates daily movement but also fosters deeper social and cultural integration between the city and the university, overcoming the traditional physical and symbolic separation between the two worlds.

In recent times, attention to urban resilience has further expanded the scope of the discussion, making it essential to consider public spaces through a climate-oriented lens. Campuses, as genuine urban microcosms, must face challenges linked to extreme weather events—heat-waves, heavy rainfall, flooding—by designing open spaces capable of absorbing, withstanding, and adapting. Soil permeability, the presence of appropriate vegetation, and stormwater management have become fundamental design criteria, steering choices toward greater environmental and social sustainability.

The goal of this research is therefore to understand which factors make university spaces healthy, liveable, and resiliently future-oriented, as well as to identify effective design strategies to translate these factors into concrete practices.

The volume collects and analyses a series of international best practices, offering a useful tool for students, researchers, academics, designers, administrators, and all those involved or interested in the design of cities and campuses.

The structure of the book is organized into three main parts, following the cultural framework provided by Eric P. Mumford, Vassiliki Petridou, and David Grahame Shane. Each part addresses a different aspect of the relationship between public space and university campuses, yet all are closely interconnected and offer further insights for discussion. These three parts regard: Campus and Public Spaces, which explores the issue

of liveability and health in campus public spaces, examining how the design and organization of open areas can promote users' physical and psychological well-being; Campus and University Communities, which focuses on the various communities that inhabit campuses and their emerging needs; Campus and the City, which delves into the topic of connecting infrastructures and the relationships between campuses and their surrounding cities.

The ultimate goal is to propose a vision of the campus as an integral part of the contemporary city. Open public spaces can be a driving force in this transformation, creating environments that improve users' quality of life and contribute to the development of more resilient, healthy, and inclusive cities. In my introductory contribution, I therefore propose a set of guiding principles to support the design of liveable and inclusive campuses.

Modern Pedestrian Campus Design in North America, 1940s-70s

*Eric P. Mumford**

The term “campus,” as applied to a college or university, seems to have first been used in reference to the Princeton campus in a student letter of 1774 (Turner 1984). By then, universities in medieval European cities and towns, originally collections of separate colleges of students and scholars from various places, often foreign, had been in existence for over 500 years. In the English-speaking world, the models for new campuses usually came from the colleges of Oxford and Cambridge Universities, whose Gothic style libraries, classroom buildings, and various common dining and religious facilities were (and are) frequently imitated in campuses across the world.

In North America, Iberian Catholic universities are the oldest, dating to the sixteenth century. The Royal and Pontifical University of Mexico, founded in 1551 and closed in 1865, was located in the Zocalo area of Mexico City, which was built over the Aztec capital, Tenochtitlan, founded in 1325. Like other early universities in the Americas, its buildings took the form of a series of closed courtyards with open walkways, on the cloister model of medieval European monasteries. In English speaking North America,

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(divided after 1776 between the US and what became Canada in 1867), early academic institutions such as Harvard College (1636) more typically resembled English colleges sited on the edge of town, with free-standing masonry buildings set amidst trees and lawns. This pattern was given a more formal neoclassical order by Thomas Jefferson in his design for the University of Virginia (1817-22), an early public university, which was then also widely imitated (Turner 1984).

By the late nineteenth century, both Gothic quadrangles and Georgian neoclassical campuses had become well-established patterns for walkable university environments. Architecturally ambitious large campuses, whose central buildings were all designed by nationally known architects began to be built in various historic styles after 1880. Notable examples include Stanford University (1885) by H.H. Richardson and his successor firm Shepley Rutan and Coolidge, in a Mediterranean version of the Romanesque style, located in Palo Alto, near San Francisco; Columbia University in the City of New York (1896) by McKim, Mead and White, designed in an imposing neoclassical style; and Washington University in St. Louis (1898) by Cope and Stewardson, designed in an English Gothic style, whose relative informality appealed to the trustees. With the partial exception of Columbia, sited in the denser urban fabric of Manhattan, these campuses were located on new sites in what were then outlying urban areas which were just beginning to be developed. They were organized as self-contained environments, deliberately set apart from their then-suburban surroundings, which were laid out at the same time. These campuses were also technically advanced, in that they included the latest technologies of indoor plumbing, central heating, electric lighting, and in some cases even elevators.

By the 1930s, some architects and patrons had become convinced that historic architectural styles and traditional forms of campus organization no longer suited modern society. Frank Lloyd Wright offered a new vision of campus design at Florida Southern College (1938), but this was not much imitated elsewhere (Turner 1984). In Chicago, the former Bauhaus Director (1930-33) Ludwig Mies van der Rohe was hired in 1938 to both direct the architecture program and to design a new campus for the merged Armour and Lewis Institutes, which were renamed in 1940 as the Illinois Institute of Technology. Mies's IIT campus plan (1942-58) was built on a cleared South Side site, fulfilling CIAM's (International Congresses for Modern Architecture) demands that new, more open, green, and sanitary urban patterns completely replace old ones. Its lowrise glass and steel buildings were set widely apart in a modern landscape designed by Alfred Caldwell, and its centerpiece is Mies's Crown Hall for the architec-

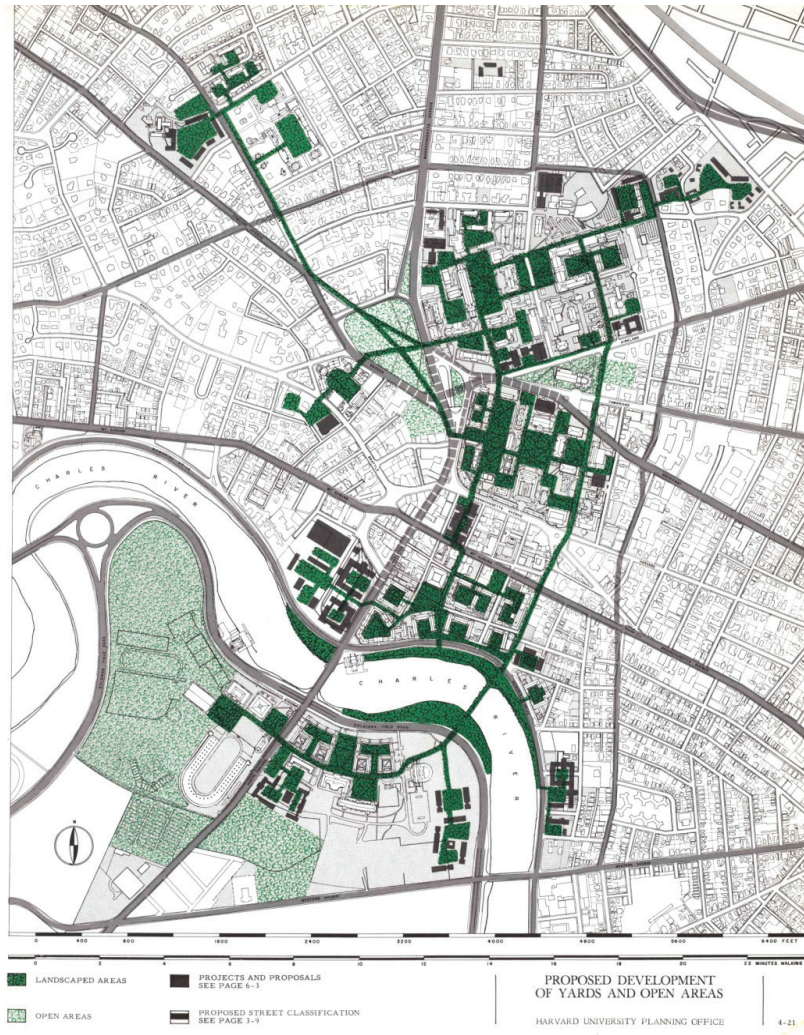
ture school, a pristine glass box rectangle enclosing “universal space” that became global model for modern architecture.

Around the same time, an even more ambitious modern campus for the National Autonomous University of Mexico (UNAM), founded in 1912, began to take shape in the rugged volcanic landscape south of Mexico City, overseen by Carlos Lazo and designed by a team of architects that included Enrique del Moral and Mario Pani, which opened in 1952. Its widely spaced modern buildings, inspired in part by Le Corbusier’s unbuilt proposal for a City University of Rio de Janeiro (1936), were ornamented with modern murals and sculpture that expressed the cultural hybridity and revolutionary ideals of modern Mexico (Cetto 1961). Though Federally supported, UNAM is truly a university city, with many hundreds of thousands of students, and remains proudly independent of the national government in running its academic affairs.

At both Mies’s politically neutral and technocratic IIT campus and UNAM’s more artistically expressive campus, their designers rejected traditional urban campus typologies and instead sought to create new kinds of architectural monumentality, intended to represent the new cultures that these remade institutions would inculcate in their graduates. Their rejection of expected forms of traditional architectural representation was part of larger midcentury political projects that were intended to create new, more socially inclusive societies that would destroy the hierarchical social orders of the past. In the context of the immense disruptions of World War 2, these projects were successful, even as their long-term consequences, which differed significantly in the US and Mexico, remain socially unstable.

By the 1950s, the limitations of the sweeping architectural and urbanistic rejections of past patterns of campus design evident at these campuses were began to become clear. At both IIT and UNAM, their immediate urban campus surroundings were kept spatially distant, and the urban environment was important only abstractly, in its social and political aspects, and not for its street-oriented ambience. Within CIAM, as early as 1944, Josep Lluís Sert had begun to suggest that modern architects needed to an approach to urban design that would continue the social and cultural values of endangered central pedestrian urban environments (Zucker 1944). By 1951, at CIAM 8, Sert argued that was in these environments that the intermingling of people and institutions of all kinds made visible and possible the social basis of democratic societies, in contrast to the orchestrated neoclassical central urban spectacles of Fascist regimes and those then being built in the USSR and Soviet-dominated Eastern Europe. (Sert 1951). His views were paralleled by

Figure 1 -
J.L. Sert, Harold Goyette, and others, existing and proposed campus yards and pedestrian paths, from Harvard University Planning Office, Harvard University 1960: an inventory for planning Cambridge, MA, 1960.



the somewhat different concerns of the Italian CIAM group, led by Ernesto Rogers, who in the aftermath of the war had emphasized the importance of the “urban ambience” of existing cities and of architectural “continuity” with their layered historical cultures (Lunati 2020).

Some of these ideas quickly found expression in various North American campus projects, including the central plazas of UNAM. Another early example is Neutra’s unbuilt master plan for Palomar College near San Diego (1944), where he labelled it on the plan as a “walking campus,” a designation he must have thought necessary in the emerging “autopia”

of Southern California. (Neutra 1950). A different approach was taken by Eero Saarinen in his design for the GM Technical Center (1948-56), where he deliberately sized the campus to be scaled to travel by car. In other projects, Saarinen's mostly unbuilt campus master plans were more scaled to pedestrians, notably those for Drake University in Des Moines, IA (1945-47) and the University of Chicago (1955-60), though at both and elsewhere, notably at MIT, Saarinen was ultimately only commissioned for individual buildings and complexes (Plattus 2006).

Recognizing that national trends then favored continued auto-based suburbanization, as Dean of the Harvard Graduate School of Design (1953-69), Sert began to focus the design curriculum there on what he called "urban design," which he launched as a pedagogical direction at the First Harvard Urban Design conference in 1956 (Mumford 2009). Around the same time, his new firm, Sert, Jackson and Gourley (later Sert, Jackson) was commissioned by Harvard University to design a large new administrative and health center directly adjacent to historic Harvard Yard, Holyoke Center (1958). Its design, which originally included a through block pedestrian passageway and a pedestrian plaza adjacent to the Harvard Square subway station, was conceptualized as part of Sert's "inventory for planning" for the campus, which when published a few years later and called for linking the campus with pedestrian routes, preserving the older urban structure of the area. At the same time, Sert advocated the use of occasional towers and peripheral parking garages to accommodate its growing density, which was expanding as Federal research funds were rapidly increasing during the Cold War. (Sert 1957).

Sert's firm, along with other architects with ties to the GSD, including Walter Gropius's firm The Architects Collaborative (TAC) and Benjamin Thompson and Associates, as well as firms such as Minoru Yamasaki and Associates in Detroit and Caudill Rowlett Scott (CRS) in Houston, were then commissioned for other Harvard campus buildings that were sited and designed with these ideas in mind. Among the most widely admired of them was Sert's Peabody Terrace Married Students Housing (1961-63), which has been the focus on considerable research (Bastlund 1967; López Matas 2020). Sert would later suggest that its combination of highrise and lowrise blocks densely woven into a sequence of pedestrian spaces, close to a parking garage for residents and a public school, could be a worldwide model for dense mixed development with an extensive pedestrian infrastructure (Mumford 2009). At the same time, the project was intensely opposed by some in the adjacent Cambridge neighborhood, leading to decades of controversy over Gropius and Sert's architectural legacy of modern architecture at Harvard.



Figure 2 -
*Sert, Jackson
and Associates, Harvard
University Married Student
Dormitories,
Cambridge,
MA, 1961-63,
with the Boston
skyline beyond
(Eric Mumford,
2017).*

In other parts of North America, beyond the older urban centers of the Northeast Corridor and some college towns, this kind of interweaving of old and new within a pedestrian framework structured by modern architecture and linking city and campus proved difficult to achieve. Yamasaki's Wayne State University campus (1958) in Detroit is a notable and little known exception (Gyure 2017), one that is perhaps more successful than the better known than Saarinen's Morse and Stiles undergraduate colleges at Yale University (1958-62).

Much more typical of the US at this time was the influential model of Ernest J. Kump's Foothill College (1957) in Los Altos Hills, a part of the suburban Bay Area now known as Silicon Valley. Extending the design directions already being used by Saarinen and others at corporate campuses into academic campus design, Foothill's pedestrian scaled campus was accessed by an auto-friendly ring road with landscaped parking lots, setting a pattern for many other new suburban college campuses in the 1960s. Its central pedestrian areas were landscaped by Sasaki, Walker and Associates. (Muthesius 2000). It was soon followed by many other campuses for the expanding University of California system, notably UC

Irvine (1965) by William Pereira, whose central landscaped oval was filled with Mediterranean plantings and linked to long pedestrian spines of new campus buildings. Pereira's initial report on the campus design for the client, the Irvine Company, also recommended that a "Princeton, NJ sized" community be developed nearby, though the plan also continued the usual American suburban practice of not creating many pedestrian linkages to it (Steele 2002).

A few architects were able to build even more ambitious alternative pedestrian campus visions at this time, offering megastructures such as Arthur Erickson's Simon Fraser University (1965) in Burnaby, near Vancouver, British Columbia, perhaps the best of a series of new campus projects in Canada from this period (Olsberg and Castro 2006). These also included the more isolated Scarborough College in Toronto (1963-65) by John Andrews (Muthesius 2000). Sert, Jackson's University of Guelph (1964), not far from Toronto, was structured more along the lines of Fumihiko Maki's influential ideas of Group Form, where the new buildings remained identifiable as detached structures set amidst existing ones, and organized in relation to a pedestrian circulation path (Mumford 2009). I.M. Pei also made a significant contribution to pedestrian-scaled campus design with his extensions of New College of Florida in Sarasota (1963-67), organizing the dormitories and other campus facilities in a dense, lowrise pattern to facilitate social connections.

By the late 1960s, the modernist vocabulary of these varied directions began to be questioned, as the ideas of Robert Venturi and Denise Scott Brown began to seem more relevant to the social realities of North American metropolitan areas. Charles W. Moore sought to combine postmodernist architectural strategies with more or less Group Form site planning ideas at his Kresge College (1966-74) at the University of California, Santa Cruz (Muthesius 2000), one of the many small undergraduate college clusters on the Santa Cruz campus, sited in the woods on a scenic slope overlooking the Pacific Ocean.

By the 1980s, even Moore's abstracted evocations of Italian hilltowns at Kresge and in his numerous other campus projects began to seem too radical to many college administrations, and a return to copying older Gothic and neoclassical styles for new campus buildings became mainstream by the 1990s. By then, the pedestrian-centered ideas of Sert and late CIAM had been appropriated and modified by the New Urbanist movement, which linked them to various urban design approaches of pre-modernist urbanism, including American campus towns like New Haven, CT (Dutton 2000).

In this century, these various approaches have all continued, often on the same campus, within a typical framework of pedestrian open spaces that connects buildings and complexes from different eras. Relatively few new entire new campuses have been built in North America since the 1970s, with some continuing New Urbanist directions and others returning to a variety of modern approaches. In a relatively few cases, notably in some successful college towns like Ann Arbor and at Harvard and the University of Pennsylvania, the pedestrian environments of the campus have been skillfully linked to the adjacent urban streets and neighborhoods. At many other campuses, there is often a clear divide between the campus environment, which often includes some adjacent blocks of student-oriented commercial activity, and nearby residential areas, which typically fiercely control campus-related pedestrian movement, sometimes even demanding that high walls be built to separate them from the academic environment.

The future of North American pedestrian oriented campuses is unclear, and is now seemingly divided between campuses located in what are now usually expensive central areas with extensive pedestrian activity, much of it commercially oriented, and more fortress-like environments that are clearly demarcated from what are often socially very different adjacent areas. In most other cases, the campuses tend toward the suburban and auto-oriented, suggesting that Charles Moore's 1965 insight, "you have to pay for the public life," is now even more true for pedestrian American campuses than it was sixty years ago (Moore 1965).

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Covered Walkways: Transforming University Campuses into Public Spaces

*Vassiliki Petridou**

Introduction

Covered walkways, whether in the form of a stoa, colonnade, or similar structure, allow universities to organize their public spaces in more complex and functional ways, enriching the overall campus experience. These walkways facilitate movement between buildings and help ensure safety during adverse weather conditions. Protecting students, faculty, and staff from rain, snow, and extreme temperatures is a key consideration in the construction of covered walkways on university campuses.

Many university campuses feature enclosed covered walkways that serve to facilitate movement while imparting a unique character to the campus. A prominent example of a covered space contributing to both functionality and architectural identity is the Main Quad at Stanford University, designed in the Richardsonian Romanesque style (1887-1906) located in the heart of Stanford's oldest campus area. More recently, universities like the University

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of Southern California¹ have proposed projects to improve open spaces and integrate new buildings with their surroundings. These developments include courtyards, plazas, pedestrian pathways, roof terraces, gardens, athletic courts, and other outdoor gathering spaces. Such elements aim to enhance both the public and private areas, reinforcing the connection between urban design and nature.

The concept of the stoa, a covered walkway or portico, originates in ancient Greek architecture. The stoa was integral to the agora, the public space for dialogue and debate, and is a precursor to modern public walkways. Its primary function was to provide shelter and a safe space for people to gather. Over time, the stoa became an essential architectural element, often defining the layout of entire buildings and complexes.

The stoa or cloister, in monastic complexes of the Middle Ages in Europe was one of the basic parts of the organization of space and the gathering of monks. It formed the living space, protected from weather, and contributed to the formation of the courtyard where gardens and fountains usually established the relationship with natural elements. In the intermediate space formed by the cloister, non-religious daily tasks took place, and the monks could be freed from the burden of religious rigor and the evocative atmosphere of the church and the cells. It was a space different from the solitude of the cell and the collective life within the sacred space of the church and other gathering halls. Also, the columns that often adorned the arcades carried symbols and images whose sight reminded the monks of the purpose for which they were in that specific space: relief representations, complex decorations were the occasions for constant confirmation of the monks' goals. The arcades were an important decorative element, separating the different parts of the monastery and constituting a vital space for the daily life of the monks.

By the Renaissance, the colonnade—defined as a series of arches supported by columns—had become an important architectural feature of European architecture. The colonnade, like the stoa, served as an open-fronted shelter with a lean-to roof, combining

¹ City of Los Angeles, USC Development Plan, Project Description, May 2010. https://planning.lacity.gov/eir/USC/FEIR/files/II.%20%20Project_Description.pdf

protection from the elements with an inviting public space. Notable examples include Bernini's grand colonnade at St. Peter's Basilica in Rome, Palladio's open loggias at Palazzo Chericati, and the barchessas of the Venetian villas. In each of these instances, the sequence of open and closed spaces added grandeur and variety to architecture, extending the building's volume into the public and private realms.

The following examples illustrate the application of covered walkways in university campuses, highlighting their contemporary importance as essential public spaces.

Thomas Jefferson's Vision: The Legacy of Covered Walkways at the University of Virginia

When Thomas Jefferson (1743–1826) conceived the design for the University of Virginia in Charlottesville between 1814 and 1826, he envisioned the institution as a self-contained village. One of his primary concerns was the relationship between public spaces and the arrangement of individual buildings within this academic community. In collaboration with architects William Thornton (1759–1828) and Benjamin Henry Latrobe (1764–1820)², Jefferson created a groundbreaking educational facility that was located outside city centers, fostering an environment where students and teachers could both live and learn, free from the distractions of urban life. The vision was to establish a community dedicated entirely to academic and intellectual pursuits.

Jefferson sought to design a space that would promote equality among students and free education from religious influence. The architecture was reflective of these values, particularly in the democratic arrangement of the open colonnades and their connection to the pavilions, which symbolized the new democratic structures of the fledgling United States. The design featured ten pavilions—five on each side of a U-shaped, terraced lawn linked by single-story walkways with Tuscan columns, which connected the student dormitories that ran north and south³.

² Benjamin Latrobe (architect), Sketch for Ground Plan and Elevation, 24 July 1817, ink on paper, 7 ½ × 10 in. Washington, DC, Library of Congress, Thomas Jefferson Papers, N-304.

³ Already from Thomas Jefferson's first sketches for the 1814 Albemarle Academy in

At the heart of this design was the library, located at the head of the lawn, symbolizing the central role of knowledge and intellectual freedom in Jefferson's vision. The entire arrangement, with its long sequence of colonnades and arcades, was a thoughtful integration of faculty and student housing, classrooms, dining halls, and utility spaces. Jefferson's intention was clear: the physical space of the university should embody the ideals of democratic education, providing both shelter and intellectual stimulation in an open, public environment. The southern end of the rectangular design was intentionally left open, emphasizing the connection between the built environment and the natural world, further reinforcing Jefferson's commitment to a holistic educational experience.

Jefferson's educational goals are centered on individuality, a spirit of common consent, the structuring of new institutions, and the relationship between the artificial and natural worlds. He sought to promote virtues derived from education while balancing public life with personal well-being. The University of Virginia's campus, spanning nearly two acres outside the city, reflects Jefferson's commitment to these ideals. The design incorporates fundamental principles of 18th-century French architecture, emphasizing public space, a hierarchy of privacy, geometric simplicity, and classical forms.

Jefferson introduced rhythm, harmony, and symmetry as essential elements of public life, and these principles are reflected in the layout of the university. His architectural inspirations, drawn from his time in Europe as Minister to France (1784–1789), included the works of Andrea Palladio, the arcades of the Palais Royal gardens in Paris (1784) by Victor Louis, and the Château de Marly (1679–1686) by Jules Hardouin-Mansart and Charles Le Brun⁴. From the last one,

Charlottesville, his intention to combine several buildings with a colonnade between them was evident, a suggestion that later appears in Benjamin Latrobe's 1817 plans for the University of Virginia. Thomas Jefferson (architect), Elevation Showing Typical Pavilion and Dormitories for Albemarle Academy, August 1814, iron-gall ink on laid paper, 21 × 13 ½ in. Charlottesville, University of Virginia, Albert and Shirley Small Special Collections Library, Jefferson Papers, N-309.

At the same time (1813), J.J. Ramée (1764-1842), as evidenced by his drawings, was working on a colonnade design for the plans of Union College in Schenectady, N.Y.

<https://nyheritage.contentdm.oclc.org/digital/collection/p16202coll7/id/3218/rec/7>

⁴ Michelle Benoit and Richard Guy Wilson, "Jefferson and Marly: Complex Influences", *Bulletin du Centre de recherche du château de Versailles* [Online], 5 | 2012, Online since 20 December 2013, connection on 27 March 2025. URL: <http://journals.openedition.org>



Jefferson likely adopted the system of paired pavilions flanking a central area, a hallmark of the University's design. At the same time (1813), Joseph Jacques Ramée, (1764-1842), as evidenced by his drawings, was working on a colonnade design for the plans of Union College in Schenectady (New York).⁵

Figure 1 -
Thomas Jefferson,
a covered
walkway at the
University of
Virginia. (©. V.
Petridou)

The concept for the Academic Village emerged as early as 1805. In a letter to Littleton Waller Tazewell⁶, Jefferson expressed his belief that large houses were impractical and prone to disaster. He argued that small, simple homes for professors, connected by covered walkways, would be ideal for fostering community. He conceived, the university not as a singular building but as a vil-

org/crcv/11936; DOI: <https://doi.org/10.4000/crcv.11936>

⁵ Joseph Jacques Ramée Architectural Plans for Union College, Capital District Library Council, <https://nyheritage.contentdm.oclc.org/digital/collection/p16202coll7/id/3258/rec/46>

⁶ Jefferson to Littleton Waller Tazewell, January 5, 1805, in Peterson, Jefferson Writings, 1152. Transcription available at Founders Online. See also Peterson, Norma Lois, (1983), Littleton Waller Tazewell, 37-39.

lage—one that could grow organically, with new structures added as needed.

The covered walkways, freestanding and often extending as colonnades or porticos, offered protected pedestrian pathways, facilitating seamless communication between the various schools and providing access to the entrances of academic buildings. They were the key element that unified the public spaces of the Academic Village. Much like the peristyle courtyard of a Greco-Roman domus, the entire campus adopted the form of an enclosed yet welcoming environment. While geometric rigor and the gradual increase in the scale of the academic buildings—culminating in the central rotunda housing the library—were maintained, the design also ensured a sense of openness. The colonnade sections, which alternated with porticos in front of the buildings, allowed unobstructed access to lateral areas, preventing a feeling of confinement.

Rather than resembling the closed, locked space of a cloister, the layout of the campus emphasized the sense of being in a central, open space, where movement and interaction were fluid. This balance of enclosure and freedom created a harmonious environment that fostered both academic focus and social connection.

The portico served as a unifying element, connecting all the school buildings. In the event of new additions, the continuation of the portico would ensure a seamless integration with the existing structures. Jefferson did not intend his pavilions to be mere imitations of classical architecture, but rather serious representations of it. Each of the two-story red brick pavilions, designed for educational purposes, was distinct, with unique plans, facades, and decorative details.

The central outdoor space, the heart of the university, exemplifies the integration of nature into the design of urban spaces. Similar to parks in hospital complexes, residential areas, cemeteries, and the grand boulevards of 19th-century cities, this space creates a setting for walking and recreation. As the colonnades frame the student and faculty residences, the library, and the classrooms, they not only form a cohesive gathering space for major academic events but also provide a more tranquil, healthy, and socially conducive environment for daily interactions.

“Frank Lloyd Wright’s Esplanade: Redefining the Campus Experience at Florida Southern College (1938-1948)”

In 1938, Frank Lloyd Wright began developing a master plan for the expansion of Florida Southern College in Lakeland, and continued working on the project until the year before his death in 1959⁷. This project not only features the world’s largest single-site collection of Wright’s work but also reflects his ideas on urban organization. It serves as a manifestation of his vision for the ideal modern, decentralized community.

At Florida Southern College, Wright had the opportunity to design a campus that embodied his belief in the direct connection between humans and nature. This concept was rooted in his earlier work on Broadacre City, developed in 1934–35.

Building on the grid of the orange grove that once existed on the site, Frank Lloyd Wright designed the master plan for Florida Southern College based on the principles of organic architecture. The twelve initial buildings, constructed between 1941 and 1958, were integrated with their natural surroundings. Wright’s plan also intentionally excluded cars from the campus, with traffic rerouted onto a network of roads that spanned the entire study area. In 1946, Wright connected his buildings through the Esplanade⁸, a mile-and-a-half-long series of covered walkways that helped form an “urbanized countryside.” These esplanades continued to be expanded until 1958 as new buildings were added to the campus.

The Esplanades were a defining feature of the design, linking all the campus buildings—academic structures and offices—in a cohesive, flowing layout. The walkways created a unified space that followed the natural slope of the land toward the adjacent Lake Hollingsworth. By emphasizing the role of highways in his Broadacre City design, Wright also highlighted the importance of the pedestrian traffic system in this modern campus. The concrete-covered walkways, framing the campus’s greenery, guided pedestrian movement while blending with the surrounding landscape.

⁷ The Wright Library, <http://www.steinerag.com/flw/Artifact%20Pages/FloridaSouthernCollegePhotos.htm#1205.50>

⁸ James N. McNally, Photographic Guide to Frank Lloyd Wright Structures, <http://www.flwright.us/FLW257.htm>

The buildings are spaced out, surrounded by green spaces, and connected asymmetrically by a network of walkways.

The outdoor garden character and the free spaces between the buildings are further enhanced by the irregular placement of the covered walkways, which add variety to the overall organization of the campus. The placement of the buildings does not adhere to a regular geometric grid, as evidenced by the meandering paths of the walkways. While paths are straight, they often meet at acute and obtuse angles, deviating from the strict geometry of urban streets. These walkways frame portions of buildings and natural surroundings, leading the walker through spaces that create surprising contrasts of light and shadow, while their low height adds intimacy to the experience.

Florida Southern College's design can be viewed as a miniature version of Broadacre City, with several key urban elements reflecting Wright's broader vision: the separation of pedestrian and vehicular traffic, the avoidance of overcrowded spaces, an emphasis on low-rise buildings, and the exclusion of tall structures. The circular Water Dome and the tall bell tower of the Annie Pfeiffer Chapel serve as striking focal points, embellishing the overall design. Wright's proposal also included student housing, which was never realized, but would have followed the principles of the Usonian Houses, representing the small residential units envisioned for Broadacre City.

In the design of the covered walkways at Florida Southern College, we can see the broader significance Wright placed on the design of outdoor spaces in his wider work. For instance, both in the Hollyhock House (1918–1921) and Florida Southern College, Wright employed exterior covered corridors, long loggias, multiple pergolas, and various terraces that not only provided protection from the sun but also connected all parts of the building. These outdoor elements transformed the exterior space into a labyrinthine extension of the interior, creating a transitional zone that bridged the indoor and outdoor environments.

Wright's careful design directed both the eyes and movement toward specific focal points—such as buildings, gardens, lakes, and fountains. The predetermined routes of the loggias and terraces enhanced the connection between primary buildings and secondary spaces. The outdoor areas were not simply passive elements



but fully integrated into the overall design with an emphasis on introversion. These spaces became a vital part of the experience, contributing to the holistic architectural vision.

The surrounding landscapes—whether the Hollywood Hills or the orange groves of Florida—were transformed into geometric canvases, where buildings and pathways replaced the pre-existing, untouched nature. Wright’s design, extended the cantilevers of buildings outward in all directions, weaving routes based on the significance of each space. The layout strategically strengthened focal points while allowing certain areas to be subtly detached from the main circulation paths. The architecture spread and compacted structures within the landscape, placing emphasis on key spaces and encouraging outdoor living throughout the year.

Additionally, Wright’s commitment to outdoor living is evident in his own practice. Photographs from his time, such as those taken in 1935 during the preparation of a model of Broadacre City at La Hacienda in Chandler, Arizona, demonstrate that working outdoors was a common practice for Wright and his students.⁹

Figure 2 -
Frank Lloyd
Wright, Florida
Southern
College in La-
keland, Florida
(1938-1948).
(©. V. Petridou)

⁹ The Wright Library, 1935, Broadacre City. Apprentices working on Broadacre City model

With the covered walkways at Florida Southern College, Wright creates selective paths that classify the uses of space. Public space is unified, acquiring continuity, while pedestrian movement is directed along prescribed routes. The urban design takes on a holistic dimension, influencing even areas where one might expect more freedom and spontaneity. As a result, almost no one can escape the network of corridors; the entire campus experience is funneled through the pre-planned, defined routes of covered walkways. The remaining open space—the gardens or lawns — become almost non-functional, transforming into spaces that feel uninhabitable. In Jefferson's original vision, the porch was a means of encouraging spatial coherence, a transitional space that connected indoors and outdoors. However, in Wright's design, the porch is reimagined as a network of interconnected pathways, creating a space for processions while also separating the habitable areas of the campus from the gardens and courtyards.

Finally, it is important to note that the shape of the covered concrete walkways, based on a cantilevered construction, is asymmetrical, with the columns positioned on only one side of the structure. This design creates a striking contrast, with the colonnade on one side and an open expanse on the other. The columns are adorned with abstract geometric motifs that echo the shape of the orange groves that once covered the campus, transforming nature into a linear composition. Additionally, copper lines the edges of most of the esplanades, adding a subtle yet elegant touch to the overall design.

Today, Florida Southern College is regarded as one of Wright's most important urban projects. As Aaron Betsky notes in his commentary on American college campuses: "Few of those, however, are as daring and dramatic in their statement of the ideal of an open and sheltered place of study, contemplation, discussion, and even celebration of shared values and exploration as the designs of Florida Southern."¹⁰

in the La Hacienda courtyard, 1935. 0397.32.0215, <http://www.steinerag.com/flw/Artifact%20Pages/PhBroadacre.htm>

¹⁰ Aaron Betsky, Connecting the Campus Dots. Frank Lloyd Wright's designs for Florida Southern College show the importance of walkways. Architect Magazine, A Critic's Notebook, Posted on: March 29, 2023 https://www.architectmagazine.com/design/connecting-the-campus-dots_o
We should also acknowledge Wright's influence on the design of the 1958 master plan

Constantinos Doxiadis' Pedestrian Grid: Redefining the Campus Layout for Modern Education

Constantinos Doxiadis (1913-1975), in the 1950s and 1960s, outlined his theories on the design of university campus buildings in a structured form in his 1974 book *Anthropopolis: City for Human Development*. In the book, Doxiadis, referring to the key characteristics of university campuses and their direct relationship with students' ages, emphasized that campus designs should facilitate the free movement of people, free from the constraints of cars, while avoiding the imposition of overwhelming and monumental buildings that could disrupt the tranquility of human nature.

The design of academic buildings as self-contained structures with internal atriums, as well as the integration of both interior and exterior open spaces of moderate and small sizes organized in small clusters, were key elements of Doxiadis' design philosophy. Additionally, the connection of buildings through covered pathways, with a focus on green spaces between buildings and streets, were fundamental design choices.

In 1972, Doxiadis' office was tasked with creating a master plan for the University of Patras in Greece, which was completed in 1973. The design for the campus shares significant similarities with the plan Doxiadis had developed a few years earlier (1960) for the University of the Punjab in Lahore, Pakistan. In his 1975 book *Building Entopia*, Doxiadis presents both examples side by side, highlighting their similarities. The University of the Punjab, designed to accommodate 20,000 students, ... 'it is surrounded by highways imposing the non-human scale, but these are restricted to the borders of the communities; it is connected with adjoining communities by controlled passages for pedestrians, or by bridges or underpasses; it is not crossed by the automobile, but is served by it; it is designed on a human scale in all its elements, with emphasis placed on the requirements of the pedestrian in design, movement, spatial dimensions, etc.'¹¹

for Tuskegee University by Paul Rudolph, where the incorporation of covered walkways plays a key role.

¹¹ Doxiadis, Constantinos, *Building Entopia*, W.W. Norton, New York, 1975: 164-165.



Figure 3 -
Constantinos
Doxiadis Asso-
ciates, Univer-
sity of Patras in
Greece
(©. V.Petridou)

All of the above aligns with the fundamental elements of human settlements, which correspond to Doxiadis' theory of Ecistics.¹²

In terms of morphology, Doxiadis' proposal refined the concepts mentioned above. The layout design, featuring large arterial roads, the organization of sub-regions by scientific sector, and the arrangement and form of individual buildings, demonstrated a strict adherence to principles of order, organization, division, cleanliness, and oversight. The orthogonal grid was central to the design, promoting pedestrian and bicycle safety while minimizing potential conflicts between pedestrians and vehicles. In all of his projects, pedestrian circulation follows central axes defined by main covered walkways, which form the heart of the complex. For Doxiadis, it was essential that students continue to live in a human-friendly environment, despite the contradictions within city structures that result from significant technological advances.

C&E Doxiadis Archives, The University of the Punjab https://www.doxiadis.org/Downloads/Punjab_proj.pdf

¹² Doxiadis, Constantinos, *Ekistics, the Science of Human Settlements*, Science, v.170, no.3956, October 1970, p. 393-404:
https://www.doxiadis.org/Downloads/ecistics_the_science_of_human_settlements.pdf

In 1970, Doxiadis' office developed a master plan for Rensselaer Polytechnic Institute in Troy, NY, where similar principles were emphasized. These included a continuous system of covered pedestrian circulation, a motor-free central walking area and the concentration of student housing in one section of the campus. The proposed master plan aimed to integrate new additions with existing buildings. Some of the key design principles for the campus included: using distance travel as an indicator for the required length and capacity of the campus network system and ensuring a clear separation between pedestrian and vehicle traffic. The goal of architectural expression should be to establish a consistent structural module applied across all buildings on the campus. This module should be reflected both in the interior and exterior of the buildings, creating a cohesive design element. The sitting and arrangement of the buildings should focus not on highlighting their individuality or distinct merits, but rather on creating visually harmonious and functionally practical spaces between them.

The key features of Doxiadis' designs for universities, especially those at Patras and Punjab, were organized along an orthogonal grid, with distinct traffic systems for pedestrians and vehicles, clear functional divisions (such as spaces for housing, educational purposes, and sports), and restrictions on building heights. The design of large building complexes with enclosed forms and internal atriums, the continuous connection between buildings through a series of covered vertical corridors, the inclusion of sports facilities, open-air amphitheaters, and an emphasis on green spaces between buildings and streets are all fundamental aspects of his approach. Doxiadis aimed at blending international standards with local architectural and natural characteristics.

Open spaces should function as extensions of interior rooms, eventually creating new public areas where students can explore fresh ways of engaging with each other, communicating, and interacting with urban space.

All of the above clearly demonstrates that Constantinos Doxiadis was a true student of Dimitris Pikionis, the architect responsible for the renowned reorganization and beautification of much of the Acropolis in the early 1950s. Pikionis created a new path for visitors, incorporating rest stops and lookouts, while visually connecting all the monuments of the Acropolis in a cohesive and thoughtful manner.

As students traverse the campus of Doxiadis, they cross from one building to another, exploring diverse fields—mathematics, philosophy, medicine, arts—all of which are intimately connected. Within this vision, the student body's movement is guided along a central axis, provided by the main covered walkway that serves as the spine of the complex. All movements perpendicular to this axis leads directly to the various departments, each interconnected with the others. As a result, pedestrian traffic is clearly defined, channeled, and unified, integrating the entire campus into a cohesive and continuous pattern.

The covered walkways that characterize the educational facilities designed by the Doxiadis Office revive the significance of the classical method, where teaching took place in the stoa and learning seamlessly extended into the open public space. At the University of Patras and the University of the Punjab, the need for protection from heat and sun is essential due to the local climate; however, the layout of the walkway grid transcends its purely functional purpose. Beyond the fact that it is a key design feature, it enhances the public space, thus emphasizing the core of Konstantinos Doxiadis' vision for the role of education in modern society. According to Doxiadis, after acquiring their initial knowledge in educational institutions, students should travel, conduct research, and return to contribute substantially to public life with what they have learned.

Conclusion

The design of university facilities aims, among other objectives, to enhance students' social life beyond the classroom. Urban design on modern architectural campuses is often inspired by local traditions, as seen at the University of Punjab, where the design connects to local architecture, particularly the Mughal era. Similarly, Mediterranean architectural influences can be observed in the regular, repetitive grid layout of The Free University of Berlin (1963) and the University of Toulouse - Jean Jaurès (1960-1970), designed by Candilis, Josic, and Woods. In other cases, such as the University of Calabria (1973), the design takes the form of an extensive 2-kilometer bridge connecting the campus buildings, a work by Vittorio Gregotti (1927-2020).



In all of these examples, covered walkways, initially introduced at the University of Virginia, play a central role in urban design. These walkways aim to connect various buildings, particularly on campuses located outside urban centers. They integrate seamlessly with internal streets and a network of multiple paths, creating a diverse range of atmospheres within a controlled modular system. The result is a rich spatial experience that enhances orientation and provides a literal spatial interpretation of the idea of horizontal communication between students and faculty. Classrooms, departments, and facilities are decentralized and distributed across the campus grid, typically avoiding hierarchical organization. This design approach fosters an open and collaborative environment, encouraging interaction and the exchange of ideas. No single building or area dominates the others, reflecting the egalitarian and communicative values inherent in modern educational spaces.

The creation of walkways effectively transforms university campuses into microcosms of cities (for example The Free University of Berlin, 1963, Candilis, Josic, Woods) where communication and interaction between users are central to the experience. The inten-

Figure 4 -
B.Tschumi,
Alfred Lerner
Hall, 1999,
Columbia
University. (©. V.
Petridou)

tion behind the covered walkways was clearly to minimize the autonomy of individual buildings, increase the flexibility of the urban design, and allow for the seamless expansion of the campus along a modular, repetitive grid. These walkways highlight the importance of paths as a design feature and emphasize their role as social connectors, link buildings together, and integrate the campus with the surrounding landscape.

However, despite these principles being foundational to modern design thinking, it is important to recognize that shifts in architectural practices and the evolving needs of universities today have necessitated a reimagining of the walkway concept.

As campus environments and their users evolve, 19th-century covered walkways are adapting to meet modern educational and social needs. Originally designed for shelter and circulation, these walkways are now reimagined as internal public spaces for collaboration, informal learning, and social interaction. They foster creativity and community, shifting from mere connectors to integral parts of campus culture that encourage engagement and a sense of belonging.

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Campus, community and public space; a short history of Columbia University's migrations and morphologies 1754-2025"

*David Grahame Shane**

To speak of the university as a "public" space representing a community is fraught with difficulty in the United States, where many on the East Coast are private institutions, exempt from taxation because of their educational mission. These universities, like Columbia, are theoretically autonomous and often enormously wealthy. They are governed by their trustees who are often big donors. Their structure and educational goals, as well as governance has changed over time. The students and teachers also constitute a shifting "community", from small and local to large and global.

The relations between the shifting "university community" and the changing surrounding "community" in New York's case has been very unstable and dynamic. The colonial influx of immigrants and slaves, then various waves of European religious immigrants and refugees, drove the university's migration to new marginal locations. The 20th century Great Migration from the South and the post Second World War automobile based "flight" of white immigrants to the suburbs made the concept of "community" fluid, far from the stable mix Jane Jacob had in mind. 21st Century global shifts in the migration patterns of workers

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and students has further complicated the concept of campus, community and context.

This paper attempts to sketch a brief outline of the history of the Columbia campus morphologies as a saga of changing ideals and deformations, forming a background to the contemporary debates and questions.

From colonial, Church of England, Kings College to American Revolutionary Columbia College 1750's-1850's

Columbia University began as Kings College, a royal, colonial foundation of 1754 financed by prominent merchants, several engaged in the slave trade, after the British captured New Amsterdam from the Dutch. It was a Church of England, Tory, religious foundation endowed with land by the crown. It taught male clergymen the bible and the classics, averaging 18 graduates a year. 3 of these students, Hamilton, Jay and Livingstone became Revolutionary leaders and helped the transition to Columbia College, an ecumenical foundation that later expanded to include scientific and medical studies.

The College's first purpose built structure was located just beyond the line of Wall Street, the limit of the Dutch city, in one of the first British expansions of the city. The large plot donated by the Crown stretched to the west down to the Hudson River. The building stood in the middle of a garden square surrounded by a small grid laid out for residential development in the typical British residential Estate pattern as employed later in Gramercy Park, Tomkins Square and Washington Square New York. The colonial building contained a nursery school, a grammar school and residential college with a library and refectory on the upper floors.

The College served and was financed by the Anglo-Dutch merchant community that owned the almost 50% slave population of the city. Besides bringing furs down the Hudson, the merchant community traded in the triangular colonial Atlantic slave and commodity system competing with Spanish and Portuguese colonial empires. The New England, Anglo-Dutch colonial ports formed a link in the system connecting Europe, West Africa, the Caribbean and New England. In New York the waterfront public slave market and prominent public gallows at a crossroad stood as systematic reminders of the community structure. While slaves wore tags identifying their owners, freed slaves moved to Brooklyn and the Village outside the city boundary.

Despite royal patronage the college was small and impoverished, averaging 18 students a year, studying the bible and classics, Latin and Greek. During the Revolution three students, Hamilton, Jay and Livingstone became the signatories of various state and national constitutional documents, guiding the transformation of the College into a secular, Enlightenment, private institution that languished in the old building, placing a domed astronomical telescope on its roof top. The revolutionaries improved and rationalized its interior organization, moving the grammar school out, enlarging the second floor library to include science and medical studies. Meanwhile the surrounding small residential grid became a commercial district with larger merchants warehouses and offices with the growth of the port and Hudson trade to the interior along the Erie Canal.

Jefferson's 1805 abolition of the American international slave trade still left a large enslaved domestic population in the community who could buy or be given their liberty. The arrival of Irish Catholics fleeing British colonial rule in Dublin destabilized the religious and racial composition of the community the 1820's. The new immigrants settled nearby in the notorious 5 Points neighborhood on the Lower Eastside in the 1830's. The trustees of the College decided in the 1850's to move out of town to a new campus 3 miles further north. This 40 acre site, on the edge of the city had formerly been Doctor Elgin's botanical garden at 49th street and Madison Avenue, the future site of the Rockefeller Center.

The Madison Avenue Campus 1850's to 1900; Darwin and the creation of the Ivy League

Despite the size of the new property, the college occupied only a small portion on the eastern edge between Madison Avenue and 4th (now Park) Avenue. The Trustees chose a small block of the New York grid, only 400ft by 200ft, about 1.5 acres, surrounded by larger blocks that would be developed later. The result was that as the College President, Charles King, moved to form Columbia University the various specialized colleges were crammed together with little "pubic space" between buildings. He began to modernize the administration to create separate colleges for the Arts and Science, following the German model. The colleges shared facilities such as the Gothic library, dining halls and dormitories (Figure 1).

The university still was a small community, averaging a hundred or so students annually. It was in a private, walled and gated campus, red brick like

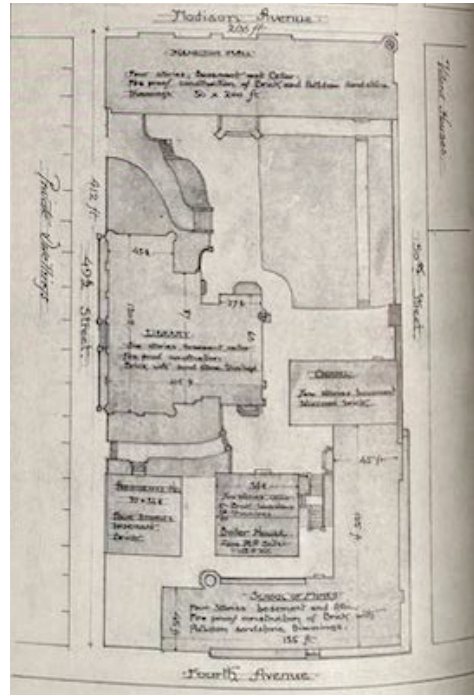


Figure 1 -
Columbia
University Ma-
dison Avenue
Campus from
Wikipedia
[https://
en.m.wikipedia.
org/wiki/Histo-
ry_of_Colum-
bia_University](https://en.m.wikipedia.org/wiki/History_of_Columbia_University)

Harvard but far smaller. In Columbia's new closed, single block, walled, Ruskinian Gothic style campus there was no large "public" open space. Later the university associated with a medical college, as well as an engineering college forming a Picturesque, collegiate, compressed, irregular garden court. A Darwinian, scientific display of evolutionary rocks and extinct dinosaur skeletons occupied its own Gothic hall as the departmentalization of disciplines developed.

The relatively flat terrain on the east side of Manhattan allowed the rapid development of the grid around the university block at 49th street. The arrival of local street cars and elevated railways tied in to Penn Station at 34th and Grand Central Station at 42nd street accelerated this process. Both stations sponsored the emergence of a new midtown business district of skyscrapers and an industrial area of flatted factories housing the garment industry. The two stations framed an entertainment district of theaters around Times Square and 42nd street, while 5th Avenue leading to Central Park became a Millionaire's Row of mansions.

The campus was no longer an isolated urban outpost on the edge of the city as Midtown developed and the steam ships accelerated the Atlantic trade greatly expanding the port. This allowed the formation a specialized

business management district “Downtown” in the old Anglo-Dutch colonial site. New communities developed. The dynamic city attracted immigrants from failed revolutionary movements in Spain, Germany and Italy in the 1850’s. The Lower Eastside tenements became the reception area for immigrants, spreading northwards towards Tomkins Square and the East Village. In the 1890’s Jewish refugees fleeing Czarist and Eastern European pogroms added further to this communal diversity. A new sense of a diversified, multi-religious community grew with the increased industrialization and factory labor in the dynamic period of growth leading up to 1910, when the city matched London with an 8 million population.

Columbia’s President Barnard in the 1860’s and President Lowe in the 1890’s, modernized the curriculum further as New York transformed into an international industrial and financial hub. Unlike the other Ivy League universities with their quotas (continued into the 1960’s) as a private, ecumenical university Columbia could accommodate more of the urban community’s religious and ethnic diversity. The University created both an expanded male undergraduate program for the immigrants’ children in Brooklyn and a separate, small female undergraduate college, named for Barnard.

Barnard and then Lowe raised the funds to move the University community away from the crowded, small Madison Avenue site to a large, four block, 12 acre, hill top, rural location, the site of the Bloomingdale Insane Asylum at West 116th street. Both Presidents sought money from the old merchant families like the Peabodys or Vanderbilts, but also from the new oil barons like Rockefeller. The University bought the blocks between 116th and 120th street, between Broadway and Amsterdam Avenue in the 1890’s, anticipating the arrival of the subway in 1904.

The McKim Mead and White Campus on Morningside Heights, 1900-1960’s

Despite the super block scale of the new land acquisition, the Trustees again decided on creating a compressed campus on only a portion of the site. This decision was prompted in part because of the steep slope down to the north between 116th and 120th street. The topography of the site required the construction of a level platform on a podium accessible from the highest elevation creating an undercroft housing services, presenting continuous basement walls to the surrounding streets like a fortress.



Figure 2 -
*Columbia
University
campus and
Morningside
Heights, Grants
Tomb in the
background
by Riverside
Church and
Park from Kings
Views of New
York (1912).*

President Lowe wanted a classical campus representative of the Western European knowledge and learning, unlike the contemporary Gothic University of Chicago campus financed by J. D. Rockefeller. Olmsted consulted on the site layout, creating a plan for a garden “Grove” on a lower terrace in the north, awaiting later development along 120th street. Several firms competed with McKim Meade and White for the site above 116th street, where McKim proposed a wide flight of stairs leading up to a platform centered on a domed Greek cross Lowe Library building based on the imagery of the Roman Pantheon (Figure 2).

Surrounding this icon of European culture and knowledge, McKim proposed a series of academic side quadrangles corresponding to the surrounding street grid dimensions. A cross axis of the campus design aligned with the central axis of the new Barnard women’s college across Broadway at 117th street. Only the side quadrangle of Avery Hall, the architecture school, was completed as planned with the basement undercroft forming the northeastern quadrangle. In the west the Mathematics department and Scientific laboratories lined Broadway. McKim created a standard class room pavilion, with a Renaissance style facade that could be varied. The internal layout on widely spaced columns allowed for the rearrangement of facilities, like in a contemporary office block.

To the north of the central Lowe Library rotunda McKim built a temporary University Hall with student and faculty dining rooms with ancillary services accessed from below through Olmsted's Grove gardens. Across 120th street Columbia's Teachers College, where John Dewey pioneered a new empirically based education system in the early 1900's, expanded along 120th street to the east. Its separate campus contained class rooms, lecture halls, social facilities, dormitories and its own gym and swimming pool for its largely female population linked to nearby Barnard.

Columbia rented the South Field, 6 acres site across 116th street from the New York Hospital as an athletic field. Eventually the Trustees bought the site from the Hospital by selling a portion of the land surrounding the old Madison Avenue campus. Low asked McKim to design a series of large dormitory blocks as most of the undergraduate students were New Yorkers, often immigrants, commuting to the campus. He wanted to broaden the appeal of the University to attract Christian students nationally (Columbia did not have a quota system, but did not admit African Americans until the mid-century). McKim repeated the pattern of the academic side quadrangles around the lower terrace of the South Field sports ground with the new Butler library site terminating the north-south axis. New dormitories flanked the library along 114th street. Eventually 116th street was closed to traffic and pedestrianized when General Eisenhower was University president in the 1950's.

Over time Low's idealism and McKim's design system created many problems on the difficult three dimensional site. McKim's library design quickly proved very impractical acoustically, also unable to accommodate either the new student numbers or the volume of publications in the new sciences and art disciplines on campus, from mining to chemistry, from art history to philosophy. The generic, classical teaching building design for class rooms and auditoriums also proved unsuitable for later, modern science laboratories. Engineering and Chemistry departments suffered, creating pressure for further developments on the Grove site to the north.

Another problem of the compressed 2 block initial campus was that it did not allow for athletic facilities necessary for competition in Ivy League sports. When the University leased the South Field various architects proposed sports stadiums and athletic facilities in Riverside Park, built out into the river, with monumental gateways towards the campus, rowing and yacht racing facilities. Low's plan included building dormitories between Broadway and Riverside Drive, above the stadium site in the Park. But despite Low's advocacy the project did not gain J D Rockefeller's support. The University spent

the next hundred years buying the apartment buildings built by private developers in the area for University faculty and student housing.

Yet another problem of the Columbia Morningside campus was its isolation from the surrounding city, in part because of its hill top position but also because of religiously inspired neighbors. Andrew Dolkart in his book, *Morningside Heights; a history of its Architecture and Development* (1998) gives a detailed account of the proliferation of religious institutions designed to create a Christian religious community around the new site of the ecumenical institution. The Episcopalians planned the largest cathedral in the world at their Cathedral of St John the Divine to the south on a 9 acre site with extensive gardens, a school, dormitories and a bishops palace. J D Rockefeller, a Baptist, initially supported this endeavor, that is still not completed. In Morningside he switched his support to the more ecumenical Riverside Church, Interfaith Center and neighboring International Student Center on a 3 acre campus, overlooking Olmsted's Riverside Park. A Protestant theological College and Jewish Seminary clustered below on Broadway around Teachers College on 120th street. A large Catholic Church faced the Olmsted Morningside Park in the east. Next door St Luke's hospital on a 3 acre block, tended to the medical needs of the new student population and community. Out of the 54 acres available in Morningside Heights, academic and religious institutions occupied 42 acres, leaving only 12 acres for the surrounding community.

This religious emphasis of the mega donors reflected the changing dynamics of the surrounding urban community. The building of Penn Station at 34th street had displaced an African American community to Harlem, where developers were building row houses, tenements and apartment blocks below the Morningside Heights campus. Besides the African Americans, newly arrived Catholic Italian and Irish immigrants along with Jewish middle class communities moved up along the elevated subways from the lower Eastside. The development began first as row houses and then transformed into apartment houses following the arrival of the subway. Dolkart noted that much of the campus staff was African American, while the census showed that white domestic staff served in the surrounding row houses and apartment blocks. The hill top location of the main academic campus, surrounded by religious institutions, proved to be a perennial problem in forging relations with the wider surrounding communities that changed in the 20th century.

The University's southern extension into South Field, facing Low Library's wide flight of steps created a unique, New York, open, symbolic, "public"

space. The Rotunda represented a European, liberal and democratic communal tradition. Initially 116th street was open to traffic and the public as a normal thoroughfare. The south side was fenced and gated as the athletic field when it was bought by Columbia. In the 1950's the University gained permission to close the street to traffic and gate the entrances on Broadway and Amsterdam, joining north and south terraces together. The public still had a right of way across 116th as pedestrians. This arrangement created a complex and ambiguous situation within the property of the private university, involving the Civil Rights of individuals in "public spaces". This fundamental contradiction haunted the University for the following century.

The Columbia-Presbyterian Irving medical campus 1927-2025

Columbia University after its foundation as Kings College had opened a medical school, modeled on Edinburgh University's medical school. The school reopened after the Revolution in 1784 and gained independence, sponsored by the New York Board of Regents in 1811 as the Columbia University College of Physicians and Surgeons. It then moved to the Upper Westside at 59th street in the 1850's, linking to Roosevelt Hospital as its teaching hospital. In 1891 it returned to Columbia University and in 1911 formed a relationship with the New York Presbyterian Hospital, located at Madison Avenue and East 70th street.

With the development of modern science in the early 20th century, the medical school and teaching hospital sought a new site that could include research laboratories. On the Upper Westside at Hamilton Heights. Columbia's path was blocked by the 1895 move of City College, a publicly funded institution to a West Harlem 40 acre hill top site between 130-141st street along Amsterdam Avenue. The university leapfrogged City College onto the next hilltop peak at 165th street, again overlooking Riverside Park on a cliff top site that had formerly housed the New York Yankees first baseball stadium. In the 1920's, Richard Harkness, the son of one of J D Rockefeller's initial partners joined the board. He purchased the Hill Top baseball stadium site and financed the new teaching hospital, medical center and biomedical research center that opened in 1927 (Figure 3). In the same years J D Rockefeller himself financed the construction of the symmetrical Rockefeller Center skyscraper tower and plaza on Columbia's Midtown property.



Figure 3 -
Columbia
Irving Medical
Center [https://
en.wikipedia.
org/wiki/Co-
lumbia_Univer-
sity_Irving_Me-
dical_Center](https://en.wikipedia.org/wiki/Columbia_University_Irving_Medical_Center)

Like the first part of the Morningside Heights campus, the initial development occupied only a small part of the land purchased. But unlike the Jeffersonian, horizontal, terracing and neoclassical morphology of the Morningside Heights campus, the medical center developed the skyscraper modern dna of New York City in a dense series of hospital towers linked by bridges. At the time of its construction in the 1920's it was one of largest medical school, hospital and laboratories complexes in America, Later additions continued this vertical emphasis, bridging across into the new Pardes Building housing the psychology department on the Riverside Park cliff face. Further north the scientists in the the Denny Laboratory, part of the Kolb biological research tower, pioneered gene splicing, creating lucrative patents for the University. Meanwhile mergers with the Weiss Cornell Medical School allowed further expansion northwards towards the Robert Moses highways and George Washington Bridge, constructed 1929-31.

The Moses highways, connecting from the Henry Hudson Parkway in Riverside Park up to the George Washington Bridge created a strategic traffic hub and vast, three dimensional regional interchange capped later by the Nervi bus station, an interior mall and housing. This enormous structure featured prominently in Reyner Banham's *Megastructures; Urban Futures of the Recent Past* (1976). The nearby medical campus immediate-

ly abutted a typical area of Upper Westside apartment buildings in the standard New York block system. Finding housing for the campus staff was always a problem, while the surrounding streets by the highways served as a distribution point for the regional supply of illicit drugs in the Crack epidemic of the 1990's. These apartments were originally occupied by Irish and Jewish immigrants, and later by Puertorican and Dominican successors. In this period private donors converted the enormous, redundant State Armory building close to the campus into a popular youth sports center. More recently, since Covid, the hospital has taken steps to landscape Fort Washington Avenue as it's forecourt as it passes beneath the pedestrian bridge system.

The later medical campus extensions continued the vertical, skyscraper morphology into the 21st Century developing complex, three dimensional, hybrid building typologies on compressed sites, as in the Irving Cancer center by Davis, Brody and Bond in 2005. In 2017 Columbia President Bollinger announced the re-naming of the complex for the graduate Dr Vagelos and his family, the CEO of the biotechnology and pharmaceutical giant Merck, whose donation enabled the school to give financial aid to all students in need. The family also sponsored a medical student education tower designed by Diller, Scofidio and Renfro (2016) with cascading student lounges spiraling around the building periphery offering views out to the Hudson, Riverside Park, the George Washington Bridge and New Jersey as well as to the surrounding streets and the recently landscaped Haven Avenue entry to the tower.

The Lamont-Doherty Earth Observatory campus 1947-2025

The small blocks at 168th street and vertical emphasis Columbia-Presbyterian campus was reminiscent of the original Kings College building downtown, with its strange sectional uses all in one building set in a garden square. The scale of the campus grew from a building to a 3 acre block at Madison Avenue, still compressing multiple uses into a small site. McKim had far more leeway for a Jeffersonian, horizontal gesture in the combined 18 acre super block at Morningside heights. Compression returned in the initial 3 acre site of the block of high-rise medical towers at the Columbia -Presbyterian campus in the 1920's.

The Lamont campus, in contrast, represented 10 super blocks, a megablock suburban estate of 189 landscaped acres. The scientific research

for the Manhattan Project had begun on the McKim campus in secret in 1939 but soon transferred to Los Alamos. Lamont provided far more space overlooking the Hudson River at Palisades New York, 18 miles north of the Morningside campus, 30 minutes on the Columbia Shuttle Bus. Florence Lamont donated the picturesque weekend estate Torrey Cliff to Columbia in 1948 after her husband Thomas died. He had been an international banker, a partner of the J.P.Morgan bank from 1911 and the Chairman of the Board at his death in 1947. Initially Columbia transferred its Geological Department seismograph from the Morningside Heights laboratory to the Lamont Campus because the subway under Broadway disturbed observations. Gradually the first Lamont Director Maurice "Doc" Ewing expanded the program beyond geology into a premier Earth Science laboratory, an earth observatory closely associated with NASA in the 1960's and 70's.

The gated, picturesque, park like setting allowed buildings to be isolated and accessed by roads curving through meadows (Figure 4). Separate low rise buildings housed marine biology and seismology, the geochemistry laboratory, the tree ring laboratory, the geo-science library, oceanography, and the International Research Institute for Climate and Society, gently curving along the Hudson shore. The Center for Integrated Earth

Figure 4 -
Lamont-Doherty
Campus
from <https://universitylife.columbia.edu/content/columbia-quest-campus-maps>



Systems Information (CIESIN) had a central position linked to the Climate School. A communal canteen in the large structure that had housed Lamont's indoor swimming pool formed the community center, where the different scientific groups could interact. Their work spanned the globe, including a research vessel for oceanic research.

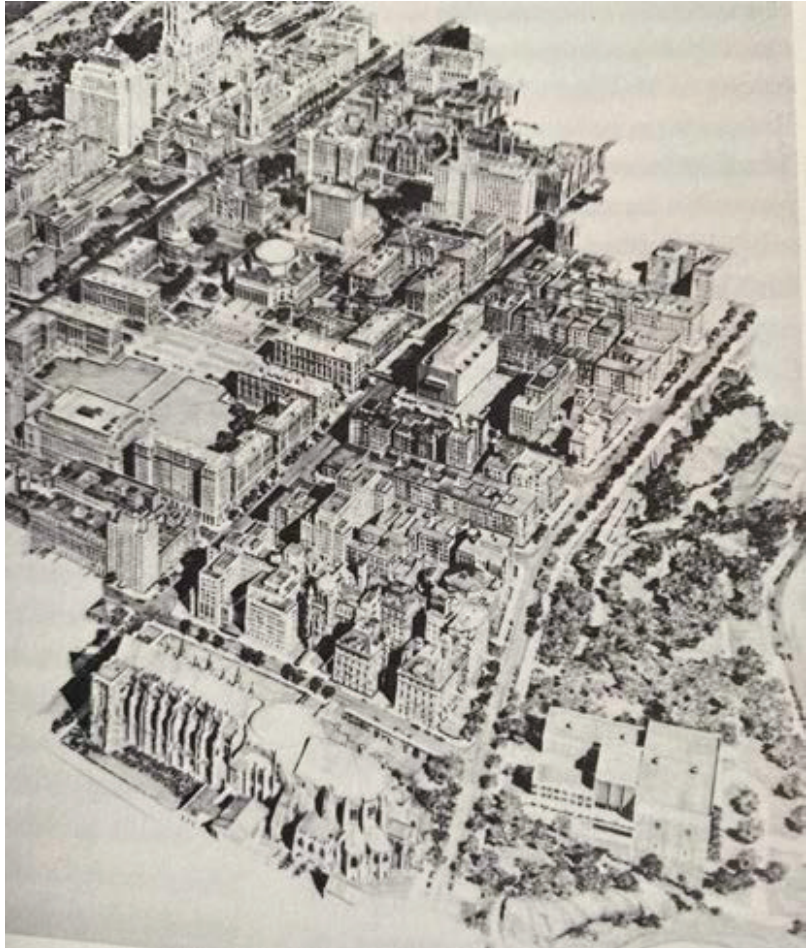
Much of this research was accelerated by a large grant in 1986 from the Doherty charitable trust. Doherty was the founder and chairman of the enormous City Service oil and gas holding company that built the Art Deco skyscraper at 70 Pine Street (1932). The Lamont geologist Robert Broecker first used the term "climate change" in a 1975 paper. The Columbia professor James Hansen of the NASA Goddard Space Institute, drew on this research in his report to Congress in 1981 and went on to a long career at Columbia becoming the head of NASA in the Bush administration. There he popularized and drew public attention in the media to the ecological costs of the oil based modernization.

The distant location, large expanse, remote communications capacity and auto based culture of Lamont-Doherty reflected a larger shift in American culture away from the difficulties and complexities of dense urban cores. The picturesque suburban campus was similar to the suburban university system of campuses built by Governor Rockefeller across New York state beside highway entrances and exits. Buildings were rarely taller than two stories, often cut into the site to allow ground level access from both sides, like contemporary shopping malls. Using remote sensors, probes and satellites scientists at Lamont-Doherty could peer on their screens into the dynamics of the global climate metabolism from their green, parklike office campus. Today the campus also houses part of the interdisciplinary Climate School, founded in 2020 to break academic silos, connecting the climate scientists with urban studies across the university.

The East and West Campus expansion plans 1950's and Gymnasium plan of the 1960's

The super dense, skyscraper, medical research campus represented one possible future for Columbia, while the suburban sprawl of the Palisades Lamont-Doherty automobile model represented another. Neither exactly fitted the situation of the Morningside heights campus that always faced the compressed, elevated nature of its basic podium. Later additions under President Butler infilled vacant sites within the McKim plan but the steep drop to the 120th street Grove site in the north always posed a problem.

Figure 5 -
*1950's Campus
Masterplan
with Gymnasium
projected in
Morningside
Park from
[https://
www.wikiccu.
com/File:
Campuswithgym.
jpg](https://www.wikiccu.com/File:Campuswithgym.jpg)*



In the 1950's Campus planners made ambitious designs for an East Campus across Amsterdam Avenue along the high point of the ridge to face Morningside Park (Figure 5). The master plan also proposed new buildings to the west across Broadway around 114th street. In the east the height of the Low Library podium allowed Harrison and Abramovitz, Rockefeller's favorite architects, to design a wide pedestrian bridge across Amsterdam Avenue leading to a new Law School and International Studies and Public Affairs (SIPA) building. A slab of high rise dormitories was proposed beyond facing the park. At the lower level stairs lead down to the south the President's House and Faculty Club at the 116th street level.

The logic of this eastward extension, and the need for sports facilities, lead in turn to a proposed gymnasium complex further to the east in Morningside Park, with limited access from Harlem below to a community center. As Barry Bergdoll recounts in *Mastering McKim's Plan; Columbia's First Century on Morningside Heights* (1997) students and faculty had long been critical of the mediocre additions to McKim's campus in the 1950's and 60's such as the new Uris Hall business school that replaced McKim's University Hall. In 1968 this critique exploded into public view in the national news media as architectural students opposed to the gymnasium joined the opposition to the Draft and Vietnam War, resulting in the violent arrest of over 700 white students by the New York Police. Since the demonstrations followed shortly after the assassination of Dr Martin Luther King, the Police lead the African American students out the occupied building through tunnels.

Later additions to the campus were constrained by this public failure, as the university reached out to surrounding communities and historic black colleges (it was not an accident President Obama attended Columbia Law). The Trustees consulted with I.M.Pei for a plan within the existing campus boundaries. Pei proposed two identical high rise towers on either side of the South Field with a huge gymnasium and student center underground, all within the existing university footprint. Further to the north Pei also pointed to the possibility of an extensive underground realm beneath the raised podium of Low Library that could be extended northwards to 120th street behind Uris Hall.

Pei's twin, vertical, high towers scheme and vast, horizontal, underground expansion crystallized the two threads of Columbia's campus history, repressing their conflicting dynamics around the placid image of the South Field in front of Butler Library. The trustees rejected Pei's hyper modern skyscraper plan as the university began to wrestle with the changing community dynamics of the Upper Westside. Nonetheless the project drew attention to the potential use of the northern podium basement to house the gymnasium and library extensions. A new engineering school and later science building filled out the "Grove" lower terrace along 120th street. The science building on the corner with Broadway by Raphael Mo-neo housed escalators and stairs down to 120th street, designed to link to the future campus planned secretly under President Rupp for further downhill on 125th street.

Broadway and Amsterdam Avenue served as the commercial strips for the gradually expanding residential and academic populations in the

post Second World War years. Columbia came to own 80% of the surrounding property, becoming one of the largest landlords in the city besides owning the ground under the Rockefeller Center until the 1980's. The university had not always acted as a good landlord and failed to maintain its property during the 1960's and 70's "White flight" to the suburbs when the city lost a part of its tax base and was threatened with bankruptcy. President Rupp in the late 1980's understood the importance of the neighborhood as the campus competed with the pristine facilities of the Ivy League, reaching out to invest in and communicate with the surrounding communities. Meanwhile the educational emphasis shifted in the Cold War "Space Race" from the Classical Humanities of the Kings College tradition towards a more science based knowledge. As the United States emerged as the global hegemon after the fall of the Berlin Wall in 1990, the University shifted towards a neo-liberal and socially more mobile and open system in a more spatially generous, even luxurious, landscaped, natural environment like the Lamont-Dougherty campus or the new public university campuses of the Rockefeller New York State system.

The 125th street campus 1990's-2025

In the new global educational market the Trustees began to contemplate a further expansion of the campus. Small satellite offices acted as contact points in the global academic market emerging with the internet and global corporations. Meanwhile the university rejected plans for a new campus by the Lincoln Center further south and concentrated on a site at 125th street in the north. The university used shell companies to buy up the small industrial district of automobile service garages and factories that lay in the valley between Morningside Heights and City College further north. When the last building owners resisted, the University convinced the New York State to use its power of eminent domain to acquire the last few sites "in the public interest" (Figure 6).

As part of this process, learning from the 1968 debacle, the University entered into an innovative \$400 million Community Benefit Agreement (CBA) with surrounding community groups promising assistance, accommodation in the new complex with open streets through the neighborhood. Now that the first phases are built these groups complain that only a small proportion of the funds have been distributed, though the new Jerome Greene Science Center laboratories do include a Community Health Center and the new business school complex an open, public plaza.



Figure 6 -
 Renzo Piano
 Workshop and
 SOM. 125th
 Street from
[https://
 www.rpbw.com/
 project/
 manhattanville
 -campus-plan](https://www.rpbw.com/project/manhattanville-campus-plan)
 File:Campuswith
 gym.jpg

The 17 acre site is one tenth the size of the Lamont-Dougherty megablock and 4 times the size of the Madison Avenue site of the 1850's. It matches the the super block size of the 1900 Morningside Heights McKim design including the South Fields extension. President Bollinger commissioned Skidmore Owings and Merrill (SOM) in 2005 to make the master plan in conjunction with the Renzo Piano Building Workshop, which would design the majority of the buildings and public spaces between 125th street and 134th street,, Broadway and Riverside Park. As at the McKim campus, Piano provided generic system for flexible interior, well serviced spaces and a strict exterior facade system of transparent glass and steel mul-lions. The system was far more flexible than McKim's Renaissance brick fenestration schemes. But like the 1890's campus the program sought to bring together the sciences and arts in one compound. This time LEED Platinum Eco-campus possessed pedestrianized streets open to the surrounding community,

The first 2 buildings symbolized this ambition, a science center bringing teams from the medical center and an arts center bringing the art history department galleries from the old campus. The art center adjoined the Science Center and in a contextual gesture, faced the Art Department studios in the 1911 Sheffield Farms Dairy milk processing plant across a new plaza on 125 street. Further west the new garden plaza between 130st and 131st separated the two low rise Diller, Scofidio and Renfro Business School buildings that attempted less successfully to create the

spiraling lounges of the Vegas tower on the uptown medical campus. Their fragmented interior organization prevents the creation of a significant, unifying symbolic presence in the public space, as in the facade at the Low Library on the old campus. The two nondescript buildings are linked by a 70ft deep underground “bathtub” so they will float and not flood as they are located in a Zone 3 hurricane evacuation area (an earthquake fault line also runs along 125th street). To the south of the plaza a new triangular building for SIPA will complete the plaza, while in the north the Art Deco 1924 Studebaker car factory on 131st street will be retained in another contextual gesture to the areas history. Further east around Broadway three warehouse sites will form a Data Science computing center hub linked to the CIESIN and Climate School outposts in the Morningside and Lamont-Dougherty campuses.

Piano emphasized the transparency and openness of the new campus to the context of the surroundings, unlike the earlier walled campuses. The pedestrianized street scapes and plazas designed by Field Operations, included landscaping, garden beds, summer sprinklers for children, public seating, tree plantings, street lighting, plus University security cameras and security patrols. The campus was surrounded on the east and north by two of the largest New York City public housing complexes, one with a MTA bus garage in its podium. The valley was spanned by the elevated tracks of the subway, the Amtrak line to Penn Station and the nineteenth century Riverside Drive viaduct. The CBA did yield the renovation of Riverside Park at the waterfront from 125th to 163rd street and the building of a new pier. There is also the Bollinger Conference Center available for local rentals at Broadway and 125th. There the replacement of a much loved McDonalds drive through restaurant across the street will fill the street level podium of a Piano 34 story residential tower for graduate students and professors.

The mixed, hybrid uses of the Piano tower, where a public school was proposed in the podium as part of the CDA besides the MacDonalds, mark lessons learnt from McKim. This programmatic hybridity first appeared in Tschumi’s Albert Lerner Hall (1998) Student Union on the McKim campus. There ramps instead of bridges connected the different elements of the program in a giant transparent glass atrium that opened to a view of the South Field and stairs of Low Library. The program included dining facilities above a coffee shop with a campus store accessed from Broadway by escalators below. A flexible auditorium space and cinema occupied the central space. The student radio station and newspaper offices faced Broadway facade, above a video game arcade behind a second floor screen of translucent glass bricks.

The Vagelos tower spun the hybrid Tschumi strategy in a spiral up a tower at the medical center, while HOK provided Presbyterian Hospital with another enormous version of this 3 dimensional planning over a street in their Eastside Koch Pavilion for Women and Children. The Jewish and Protestant theological seminaries both added also high rise residential towers to their campuses, rivaling the height of Rockefeller's Riverside Church in the 2010's. In the case of the Theological Seminary, the Dining Hall became the swimming pool of the luxury residential tower added at 120th street. The swimming pool at the top of the Jewish Seminary tower helped stabilize the structure against the wind.

Further Questions; Public space in the Private University, context and community

Columbia has 5 active campuses and previously occupied 2 others. Only the McKim Mead and White campus is currently besieged but the savage funding cuts were aimed at the medical and earth science campuses. There are many reasons why Columbia was chosen for this high profile humiliation that relate to the ideals of the university and its distinguished campus history.

The recent demonstrations at the Columbia Morningside Campus initially against the Hamas massacre of Israelis and then against the Israeli Gaza War highlighted the global turn of the University and its problems. As in 1968 the NY Police were called to clear the protests, because after the earlier violence Campus Police were not allowed to touch demonstrators. A total of 200 demonstrators were arrested in two events, though charges were dropped.. Students on the campus, both Jewish and Islamic were harassed. The first encampment included students from both who supported peace and ending the war. Tensions escalated in the divisive atmosphere exploited by politicians in the 2024 Presidential elections. The student encampment of the South Field faced the Tschumi glass atrium, where the global press corps took up residence in the student union Starbucks, positioning microphones outside for the student leaders. The campus was closed, classes went virtual as in Covid and the University cancelled Graduation, the great event of the year in the "public space".

The University with its multiple campuses was a very different institution by 2025 from 1968. The university student population had expanded to over 35,000 by the 2020's, with 9000 undergraduates and 26,000 graduates in the Professional Schools, mainly from Asia, China, India, Indo-

nesia, Taiwan and Japan, relatively few from Europe in the old Fulbright Program. The new Egyptian president of Columbia, Dr Minouche Shafik from the London School of Economics, resigned after interrogation by a female led congressional committee. The female, minority presidents of Harvard and the University Pennsylvania, also resigned after the same treatment allegedly for their failure to prevent anti-Semitism on campus. The liberal Ivy League universities were trapped by their application of the Civil Rights legislation they had supported since 1968 to integrate and open the campus. Neo-nazi and Conservative politicians used this legislation allege anti-semitism on campus, while advocating the abolition of Civil Rights legislation at a national level and cancelation of Federal scientific research contracts.

The Ivy League Universities are wealthy and have donors who can help them fend off the government intervention in their private campus properties in the name for Free Speech, the same Civil Right claimed by the students. The Universities can also spin off their scientific campus endeavors to operate as separate entities that do not attract the same media attention as the symbolic, historic campuses. Administrators did make mistakes in 2024 but can find new ways to protect the pluralism valued on the liberal campuses, countering the strategy of the new censors proposed by the Federal government. Columbia, because of its long history of migration in the dynamic city of New York has multiple opportunities in its many campuses that trace an arc of history over 250 years. The government can threaten the global reach of the professional graduate schools, but doing so will only lead to the proliferation of satellite campuses in Asia and the Middle East, anxious to capture their share of the educational market place. The Columbia Trustees were slow to realize the strength of their position, only resisting the governments advances after Harvard's much more forceful opposition.

The "public realm" of the campus now exists largely in cyberspace and the media, as part of an educational marketing strategy in the informational Metacity. Columbia needs to keep its promises to the local communities and begin again in its attempts to create a civil discourse on the campus, including the digital dimension. As the students assemble in their gowns for their May graduation in McKim's symbolic "public space" in front of Low Library, the University should again restate its mission of creating knowledge for the good of humanity including all people. It is this brilliant, pragmatic idealism of the ecumenical institution that draws students globally and needs a clear restatement.

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Public spaces for community campuses and universities

*Marichela Sepe**

Universities and Public Spaces

A university campus—or more broadly, the physical sites of a university—mirrors the functions of a city on a smaller scale and, like a city, requires large open public spaces. These spaces are crucial not only for academic training but also for fostering socialization among students, faculty, technical-administrative staff, and members of the broader community, including families, maintenance workers, and service staff. The well-being of a university community is closely tied to the liveability, accessibility, inclusiveness, and healthiness of its spaces. Properly designed public spaces, particularly open areas, can significantly enhance the quality of life for all university users, fostering more effective learning and a richer social experience.

Historically, university campuses were conceived as isolated environments dedicated exclusively to academic pursuits, separated from the surrounding urban fabric. Medieval universities in Europe, such as Oxford and Cambridge, were characterized by cloistered designs that emphasized separation from city life, fostering intellectual solitude within con-

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trolled settings (Turner, 1984; Gumprecht, 2007). This architectural model mirrored the medieval worldview, where scholarly activity was considered distinct from the practical concerns of urban existence.

The evolution towards more open and accessible campuses began in the United States, influenced by landscape architects such as Frederick Law Olmsted. Institutions like Harvard University, founded in 1636, and the University of California, Berkeley, exemplified this shift by incorporating open green spaces and pedestrian paths, promoting interaction between universities and broader communities (Fassi, Galluzzo, Rogel, 2016). This model of the “extroverted campus” emphasized the university’s role as a public resource, blending academic, social, and civic functions (Lester, Piore, 2004).

In the contemporary era, university campuses continue to evolve from places of mere attendance to environments designed for full inhabitation. Campus design increasingly focuses on creating connections between interior common spaces—such as residences and study areas—and exterior landscapes, including parks, plazas, and gardens. These spaces are designed to foster greater engagement, interaction, and a sense of community. Universities are now recognized as pivotal social, cultural, and economic actors within cities, contributing significantly to the urban landscape and promoting collective well-being (Haar, 2011).

The concept of liveability—encompassing safety, accessibility, comfort, inclusivity, and community engagement—has gained prominence in campus planning (Gehl, 2010; Sepe, 2025a-b). Universities today aim to create environments that not only support academic activities but also enhance the everyday experiences of students, staff, and urban residents (Sepe, 2023; Soares et al., 2020). Public spaces on campuses serve multiple functions: they are arenas for informal learning, relaxation, cultural expression, social interaction, and sustainability initiatives (Ali, Kim, 2020).

The challenge for modern universities is to balance their traditional academic mission with an expanding civic role. Public spaces are increasingly viewed not simply as infrastructural necessities but as vital instruments for social inclusion, urban liveability, and sustainable community development.

From Historical Context to Modern Trends in University Campus Design

The concept of the university campus has been shaped over centuries by cultural and historical factors. Early European universities, such as Bologna

and Paris, operated without defined campuses; academic activities were distributed across rented spaces, churches, and private homes (Turner, 1984). The notion of a distinct, enclosed campus emerged later with the creation of colleges at Oxford and Cambridge in the 13th century. These institutions adopted cloistered, inward-focused layouts inspired by monastic traditions, emphasizing intellectual seclusion and withdrawal from urban life.

In contrast, American universities developed along a different trajectory. By the 19th century, influenced by the urban parks movement and figures like Olmsted, American campuses embraced openness and integration with broader communities (Gumprecht, 2007). Harvard University exemplified this shift, incorporating open spaces that enhanced aesthetics and facilitated interaction with the public.

Olmsted's vision of campus design, realized in projects such as Stanford University and the University of California, Berkeley, promoted a harmonious blend of built and natural environments, integrating academic buildings with public spaces to foster intellectual engagement and community life (Dober, 1992; Fassi, Galluzzo, Rogel, 2016). This model stood in stark contrast to the European tradition of isolation, reimagining the university as an active civic institution.

The "extroverted" American campus model, emphasizing accessibility and integration, became a hallmark of higher education institutions across the United States. It reflected democratic ideals that positioned universities as public assets contributing to the cultural and civic life of the nation (Lester, Piore, 2004). As urbanization accelerated, this model spread internationally, influencing campus designs in Europe, Latin America, and Asia, where institutions sought to align with their urban contexts and serve wider societal functions.

In recent decades, the role of university campuses has expanded significantly. The increasing pressure on urban public spaces and the rapid growth of cities have driven universities to rethink their spatial models. Universities are now increasingly seen as contributors to urban life, offering green spaces, cultural hubs, and community services (Lester, Piore, 2004).

Notable examples include the Massachusetts Institute of Technology (MIT), which revitalized the Kendall Square area into a vibrant mixed-use district incorporating parks, commercial spaces, residences, and cultural venues. This transformation illustrates how universities can foster innovation, social interaction, and community engagement through strategic urban planning.

Similarly, the University of Pennsylvania's "Penn Connects" initiative has strengthened the university's integration with Philadelphia by creating pedestrian-friendly spaces, green areas, and sustainable infrastructure that enhance both campus life and urban liveability (University of Pennsylvania, 2011).

In the United Kingdom, the University of Cambridge's "Northwest Cambridge Development" exemplifies the role of universities in urban sustainability. Combining residential units, commercial spaces, parks, and cultural venues, the project fosters a mixed-use community addressing challenges such as housing shortages and the need for green spaces (Fassi, Galluzzo, Rogel, 2016).

Universities in developing countries are also moving towards more integrated campus models. For example, Ain-Shams University in Cairo is exploring ways to open its campus to the public, providing much-needed green spaces in a densely populated urban environment, despite facing challenges like overcrowding and pollution (Ali, Kim, 2020).

The shift towards open, integrated campuses reflects a broader redefinition of the university's role in society. Universities today are not only centres of education but also agents of urban development, enhancing social interaction, cultural vitality, and environmental sustainability. As urban populations continue to grow, the strategic design of campuses as multifunctional public spaces will remain essential for meeting contemporary urban challenges.

Emerging needs for new communities

Public spaces within university campuses have become fundamental elements not only for students, faculty, and administrative staff, but also for broader urban communities that frequently interact with academic environments (Sepe, 2023; Oldenburg, 1999; Soares, Weitkamp, Yamu, 2020; Tjora and Scambler, 2013). University campuses today accommodate a wide range of communities—some permanent, others transient—linked to academic programs, institutional events, or informal social networks. These multifaceted groups, whether connected through formal structures like departmental councils or through informal platforms such as social media, reflect the increasingly complex and dynamic social fabric of contemporary university life.

A key driver of the transformation of university campuses has been the growing recognition of their potential role in revitalizing urban areas,

particularly in cities experiencing economic decline or a scarcity of public spaces. By opening their campuses to the public, universities provide vital green areas, cultural amenities, and social services that benefit both academic and urban communities. This strategy fosters stronger ties between universities and their surrounding contexts, generating mutual benefits that transcend traditional educational missions.

Across the globe, many universities are adopting the open campus model, particularly in urban environments where recreational and green spaces are limited. Universities, often among the largest landholders in cities, can relieve urban pressures by offering accessible, multifunctional spaces. Beyond providing physical amenities, universities enhance their cultural and civic missions by organizing public events, outreach initiatives, and lifelong learning opportunities, thereby bridging the gap between academia and society and strengthening their public reputations.

Nonetheless, transitioning from traditional enclosed campuses to open, integrated environments poses challenges. Universities must balance the imperatives of security, privacy, and facility maintenance with the goals of accessibility and inclusivity. Effective governance structures and thoughtful design strategies are essential to managing safety concerns and diverse user needs. Despite these complexities, the open campus model offers a promising pathway for enhancing urban liveability and cultivating socially engaged higher education institutions.

Public spaces within university campuses play an essential role in fostering community engagement. Acting as “third places”—neutral settings beyond home and work—they provide environments where informal social interactions among students, faculty, staff, and visitors from diverse backgrounds can flourish (Soares et al., 2020). These spaces are crucial for promoting a sense of belonging and enabling cross-cultural and interdisciplinary exchanges.

Inclusivity remains a fundamental principle in the design of campus public spaces. It requires offering a variety of seating and social configurations to accommodate different preferences, ensuring full physical accessibility for individuals with disabilities, and providing socially and culturally welcoming environments (Hami, Abdi, 2019). Thoughtful incorporation of cultural elements—such as familiar plant species, public art, and diverse food offerings—can foster greater comfort and connection for international members of the academic community.

The contribution of public spaces to well-being is equally significant. Green spaces such as gardens, parks, and natural features serve as “heal-

ing environments,” supporting both mental and physical health. Exposure to nature has been shown to reduce stress levels, improve mood and cognitive performance, and enhance life satisfaction (Bagnato, 2021; Lau, Yang, 2009; Dong et al., 2023). These benefits are particularly valuable within the high-pressure environments of universities, where students and staff face intense academic and professional demands.

Additionally, the provision of spaces that facilitate physical activity—such as walking paths, sports fields, and outdoor fitness equipment—further supports cardiovascular health, reduces the risk of chronic diseases, and promotes emotional resilience (Gehl, 2016; Dong et al., 2023). Beyond their health benefits, green and public spaces foster social interaction, mitigating feelings of isolation and strengthening campus community ties. Informal meeting places, such as plazas and outdoor cafés, encourage spontaneous encounters and cultural exchanges, enriching the intellectual and social life of the university (Soares et al., 2020).

To maximize these benefits, the design of public spaces must prioritize inclusivity, diversity of use, and strategic location. Spaces should be easily accessible from academic and residential buildings and integrated into transit networks, ensuring equitable access and sustained use (Hami, Abdi, 2019).

Campus and the city

In the contemporary context, the university can no longer be conceived as an isolated entity, separated from the urban fabric that hosts it. On the contrary, it must take on an active role as a public space, accessible to all citizens, capable of fostering new forms of sociality, sustainable mobility, and cultural exchange. Opening the university to the city means overcoming the traditional distinction between “academic interior” and “urban exterior,” shaping the campus as a natural extension of the urban space through physical and programmatic interventions that promote inclusivity, universal accessibility, vitality, and safety (Barioglio, 2022; Carmona et al., 2010; Halsband, 2005; Schmertz (ed.), 1972).

One of the fundamental strategies for fostering integration between university and city is the creation of open public spaces, accessible not only to students, faculty, and administrative staff but also to the entire citizenry. Green areas, squares, courtyards, public libraries, and open sports facilities help transform the campus into a place of daily encounter and exchange, enriching urban life and dismantling the symbolic and physical barriers that have historically isolated many academic institutions. The

quality and variety of these spaces are crucial: it is necessary to design environments capable of responding to diverse social, cultural, and generational needs, offering areas for relaxation, play, sports, informal learning, and cultural enjoyment, always ensuring full accessibility for individuals with motor, sensory, or cognitive disabilities.

A key element of this new openness is sustainable mobility. The implementation of bicycle lanes and pedestrian paths connecting the university with surrounding neighbourhoods promotes active transportation and helps reduce environmental impact. It is essential that these pathways are designed with road safety and inclusivity in mind: protected crossings, accessible ramps, call-activated traffic lights, and clear signage must ensure safe usability for all, including the elderly, people with disabilities, and children. Creating a continuous and secure network of soft mobility connections not only improves physical accessibility to the campus but also encourages healthy lifestyles and reinforces the university's identity as an integral part of the urban system. In this sense, infrastructure such as pedestrian bridges, cycling overpasses, and elevated walkways assume both a practical and symbolic function, becoming true "cultural bridges" that unite the city and the university, facilitating movement, inclusion, and interaction.

Alongside spatial interventions, it is essential to activate a shared cultural program that transforms the university into a vibrant hub of city life. Organizing open events such as conferences, festivals, cultural markets, art exhibitions, and concerts can attract a diverse public and promote dialogue between different worlds. These initiatives must be designed with attention to gender equity, ensuring the participation and representation of all social and cultural components, and guaranteeing a perception of safety at all hours, including the evening and night, through adequate lighting, the presence of security personnel, and careful space management.

Another significant aspect is the creation of both formal and informal meeting spaces that foster dialogue among universities, public administrations, businesses, and potential employers interested in the graduates' profiles. Establishing innovation centres, multifunctional halls, coworking areas, and accessible business lounges within the campus can support the development of professional networks, stimulate the transfer of knowledge and skills, and facilitate the employment of graduates, thereby strengthening the link between academic education and local economic development.

Opening the university to the city entails mutual benefits. For the university, it means consolidating its social role, improving campus life quality, expanding opportunities for experiential learning, and strengthening its public image. For the city, it means enriching the supply of quality public spaces, promoting social cohesion, stimulating innovation, enhancing the available cultural and scientific capital, and actively contributing to sustainable urban regeneration processes.

This integrated vision addresses the contemporary challenges of environmental sustainability, social inclusion, and civic participation, transforming the university into not only a place for the production and transmission of knowledge but also a driver of urban transformation and collective well-being.

In conclusion, rethinking the university as an active part of the city requires a design and political commitment capable of combining universal accessibility, spatial quality, cultural openness, safety, sustainability, and strategic economic connections. Investing in the creation of inclusive public spaces, soft mobility networks, safe pedestrian pathways, platforms for business-community interaction, and both material and immaterial connections between universities and cities represents a strategic choice for building more cohesive, resilient, and aware communities.

Design liveable, inclusive and connected campus public spaces

Based on the analysis of several international case studies, it is possible to identify a series of key principles that define the contemporary liveable university campus. These principles, distilled from best practices observed across different cultural and urban contexts, reveal common strategies for fostering liveability, integration, sustainability, inclusivity, and community engagement within and beyond campus boundaries. The following discussion outlines these foundational principles and their relevance for shaping future university environments (Sepe, 2023; Sepe et Al., 2025c).

The contemporary university campus must evolve as a liveable, dynamic environment that reflects the complex and interconnected realities of urban life. Central to this transformation is the principle of integration with the surrounding city. University campuses should not exist as isolated enclaves but rather as open and permeable entities, seamlessly connected to the urban fabric. Such integration fosters continual inter-

action between the academic community and local citizens, promoting a vibrant exchange of ideas, resources, and opportunities that enrich both the university and the city. A campus that is spatially and functionally connected to its surroundings becomes a catalyst for cultural, social, and economic vitality.

The multifunctionality of public spaces within the campus is another crucial element. University spaces must be designed to accommodate a wide range of activities beyond the purely academic. They should be able to host educational events, recreational activities, sports, cultural initiatives, and professional interactions, enabling diverse uses throughout the day and across different seasons. Multifunctional spaces encourage a fluid coexistence of learning, leisure, and work, reflecting the multifaceted needs of contemporary university populations and ensuring that campuses remain active and inclusive environments for all users.

Sustainable mobility is a further pillar in creating liveable university environments. Well-structured pedestrian pathways and bicycle networks must be prioritized and fully integrated with public transportation systems to minimize car dependency and reduce air pollution. Facilitating active transportation not only supports environmental objectives but also enhances the health and well-being of campus users. The design of these mobility networks must ensure continuity, safety, and accessibility, creating comfortable and efficient connections between the campus and the broader urban territory.

Accessibility and inclusion are fundamental principles that must guide the design of all campus spaces. Adhering to the philosophy of “design for all,” university environments should be accessible to individuals with diverse abilities, ensuring that physical, sensory, and cognitive barriers are eliminated. An inclusive campus empowers all users to participate fully in academic, social, and cultural life, promoting equity, dignity, and opportunity for everyone, regardless of physical condition.

The presence of green areas and the promotion of environmental well-being are equally vital. Universities must prioritize the creation and enhancement of natural spaces that improve air quality, foster biodiversity, and support the psychological and physical health of their users. Parks, gardens, green roofs, and ecological corridors not only serve as aesthetic enhancements but also as crucial components of a sustainable campus ecosystem, offering restorative environments that mitigate urban heat, manage stormwater, and contribute to the overall resilience of the city.

Ensuring safety and comfort is essential for the continuous use of campus spaces. Adequate lighting, safe pathways, and protected areas capable of shielding users from extreme weather conditions must be integrated into campus design. A secure and comfortable environment encourages greater use of public spaces throughout all hours of the day and under varying climatic conditions, thereby enhancing the liveliness and inclusivity of the campus.

The integration of digital technologies and innovation represents another fundamental aspect of the modern campus. Smart infrastructures, such as widespread Wi-Fi coverage, digital information kiosks, and interactive wayfinding systems, should be implemented to ensure continuous connectivity and access to information. These technological enhancements support academic and administrative functions while enriching the overall campus experience for students, faculty, visitors, and citizens alike.

Community engagement is a key factor in the sustainable development of university spaces. Active participation by students, faculty, administrative staff, and local citizens must be promoted in the planning, design, and management processes. Such participatory approaches ensure that diverse needs and perspectives are considered, fostering a sense of ownership, inclusion, and gender equity. By involving multiple stakeholders, campuses become more responsive, democratic, and reflective of the communities they serve.

Energy efficiency and sustainability are indispensable components of future campus development. Universities must commit to constructing low-impact buildings and refurbishing existing structures using green technologies such as solar panels, green roofs, and rainwater harvesting systems. Sustainable architecture reduces environmental footprints, lowers operational costs, and demonstrates institutional leadership in addressing global challenges such as climate change.

Finally, flexibility and adaptability of spaces are critical for ensuring the long-term relevance and resilience of university campuses. Spaces must be designed to be modular and multifunctional, capable of evolving in response to changing academic, social, and technological needs. Flexible environments support a variety of uses over time, from classrooms that transform into community centers to open plazas that host both recreational activities and academic ceremonies, ensuring that the campus remains a dynamic and responsive setting.

Conclusion

The contemporary university campus has evolved significantly from its historical origins, progressively reshaping itself to better meet the complex demands of modern society. No longer confined to their traditional roles as isolated centres of academic pursuit, university campuses today are increasingly recognized as dynamic, integrated, and multifunctional environments that respond effectively to the social, cultural, environmental, and economic needs of contemporary urban life.

This transformation reflects a broader shift in the understanding of higher education's role within society. By adopting principles of urban integration, sustainable mobility, inclusivity, environmental stewardship, technological innovation, and participatory governance, contemporary campuses are able to engage with a much wider community beyond their academic core. In doing so, they provide spaces that foster interdisciplinary collaboration, cultural exchange, social cohesion, and public well-being—dimensions that are increasingly vital in an interconnected and rapidly changing world.

Modern campuses are designed to be open and permeable to the urban fabric, facilitating continuous interaction between students, faculty, citizens, and diverse stakeholders. Multifunctional public spaces allow for a seamless coexistence of academic activities, cultural events, recreational practices, and professional opportunities, reflecting the multifaceted needs of today's users. Moreover, the emphasis on sustainable mobility—through integrated networks of pedestrian pathways, cycling infrastructure, and public transit connections—directly addresses contemporary concerns about environmental degradation and urban liveability.

Inclusivity and universal accessibility have become foundational values in campus design, ensuring that all individuals, regardless of physical or cognitive abilities, can participate fully in campus life. Similarly, the integration of green spaces within campuses promotes environmental resilience while enhancing mental and physical well-being, responding to growing awareness about the health benefits of access to nature in dense urban contexts.

Safety, comfort, and flexibility are further aspects through which contemporary campuses accommodate the evolving expectations of their communities. Thoughtful design solutions ensure that campuses remain usable and welcoming across different times of day and weather conditions, while adaptable spaces provide the capacity to support a variety of

academic, social, and entrepreneurial initiatives over time.

In addition, the embedding of smart technologies—such as digital navigation systems, public Wi-Fi, and interactive information hubs—positions campuses as innovation hubs, connecting knowledge production with real-time user needs and enhancing the accessibility of services and resources.

Critically, the participatory engagement of students, faculty, administrative staff, and citizens in the design and management of university spaces ensures that these environments are not imposed but rather co-created, embodying principles of democratic inclusiveness and gender equity. This collaborative model strengthens the sense of ownership and belonging, making campuses more resilient, responsive, and reflective of the communities they serve.

Finally, contemporary campuses are increasingly seen as laboratories for sustainability, leading by example through energy-efficient buildings, green roofs, renewable energy systems, and circular resource management practices. In this way, they actively contribute to addressing global challenges such as climate change and resource scarcity.

In conclusion, the contemporary university campus stands out as a space where multiple dimensions of modern life converge. It offers a model of urban living that is inclusive, sustainable, connected, and resilient. By continuously adapting to emerging societal needs, today's campuses not only serve as sites of education and research but also as engines of urban regeneration, cultural innovation, and social well-being, shaping a more equitable and sustainable future.

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PART 1

CAMPUS AND PUBLIC SPACES: LIVEABILITY AND HEALTH FACTORS

Strategies for university campus performances and adaptation. An Italian case study

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*Isidoro Fasolino***

Introduction

University campuses are established in urban territories and create a relationship with the surrounding context. They have similarities with the urban pattern composed of roads, buildings and spaces (Aydin and Ter, 2008). As large institutions, universities comprise many functions that occur in massive facilities, including educational, administrative, residential and recreational spaces, transportation and open space operations. Thus, universities act like small-scale towns and their activities have a great environmental impact on the surrounding urban space.

Various research claims that the morphological dimensions, i.e. the physical qualities of a campus can be associated with the loyalty rate of students and their academic performance (Hajrasouliha, 2017; Hipp et al, 2016; Styron, 2010). Based on these dimensions and qualities, a well-designed campus has been conceptualized as one that is mixed, compact, well-connected, well-structured, lived-in, in a green environment and where the *city effect* prevails: "A well-designed campus can be a fascinat-

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ing place to be and allows students to rest and enjoy their college life. Taking a short walk in a park-like setting of campus (Green dimension), or visiting coffee shops and galleries adjacent to campus, or simply watching a vital street (Urban dimension) or taking a short nap in an accessible dorm (Living dimension) may have a positive impact on student's mental health" (Hajra-souliha, 2017).

It should also be remarked that contemporary universities are no longer isolated and monofunctional entities, but are pro-active agencies of urban transformation. In this regard, the mission of universities has changed profoundly: from their exclusive function as education and research institutions, universities have moved towards a third mission, namely public service and, among these, urban redesign activities. Many contemporary universities are engaged in the transformation dynamics of cities, promoting synergies and functioning as engines of sustainable urban development.

The observance of environmental, resilience and adaptation criteria are issues that are increasingly part of the set of strategic issues to be observed on a national and global scale when trying to design an efficient city, district or university campus.

This paper intends to apply a multi-criteria evaluation methodology developed for the assessment of settlement efficiency in urban regeneration contexts to the University Campus of Fisciano (Salerno). The objective is to verify whether efficient planning and management of a set of planning elements within university campuses results in a number of benefits in terms of urban quality, resilience and adaptation.

Campus of the University of Salerno

The University of Salerno (UniSa) is located in the Irno Valley, a few kilometres from Salerno and Avellino, at the highway intersection that makes it central and easily reachable. The distinguishing feature of the University of Salerno is its configuration in the form of campuses: the main one located in the municipality of Fisciano, with an area of 1.200,000 square metres, 1.015,838 cubic metres of volume and 35.000 students and 2.000 employees; and the one in Baronissi, with an area of 150.000 square metres, and 180.615 cubic metres of volume, which houses only the Department of Medicine and Surgery. The university also has its own theatre and sports facilities.

Universities have been fluctuated between being open or closed to the external world based on how they interact with the surrounding urban

fabric (Giliberti, 2011). The Salerno campuses' can be defined as: *"out-city campuses which have been mainly located in the outskirts of an important city and establish physical ties with the adjoining city in spite of being self-contained. Their peripheral position imposes some degree of isolation as well as proximity and connection. They create visible boundaries with the outside realm. These campuses are mostly mono-location entities and obtain various kinds of amenities for their faculty, staff and students in their setting such as educational, recreational, sport, commercial, and residential facilities but it depends on the users' preference to live in the campus or commute"* (Razavivand Fard, 2019).

UniSa has been promoting sustainable development for years, both from a political-institutional as well as a scientific and research perspective. It is well known that UniSa is increasingly seeking to pursue these goals, following the strategies shared by the Sustainable Development Goals (SDGs) and the Higher Education Sustainability Initiative (HESI), which promote the concepts and principles of sustainability in research and education, the dissemination of knowledge in the local community and, finally, the need to make campuses sustainable. UniSa's commitment to sustainability is demonstrated by its membership in 2013 of the UN Global Compact and in 2014 of the International Sustainable Campus Network (ISCN) as well as its membership with the Universities for Sustainable Development Network (RUS) and its annual participation in the UI GreenMetric World University Rankings survey.

The University also has a University Strategic Plan, which states that *"a common element in all the areas of interest in which the University's actions are developed is sustainability"*, and that *"the University believes it is important to strengthen the network of relations with the territory and external realities capable of producing concrete effects in cultural, social and economic life, in the valorisation of urban spaces, ..., in the analysis and reconstruction of territorial and cultural landscapes"* (UniSa, 2025).

In the instance of UniSa, the physical and functional transformations of the campuses are disciplined by the neighbourhood urban plans (PUA) for the two campuses of Fisciano and Baronissi.

UniSa's PUA for Fisciano envisages an extension of the campus area towards the north-west with new sports facilities, four technical-scientific districts and large car parks. All this, in an area that is currently permeable and vegetated, forms a building complex with a drastic change from a permeable surface to an impermeable surface (built, covered, paved,

asphalted). In addition to the buildings currently under construction, the PUAs envisage the construction of further new buildings for various functions related to university activities and related services. However, no specific criteria can be discerned based on which the aforementioned volumes are located, arranged almost randomly within the campuses with an outcome apparently lacking a clear ordering rationality that motivates the specific choices and localizations according to an overall, organic and unitary design, in an efficient urban planning perspective.

Methodological framework

The methodology was developed with reference to urban regeneration interventions, to assess the degree of efficiency of a settlement. The term *efficiency* refers to the ability to achieve a system of objectives with the minimum expenditure of resources, thereby maximizing the instrumental value of the approach, its productive capacity, and its overall performance (Fasolino and Grimaldi, 2020). Clearly, should be highlighted that this theme brings with it a series of multidisciplinary aspects, think of urban green areas, mobility, energy, water management, waste management, etc., which go beyond urban planning in the strict sense. To introduce indicators capable of interpreting these different components of a territorial system, a model for evaluating the efficiency of the settlement has been developed that is as comprehensive as possible of the various aspects that fall within the vast concept of sustainability (Cicalese and Fasolino, 2024).

The methodology consists of a set of 24 *planning elements* (Figure 1), i.e. elements of the project that contribute to increasing the efficiency of the settlement. A set of objects that make up both the physical and functional urban transformation, which, in this case, attempt to outline the characteristics of a sustainable and resilient campus that implements strategic solutions to global issues such as climate change adaptation, reduction of climate-altering gas emissions, reduction of land consumption, waste management, promotion of green mobility, and protection of natural resources and non-renewable energies.

Each planning element corresponds to an indicator and performance bands that make it possible to assign a score. The indicators (both quantitative and qualitative) are then aggregated to develop an Efficiency Index (EI) representative of the overall efficiency of the study area (Cicalese and Fasolino, 2024). The procedure, in fact, consists in carrying out a multi-criteria evaluation procedure aimed at formulating a synthetic judgment of the global performance of a portion of the urban area.

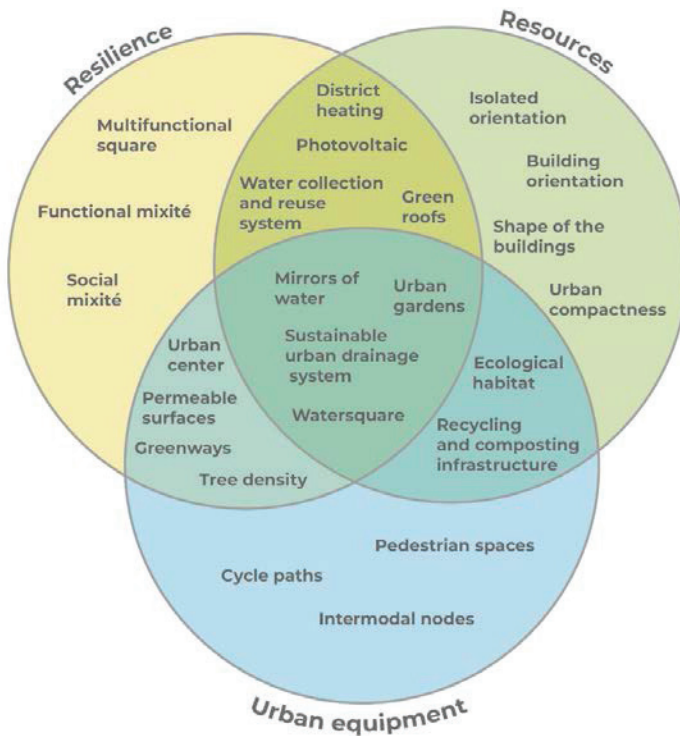


Figure 1 -
The 24 planning elements clustered in three main areas: resilience, resources and urban equipment.

Application

The application phase, which only concerned the Fisciano Campus, involved the construction of four scenarios, briefly described below, which differ in terms of design choices and planning elements, involving surfaces, volumes, and coverages.

The starting scenario is *Scenario 0 - state of the art*, i.e. the state in which the Fisciano campus is currently located, drawn up based on data and design descriptions provided by the technical offices of the University of Salerno.

Scenario 1- trend was realised with the provisions of the PUA of the Fisciano campus, thus introducing new buildings, eliminating some car parks, introducing new sports facilities and creating a new urban area to the north-west of the campus with large impermeable surfaces. In addition, public transport is promoted by enhancing connections to the railway station.

Scenario 2 - Intermediate represents an evolution of *Scenario 0 – state of the art*, it is a “short-term” scenario that does not particularly change the urban building load and the current campus planovolumetric. Only three elevations (of one level) are planned, on existing invariants, to integrate a number of functions and services not currently present (pharmacy, gymnasium, laundry, co-working spaces, legal support desk, newsstand, hygiene and cleaning products shop, museum and multi-religious hall), while also providing for an extension of the user base to the non-student community. Urban equipment that improves efficiency by including an internal bicycle path on campus, the construction of green roofs and an urban garden are considered. Incentives are given to expand the energy requirements met by cogeneration systems and photovoltaic roofs. Impermeable surfaces are transformed into semi-permeable ones, with the introduction of filter strips, bioretention areas and increasing shrubs along ecological corridors. New rainwater collection tanks have been added to the existing ones, and recovery and filtering systems for non-drinking use have been implemented. Finally, it is proposed to install a recycling area equipped with a composting plant and collection point for potentially hazardous waste.

Scenario 3 - final is the last scenario developed and is to be interpreted as an evolution of the previous scenarios, implementing actions to progressively improve the energy and environmental performance of the campus. The ‘long-term’ scenario proposes the realisation of the buildings envisaged by the PUA for which funding has already been approved. In addition, two new volumes are planned to expand the functional mix of the area and integrate new activities such as B&B, wellness centre, shopping centre, cinema and pub. The objective is to realise a scenario of maximising the efficiency of the settlement by making the most of certain planning elements.

Efficiency is also improved by adding additional photovoltaic roofs and increasing cogeneration systems. New sports facilities, new squares, and new pedestrian and bicycle paths are built. An increase of the cycle path is envisaged, as well as an outward integration of the main ring of the cycle path already planned in Scenario 2, with provision for a cycle link to and from the Baronissi campus occupying part of the lane and, where possible, in its own right of way, guaranteeing the presence of sidewalks. In this way, it is possible to further integrate the University with the urban fabric and at the same time favour a low-emission mobility choice.

Two different routes are planned (Figure 2), both about 2.5 km long: the first runs through Penta to the southern entrance of the Baronissi cam-



pus, the second, slightly longer, from Penta heads towards Lancusi and provides access to the northern entrance of the Baronissi campus. The new cycle path ensures continuity and connection with the new external areas of the campus, this is ensured by providing underpasses and bridges, including pedestrian ones, at the intersections between the cycle path and the vehicle-accessible roads, all while taking care to make the structures low-impact, integrated and environmentally friendly.

In addition, two ecological micro-corridors are planned to favour the connection between the area's 'green lungs', in particular, two ecological

Figure 2 -
(a) Hypothesis of bicycle connection between the two campuses;
(b) Ecological micro-corridors (dashed red line) and intersections.

routes are consolidated, one to the south and the other further north, which guarantees the continuity of natural areas and the interconnection between the Torrente Calvagnola and Vallone Mosca canals (Figure 2).

Parking spaces are reduced and permeable and filter surfaces are implemented. The increase in tree and shrub species ensures the enhancement of ecological corridors and the conservation of habitats. In addition, resilient solutions are proposed such as the water square that can function as a sports arena and, in the event of heavy rainfall, a temporary water collection and storage basin.

Discussion and suggestions

The design choices used in the various scenarios result in a progressive increase in efficiency, as demonstrated by the EI value, which increases progressively from scenario 0 to scenario 3. The gradual increment in the final efficiency index is an indication that certain choices can guarantee a certain degree of success in terms of improving energy and environmental efficiency performance, towards a path ever closer to sustainability. The introduction of new urban equipment, infrastructures and services (cycle paths, recycling area, water squares, green roofs, efficient inter-modal nodes, urban centre, ...) and the correct management and eventual implementation of already existing elements of the project lead to a systematic improvement of campus efficiency.

What has emerged from the application is that in order not to completely ignore a paradigm that has long been universally agreed upon (Bakken, 2012; Creighton, 1998; ISCN, 2014; UI GreenMetric, 2019), on the Salerno campus, not only should a network of campus cycle paths (which does not currently exist) be created, with a related bike sharing service, but the conditions should also be created for connections with the surrounding urban fabric. In particular, the university should promote a project to connect the campuses with other elements of the UniSa system, such as residences, nursery schools, etc.. To the possible objection of the obstacle represented by the morphology of places that are not particularly suitable for this mode of transport, it can be answered that, in addition to the traditional bicycle, the possibility of using pedal-assisted means of transport could be offered for people or categories that might need them.

This is in order to make the university more open and inclusive towards the surrounding area and urban centres. The distance from the city, in fact, can create problems of campus accessibility and liveability. Accord-

ing to such a concept of an *open university*, the campuses would progressively take on the shape and appearance of a real city, a place of life and aggregation and not only for the student and academic community (Dober, 1963; Koester et al, 2006; Mohammed et al, 2022; Sugiarto et al, 2022). A place where, for those who desire it, their relational life can take place in the same spaces as their cultural, professional and scientific growth. This means having to strengthen the organisation of campuses, both, of course, in terms of supporting study and work activities, and in terms of broadening the spectrum of activities and services that can be carried out there (CAT-MED, 2014; Song et al, 2013).

In addition, insufficient attention is paid to intervention in elements related to naturalness, ecosystem services in general and, in particular, habitats and ecological corridors, as ecological continuity is fundamental to preserving biodiversity (Amr et al, 2016; Orenstein et al, 2019; Smith, 1993). For example, two ecological micro-corridors could be designed and built on the Fisciano Campus to allow the continuity of natural areas and the interconnection of two natural incisions on either side of the Campus itself: the Calvagnola stream and the Vallone Mosca stream. The skills (environmental scientists, ecologists, botanists, biologists, agronomists, foresters, etc.) that are fully operational in the university could be involved in this type of project.

Moreover, impermeable surfaces should be converted into semi-permeable and permeable ones, with the introduction of filter strips, bio-retention areas and increased tree and shrub plant stratification along these ecological corridors (Amr et al, 2016; Simpson, 2009; Saygin and Ulusoy, 2011; Chai et al, 2011).

During heavy rainfall, however, considerable amounts of water surface runoff occur. Such situations call for resilient solutions such as cisterns for the collection and temporary storage of water.

Conclusion

When we talk about a sustainable university, we are not only referring to the content of the three traditional missions of education, research and knowledge transfer but also, in a certain sense, especially to its settlement sustainability. The physical space of the campus is not only a way to facilitate learning but also influences the educational, social, cultural and economic life of the academic community and society at large. The physical footprint of campuses on the soil must reflect the outcome of scientific research and the beliefs of all the competences called upon to

express an opinion on this issue. A university campus with a high-quality urban space can in some way strengthen research and education, attract and nurture high-quality human capital activity, ensure the presence of people with diverse roles, support diversified activities, stimulate flows of synergies and foster social and economic well-being. Consequently, they contribute to the campus space's vibrancy, liveability and sustainability and promote the prosperity of the host neighbourhood, city and region.

University campuses must not give up being a place for experimentation with technical and technological solutions. As for the most relevant aspect, which is that of the resources needed to implement the interventions, it is part of ordinary planning according to which investments must be oriented to achieve the short, medium and long-term objectives of a strategic plan for the PUA, which, of course, remains the mandatory regulatory instrument.

The university is a place of creativity (Bakken, 2012; ISCN, 2014), variety and multiplicity of attention, points of view, areas of experimentation and advancement of knowledge and the well-being of the community that lives there.

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Public places and University campuses.

UK approaches to green, accessible and inclusive environments

*Candida Cuturi**

Introduction

Public spaces play a key role for the spatial configuration of university campuses, as learning places and liveable environments within the general urban framework.

Public places turn out as learning environments within the university campus, promoting cultural relationships, creativity and trans-disciplinary networking, beyond typical closed classrooms and laboratories: formal and informal knowledge exchange, self-education and interactive co-learning/creation, etc. (Działek *et al.*, 2023). Outdoor public spaces provide health benefits – restoring psychophysical wellbeing and recovering from stress (particularly from mental fatigue) – both to students/researchers and teachers/employees, as well as visitors. The physical layout of public spaces contributes to the campus liveability, in terms of accessibility, safety and security, comfort and diversity: appropriate scale and proportions, greenery, shelter and shade systems, comfortable seats, balanced diversity of functions (sport, rest, refreshment and food, cultural events), visibility, cleanliness, etc.

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Contemporary campuses should be planned or regenerated thinking about wide accessibility, for pedestrians, persons with reduced mobility, and cyclists, within a strategic green network, through attractive/enjoyable public places, safe connections between usable buildings, and diverse common spaces inside.

Following an in-depth study of the characteristics for liveable and welcoming public spaces, within resilient university campuses, the paper focuses on three different UK cities: Belfast, in Northern Ireland, Manchester and Nottingham, in England.

University public spaces and the urban environment

Outdoor public spaces play a critical role in affecting mental performance and wellbeing. Positive effects of general greenspace on students' mental wellbeing and satisfaction have been identified, as well as the effects of perceived greenness on students' mental performance. Specific landscape characteristics, public art, facilities and furniture in the campus, as well as surrounding buildings, maintenance, safety and healthy environment may have positive impacts too (Li *et al.*, 2024). Landscape characteristics of outdoor greenspaces in different campuses vary in terms of distribution, type and function, size and scale, configuration and composition. University campuses may display different forms of green spaces, satisfying the needs of various users.

According to the findings of a study at the Liverpool Hope University campus, formal gardens and lawns were preferred by students over more naturalistic areas, being relax and social interaction the predominant purposes for the use of green spaces, preferably near their learning and living places (Speake *et al.*, 2013). A survey carried out in four California campuses, applied to undergraduate students, graduate students and staff, stressed a high degree of support for native ecosystems (preferred to lawns), particularly for replacing turf with native plants ("reconciliation ecology"), and a moderate support for implementation of green stormwater infrastructure with native plants ("alternative reconciliation ecology approach"), the latter likely to become more mainstream (Fausey *et al.*, 2024).

The social use of space is particularly significant within university campuses. "Sociable spaces", in a good location, are both physically and visually accessible, with streets being part of the social space, diverse places

to sit (steps, benches, movable seats, etc.), and possibly natural lighting (Carmona *et al.*, 2003). Campus public places need to be designed and improved particularly for pedestrians, integrated within local movement systems and providing connections between spaces, allowing the potential for other optional activities while travelling from origin to destination.

Some surveys on the field and relative literature (Działek *et al.*, 2023) suggest that squares, courtyards, pedestrian paths and green areas do not fulfil appropriately the expectations related to modern public spaces – in terms of comfort, relaxation, entertainment, etc. – therefore weakening the potential of the campus in the wider urban fabric.

Features of liveable and welcoming public spaces within resilient university campuses

Sustainable mobility is a priority in the context of a university campus, in terms of public transport infrastructure (comfortable, convenient and safe bus stops and fare systems), quality of pedestrian paths, inside and to access the campus (width, maintenance and accessibility within and around), parking spaces for users with mobility constraints (the elderly, wheelchair users, etc.), urban public transport (frequency, crowding, reliability), security perception within and outside the campus, universal access to buildings (qualitative assessment of buildings' accessibility for all, including users with mobility constraints), parking infrastructure, bike racks and bike shelters, entrance/exit gates to access the campus (for pedestrians and cyclists), adequacy of transport modes (considering individuals' commuting distances to the campus), quality of campus roads (pavement, drainage structures, road signs and other traffic control devices), cycling infrastructure (length, location and quality of the infrastructure within and around the campus), traffic law enforcement (measures and resources on campus, such as trained agents, offense notification procedures, warnings to road users, etc.), and road safety campaigns (Rodrigues da Silva A.N.R. *et al.*, 2024).

Guidelines for liveable campuses may be developed in the wake of some characteristics recurring in public places of successful university campuses:

- integrated network of open spaces, diverse activities and facilities, with effective links between buildings, avenues/streets and other public places;

- pedestrian-friendly spatial composition (not axes oriented towards distant views), with short paths to/from bus/tram stops and train stations (Działek *et al.*, 2023);
- traffic-calming measures, aimed at easy and safe pedestrian crossing and cycle mobility;
- separation of pedestrian and vehicular traffic;
- appropriate parking lots, preventing illegal parking in the campus and around;
- no architectural barriers;
- visibility through good design and appropriate lighting; indoor/outdoor interaction (Gehl *et al.*, 2006);
- universal design, for inclusive and welcoming places;
- functional and attractive street furniture;
- diverse seating arrangements, including L benches and benches facing each other (Działek *et al.*, 2023);
- permeable paving, increase in green spaces and water spaces, improving urban resilience and biodiversity;
- diverse greenery; native tree species with large crowns, providing more shades, and shade sails as a temporary solution (Działek *et al.*, 2023);
- outdoor sport facilities and health services;
- outdoor event and exhibition spaces (also informal cultural activities/events in “temporary spaces”);
- works of art;
- (outdoor) food facilities;
- participatory processes of public space design, for better accessibility, diversity and comfort within the campus and integration with the urban environment.

Another issue to be taken into consideration is the provision of ecosystem services. The urban landscape may provide several benefits, related to recreation (walking, picnicking, jogging, cycling or team sports), aesthetics, water quality, animal biodiversity, urban cooling, flood regulation, storm-water management, water conservation, etc. (Fausey *et al.*, 2024).

Environmentally friendly design of university campuses can contribute to enhancing urban biodiversity and promoting nature conservation.

Water sensitive urban approaches are useful for sustainable management of the water cycle.

Besides, large open spaces of universities may act as city-level emergency shelters, providing refuge during disasters (earthquakes, fires, extreme weather events, pandemics), therefore contributing to urban resilience (Xin *et al.*, 2025).

The role of public spaces in the University campus: three UK experiences

Belfast

The troubled history of Belfast as a site of political conflict emerges from its territorial segregation and by distinctive murals, as well as by “peace lines” (Cuturi, 2011). Particularly marking West and North Belfast neighbourhoods, the murals have evolved from the sectarian divide to social/cultural issues.

Public spaces play a key role in the contested city, through a regeneration approach aimed at creating an accessible spatial network, with green corridors and blue assets, interesting architecture and visual arts, and involving local communities.

Significant regeneration processes have been carried out across the city for a more welcoming environment. 20mph speed limits and less cars in the city centre would have contributed to a more sustainable mobility; besides, walking and cycling levels would have increased (Milton *et al.*, 2022).

The city centre and the university campuses have been considered, for a long time, as shared and “neutral” areas.

Founded in 1845, Queen’s University Belfast (Fig. 1) develops in the Queen’s Quarter (south of the city centre), home to Botanic Gardens, the Ulster Museum, Queen’s Film Theatre, etc. (qub.ac.uk). On the background of *Strategy 2030*, to “Shape a Better World”, the campus will be further enhanced through the complexion of key projects, such as the Student Centre, and will provide a welcoming environment open to regional communities.

The Ulster University is within Belfast Cathedral Quarter, creative and cultural hub developed around St. Anne’s Cathedral, with the Metropolitan Arts Centre, the Cathedral Quarter Arts Festival and street art (ulster.ac.uk).



Figure 1 -
Queen's University Belfast, Lanyon Building, University Road (photo by Cuturi C., 2010).

Students, staff and visitors are encouraged to adopt active travel behaviours (walking and biking) and to use public transport.

Belfast universities are particularly focused on building inclusive and cohesive communities, with a longstanding track record in research related to peace and conflict, culture and identity (qub.ac.uk).

Manchester

Renowned as the first industrial city, Manchester has always been dynamic and innovative, moving from deindustrialization to brownfield re-development and urban regeneration (Cuturi, 2010) (Fig. 2).

The proposed *Manchester Education Precinct* (1960s) was an ambitious scheme for an integrated network of academic and residential complexes, linked by pedestrian walkways crisscrossing Oxford Road for more than a mile. Space, light and height were emphasized through a zoned precinct planning and clean modernist lines, with a new shopping centre area, including a pub (Sumner, 2013). Large open spaces, flexibility of buildings, social organization and maximum integration of city develop-

ments played a significant role in the plan¹, so that the University would turn out as a place for meeting people and ideas (*mpwm.msa.ac.uk*).

Many exteriors had survived as originally built, while most interiors were radically reshaped to accommodate changes of use and access (Sumner, 2013).

In the first decades of the 21st century some modernist buildings were demolished, making way to new developments: the Maths Tower (19 storeys high, making the education precinct visible from anywhere in the city) demolished in 2005, Loxford Tower (formerly home to the Manchester School of Architecture) demolished in 2008, the Precinct Centre over Oxford Road in 2015 (*mpwm.msa.ac.uk*).

The always evolving campuses of the University of Manchester, in the two areas of Oxford Road and Sackville Street, are undergoing new transformation according to a ten-year Campus Masterplan: new buildings, major refurbishments and conservation works (Nancy Rothwell Building,

Figure 2 -
Castlefield
Conservation
Area, near
university
campuses in
Manchester
(photo by Cu-
turi C., 2006).



¹ The 1964 plan by Wilson & Womersley took into consideration car ownership/usage and gave extreme emphasis to the separation of vehicles and pedestrians in the form of a raised walkway and precinct above the traffic of Oxford Road.

The Old Quadrangle, Brunswick Park, etc.). University sites are open to local communities and international visitors, for enjoying green spaces – such as Alan Gilbert Square, University Green and Whitworth Park – musical performances and works of art (The Whitworth Art Gallery, Manchester Museum, etc.), as well as exploring library collections or learning about the night sky (*manchester.ac.uk*).

The University of Manchester embeds sustainable practices into systems and processes across the campus, from green spaces and sustainable construction, adapting to the changing climate, to sustainable travel and transport, as well as responsible procurement (*manchester.ac.uk*). It is committed to a zero-carbon future, by its strategy “Our Sustainable Future”, pursuing sustainability through research and teaching, and community involvement.

The Manchester Metropolitan campus, developed on the west side of Oxford Road (close to the city centre), was the first to be certified as an EcoCampus; Manchester Met is rated as one of the UK’s greenest universities (*mmu.ac.uk*).

Nottingham

The University of Nottingham develops through several campuses: University Park Campus, one of the largest and most attractive campuses in the country, Jubilee Campus, an award-winning green campus, the Medical School and University Hospital sites, King’s Meadow campus (acquired in 2005), the next opening Castle Meadow Campus (acquired in 2021), on a former railway area by the Nottingham Canal; besides, two campuses abroad, in China and Malaysia.

The University promotes equality, diversity and inclusion, providing access to residential and teaching buildings and other facilities, in particular for students with disabilities: accessible rooms and toilets, wheelchair accessible Minibus Service (reservable in the main campuses by people with temporary or long-term impairments as well as pregnant visitors), appropriate parking space and available wheelchairs for visitor use while on campus, accessible sporting and fitness opportunities for all students, prayer rooms (Christian chapel, Muslim prayer rooms, and several multi-faith prayer rooms available to all faiths) and quiet space as low-sensory environment for anyone who needs a break from the day’s activity (*www.nottingham.ac.uk*).



The University of Nottingham is committed to supporting the environment and tackling climate change, promoting energy saving and renewable energy, and pursuing carbon reduction goals (Fig. 3). Its extensive award-winning grounds, accessible and free to visit for all, provide a wide range of habitats: “English landscape” with rolling grassland, trees, shrub groups, various plant species, and water features (University Park), lakes and wildlife conservation, such as herons (Jubilee Campus), an oasis and beehives (King’s Meadow Campus) (www.nottingham.ac.uk).

Figure 3 -
The University of Nottingham, Sustainable Research Building, University Park (photo by Cuturi C., 2006).

The student experience and environmental sustainability stay firmly also in the agenda of Nottingham Trent University, with a vibrant City Campus in the heart of the city, and other four University sites across Nottingham and the UK (ntu.ac.uk).

Conclusion

Public places within university campuses are increasingly recognized as learning environments, social spaces for meeting and inclusion, healthy spaces for students, staff and visitors, landmarks within the urban fabric,

through their design and management, green drivers for urban resilience and biodiversity.

Outdoor public places play a key role for students, researchers and employees, but they dialogue and interact with the wider urban environment too.

Despite the recognized social, cultural and environmental benefits of university campuses and the advantages for the whole city, the quality of university public space needs more attention, in the light of its great potential and impacts.

Built environments of universities are memories of institutional development, through their exteriors and different facilities (Sumner, 2013). At the same time, they are expression of new priorities: the rise and decline of disciplines, the evolving relationship with the wider public, the focus on accessibility and the care for environmental instances.

British Universities are aware of the key role campuses can play in promoting decarbonization, energy-efficient practices and green initiatives. Renewable energy is a prevalent option for reducing carbon emissions; university campuses located in suburban areas have the highest proportion of renewable generation, while campuses within urban areas show a less renewable generation rate² (Aghamolaei and Fallahpour, 2023).

UK green spaces turn out as major University assets, to be enhanced through regeneration and diversification: botanic gardens, natural or semi-natural portions of land, utility lawns, planting adjacent to student residences, etc. Nature restoration and biodiversity are at the core of university campuses (*publicengagement.ac.uk*).

On the background of general and shared priorities related to accessibility, cultural and environmental issues, the campus reflects major local trends, depending on the specific urban context at stake: aspiration to “peaceful” and inclusive places (Belfast), strong/dynamic regeneration approach and innovation (Manchester), focus on diversity and green concerns, while expanding (Nottingham).

² Considering the potential of adopting renewable energy technologies in more compact and dense urban areas, solar energy is one of the most common and applicable strategies (solar PV panels and photovoltaic systems); other renewable sources are biomass and geothermal sources (or combined renewable energy sources).

In the light of previous experiences of university campuses, the concept of sustainable learning landscape may be a reference and implies interdisciplinary approaches and deep connections between campus spaces and the urban fabric around.

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Liveability and art at UBC's Vancouver campus

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Introduction

The story of UBC's Vancouver campus begins in the early 20th century, when British Columbia's leaders envisioned a university that would serve as a center for research, innovation, and learning on the Pacific coast. The University Act was passed in 1908, and UBC was officially established in 1915. However, it wasn't until 1925 that the university moved to its permanent location at Point Grey, a striking site on a forested cliffside overlooking the Strait of Georgia, with views of the mountains and ocean.

Today, UBC works in partnership with the Musqueam people to acknowledge this long-standing history and respect the cultural importance of the land.

In its early years, the campus consisted of just a few buildings surrounded by dense forest. Over the decades, it grew into a lively academic community, home to thousands of students, faculty, and researchers (Fig.1). The iconic Main Mall became the ceremonial heart of the campus, lined

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Figure 1 -
*UBC Campus
public space*
(Photo: Ma-
richela Sepe'
Archive).

with heritage oaks and academic buildings. University Boulevard soon followed, connecting the campus to the city.

Today, the campus is a blend of nature, art, and architecture. Forests, gardens, beaches, and green buildings sit alongside advanced labs and cultural landmarks. With its strong focus on climate action, student well-being, and inclusive public spaces, UBC continues to balance tradition with innovation, and learning with community¹.

The 2009 UBC Public Realm Plan for the Vancouver campus, still under-way, aims to enhance many parts of the campus, with particular attention to the livability of public spaces and art (Sepe, 2023), as will be illustrated in the dedicated section.

The UBC Public Realm Plan

The UBC Public Realm Plan for the Vancouver (UBC, 2009, 2016, 2019) campus is an initiative aimed at revitalizing and transforming the outdoor spaces that define the university experience. Courtyards, walkways, public art, and street furniture are more than mere background elements;

¹ This study was carried in the framework of the *Honours Programmes*, Building Engineering-Architecture Degree Course - Sapienza Università di Roma, Tutor: Prof. Marichela Sepe

they are essential components that shape daily movement, foster interaction, and reflect the campus's identity and spirit. The plan underscores that well-designed public areas must be inviting, practical, safe, and intuitive to navigate, while nurturing a strong sense of belonging and community. Although the 1992 Campus Master Plan included important outdoor space goals, much of its vision remained unrealized. Recent reviews have highlighted pressing issues: over 70% of outdoor spaces need significant upgrades, a quarter are difficult to access or feel isolated from the flow of campus life, and many serve only as passageways rather than as places to gather, relax, or learn. The pedestrian and cycling experience, in particular, has been identified as a key area requiring improvement.

As one of Canada's academic institutions with a strong commitment to sustainability, UBC understands that its outdoor spaces must go beyond mere utility. These spaces should energize, connect, and inspire, offering settings that promote active lifestyles, mental wellness, and social connection. A vibrant public realm can offer moments of reflection, interaction, and contact with nature—elements that enrich the educational experience and contribute to a healthier, more meaningful campus life. The plan lays out a bold vision for an interconnected network of outdoor areas designed to foster creativity, informal learning, and cross-disciplinary exchange. Expressing UBC's culture and identity, these spaces are intended to create lasting memories and impressions for students and visitors alike. To realize this transformation, the plan introduces a set of design principles centered on landscape coherence, native vegetation, sustainability, and universal accessibility.

Another central objective of the plan is the integration of indoor and outdoor spaces, ensuring year-round comfort and safety after dark. Manicured and natural landscapes will be carefully blended, using native plants and sustainable techniques to promote ecological health, reduce maintenance, and lower carbon impacts. The design focus will prioritize people on foot or on bicycles, creating spaces scaled to human movement and enhancing overall accessibility. Public spaces will be designed to be visually striking and socially welcoming, offering adaptable environments that support both quiet relaxation and social gathering. By connecting outdoor and indoor environments, the campus experience becomes more seamless and immersive, strengthening the relationship between learning, leisure, and the physical surroundings.

In support of these goals, the campus will be enhanced in ways that appeal to all five senses, creating a more connected and intuitive experi-

ence. A particular focus will be placed on visual continuity, guiding people across campus through strategic sightlines, distinctive art, thoughtful lighting, and harmonized landscaping and furnishings. Pathways will be made clear and accessible, improving navigation and the ability to link key buildings and spaces. Among the most iconic areas slated for improvement are Main Mall and University Boulevard, long seen as the symbolic heart of UBC. These historic corridors will be redesigned to put pedestrians first, incorporating sustainable materials such as low-carbon concrete and drastically reducing vehicle access. While respecting the historical character of these sites, the redesign will update them to meet contemporary needs and expectations.

Main Mall will emerge as a vibrant “social node,” offering active ground-floor spaces and ample seating to foster community energy and interaction. University Boulevard will be transformed with the addition of water features that serve both as visual highlights and as sustainable stormwater solutions. Bicycle facilities will be integrated thoughtfully, supporting active transit without undermining the boulevard’s formal aesthetic. These improvements are not just about physical upgrades—they are about celebrating UBC’s rich history while making its public spaces more engaging, functional, and resilient. The ultimate vision is a campus where movement feels natural, spaces captivate the senses, and the built environment embodies UBC’s commitment to well-being, sustainability, and academic excellence.

Central to this effort are the large commons and gathering spaces that serve as the beating heart of campus life. These spaces allow students, faculty, and staff from across disciplines to come together, facilitating everything from cultural performances and lively debates to quiet reflection and casual study. Well-connected through thoughtfully designed pathways and offering views of iconic campus architecture, these commons will be seamlessly integrated into the campus fabric. They will feature public art, water elements, versatile seating, and landscaping that invites both solitude and vibrant social interaction. Designed for flexibility, they will adapt to various times of day, uses, and seasons, supporting outdoor classrooms, amphitheatres, and informal meeting spots alike.

Fairview Square will take on a special role as the social hub for UBC’s science community. Developed through extensive consultation, it will highlight themes of earth, ocean, and atmosphere, including the campus’s first dedicated outdoor classroom—perfect for university students as well as visiting school groups. A reflecting pool in front of the Beaty

Biodiversity Museum and the Pacific Museum of the Earth will anchor the square, elevating both its visual appeal and sense of place. Other key spaces like Library Gardens and University Square will also be reimagined to support the arts and cultural programming on campus, featuring elements like sculpture gardens that showcase international works of art and help position UBC as a global cultural destination.

Recognizing that some of the most profound learning and human connections happen outside the traditional classroom, the plan emphasizes the creation of informal, flexible spaces tailored to the unique character of each academic faculty. Each space will reflect input from students, faculty, and staff to ensure it resonates with the specific needs and identities of its community. From varied seating to weather-protective building edges, to the integration of food and social outlets, these spaces will be designed for day-long use, across all seasons. Carefully designed lighting will ensure they remain safe and inviting well into the evening hours. Sustainability will continue to guide every decision, with design elements such as reflecting ponds to direct natural light into surrounding buildings and deciduous trees to help regulate temperature and reduce glare.

The Buchanan Complex will serve as a model for this approach, with its eastern courtyards offering calm, contemplative spaces for study and small-group learning, enhanced by native planting and rainwater features. In contrast, the western courtyard will become a lively stage for art installations, outdoor lectures, and performances, reinforcing its role as a cultural focal point. Altogether, these outdoor spaces are designed to enhance the campus experience, merging academic, social, and environmental functions into vibrant, human-centered environments. They are not just places to pass through—they are destinations in their own right, where individuals can learn, reflect, connect, and recharge, fully supporting UBC's dynamic and diverse academic community.

Given the campus's large scale, walking is a central part of daily life for students, faculty, and staff. As such, pathway design plays a crucial role in shaping both movement and experience.

The new vision for UBC's pathways focuses on making travel more seamless, enjoyable, and inspiring. A clear hierarchy—established through variations in width, surface materials, and lighting—will help users navigate intuitively. Designed at a human scale, these pathways will offer open sightlines and comfortable lighting, accommodating movement throughout the day and night.

To enhance wayfinding and visual appeal, landscape features such as plantings, elevation changes, and integrated seating will define each path and create a sense of place. Seating areas will invite people to pause, connect, and engage in spontaneous social interactions.

Sustainability is a core priority. Pathways will incorporate permeable surfaces and environmentally responsible landscaping to manage stormwater, while carefully selected plantings will support biodiversity and strengthen UBC's green commitments.

Beyond functionality, pathways will foster social connection by linking buildings with outdoor gathering spaces. New campus buildings will contribute to this by featuring prominent, accessible staircases that promote active movement and informal encounters.

UBC's reimagined pathways are designed to offer more than just a means of getting from point A to B—they aim to enrich the campus experience by blending utility with beauty, sustainability, and community connection.

The Main Gateways and Public Realm Transformation at UBC

The University of British Columbia (UBC) is undertaking an ambitious effort to reshape how people experience its Vancouver campus, starting with the creation of six main gateways. These key entry points will be designed to clearly and warmly welcome visitors, students, faculty, and staff, combining striking architecture, thoughtfully curated landscapes, and clear signage to communicate the university's identity, enhance wayfinding, and celebrate the surrounding natural environment. Positioned at prominent intersections such as Chancellor Boulevard, Wesbrook, and 16th Avenue, these gateways will follow a unified design language, ensuring that arriving at UBC feels both cohesive and meaningful. In particular, the future transit terminal on University Boulevard will become a major campus access point, carefully woven into the landscape and urban fabric to strengthen the university's connection to the broader region.

This gateway strategy is part of a larger public realm renewal that seeks to elevate both functionality and campus experience. UBC is focusing on several major outdoor improvement projects, driven by repair needs, safety enhancements, and extensive input from the university community. Among these key sites, University Boulevard will undergo landscaping and wayfinding improvements to reinforce the structural and sym-

bolic identity of the campus. Fairview Square, linked to the Earth Systems Science Building, will become a focal point celebrating environmental themes. The Buchanan Courtyard, renovated alongside the UBC Renew program, will reflect the vibrant spirit of the arts community, while the Applied Science Quad will be reshaped in tandem with the development of the WWW Centre for Engineering Design. In the Health Sciences Quad, work will align with renovations to the Friedman Building, and the under-performing Library Gardens will be revitalized to reestablish its role as a central gathering place and cultural commons.

Improving campus entryways and pedestrian pathways is equally critical. Initial work will focus on clarifying and enhancing confusing or uninviting access points, starting with University Boulevard. Additionally, the repair and redesign of four heavily used pedestrian corridors—including Agricultural Road, a major east-west artery—will help create a safer, more intuitive, and more attractive environment for everyone navigating the campus.

UBC has developed a clear and thoughtful system for prioritizing these projects, ensuring that limited resources are allocated where they will have the greatest impact. Priority is given to projects that benefit from external donor support or funding, that provide broad value to the university community, or that serve key user groups such as students, faculty, and staff. Alignment with both the 1992 Campus Plan and the evolving Vancouver Campus Plan is crucial, as is the scale and complexity of the work involved. Projects expected to see high levels of use, or those that create momentum for the broader Public Realm Plan, will rise to the top of the priority list. UBC will also prioritize projects that can be efficiently coordinated with nearby developments, or that offer opportunities to leverage external funding or partnerships. Finally, where nearby construction or planning efforts may complicate a project, UBC will defer work until those conditions are resolved, ensuring that improvements are implemented smoothly and effectively.

Altogether, these gateway and public realm projects represent a transformative vision for UBC's campus environment. They aim not only to address current challenges but to create a more connected, inclusive, and inspiring university—one where outdoor spaces and access points reflect UBC's academic prestige, environmental values, and commitment to the well-being of its entire community (UBC, 2009, 2016, 2019).

Implementation of the UBC Public Realm Plan

Over the next fifteen years, the University of British Columbia (UBC) will make significant investments to enhance its public realm, drawing on two primary sources of capital: landscaping investments tied to major capital building projects and public-private partnerships (P3). Every major construction project on campus will be expected to contribute to the surrounding landscape on three levels—by helping integrate the landscape into a unified campus whole, improving the pedestrian experience in and around the building, and creating outdoor social or learning spaces that extend the building's educational purpose. To maintain consistency and alignment with UBC's broader Public Realm Vision, the landscaping budget will be carefully calibrated: smaller projects will contribute about 2.5% of their total budget, while larger projects will allocate between 1% and 2% of their hard construction costs. The exact amount will be negotiated according to the specific needs and context of each project site.

The development permit (DP) process plays a critical role in this implementation phase, ensuring that landscape designs meet UBC's established standards before construction begins. Any proposed changes to the landscape following DP approval will require an amendment to the permit, protecting design integrity. To further safeguard the landscaping budget, UBC will establish a retained risk fund, designed to prevent funds allocated for landscaping from being redirected into contingency budgets during construction.

Public-private partnerships will also play an important role in financing and delivering public realm improvements. However, UBC recognizes that P3 procurement comes with unique challenges, particularly when it comes to landscaping. Because property boundaries on campus are often undefined, there is a risk that competing consortiums may address landscaping budgets inconsistently, potentially leading to over- or under-spending. Careful oversight will be required to manage these risks and ensure fair, balanced investment in public spaces.

A targeted funding package will further support the revitalization of UBC's outdoor spaces. The Infrastructure Investment Charges Fund will provide \$38 million over a fifteen-year period to improve public spaces within the academic core, while an additional \$8 million will be sought through matching donations with the help of the University's Development team. The policy document governing this package will provide detailed guidelines on the structure, management, and tracking of these funds to ensure their effective allocation and long-term impact.

To oversee implementation, UBC will follow a management structure modelled on the successful UBC Renew process. This approach offers a clear framework for planning, funding, and execution, with accountability embedded at every stage. Campus and Community Planning will deliver annual updates to the Board of Governors, providing progress reports, a three-year projection of priorities, and a detailed budget for the coming year's projects. Funding decisions and prioritization will be made collaboratively by the Vice Provost Academic, the Associate Vice President of Campus and Community Planning, and the University Architect, with annual reassessments to account for evolving campus needs and funding availability.

Each public realm project will follow a flexible, collaborative design process tailored to its specific context and complexity. This process begins with concept design informed by stakeholder input, followed by design refinement in coordination with key departments to ensure alignment with UBC's standards and sustainability goals. Once designs are finalized, they will be submitted for approval by the University Architect and other relevant authorities. During the construction and installation phase, close oversight will ensure that work meets the agreed-upon standards. Finally, post-completion evaluations will assess the usability and maintenance needs of each project, ensuring long-term functionality and alignment with the campus vision.

Crucially, each project will be approached with the flexibility needed to address unique site challenges, whether they relate to infrastructure integration or the specific needs of campus users. This approach will allow UBC to achieve a cohesive and unified public realm that strengthens the university's identity while supporting the evolving needs of its diverse academic and community life (UBC, 2009, 2016, 2019).

Conclusion

The Public Realm Plan, developed in connection with the Vancouver Campus Plan, introduces a change from previous approaches that focused mainly on roadways and lighting. The current plan prioritizes pedestrian and cycling infrastructure, mental health considerations, interaction with natural elements, and the general quality of campus spaces. It includes recommendations related to outdoor furniture, planting strategies, the location of gardens, and public art installations. Vegetation on campus, particularly trees and shrubs, is included for its role in providing shade, moderating temperatures, and offering gathering areas.

To date, the plan has been implemented in several areas. Main Mall and University Boulevard have been redesigned as pedestrian corridors with integrated public art and seating. University Commons has been adapted to accommodate events and gatherings, while smaller areas such as Library Garden and the Knoll have been prepared for informal use. Approximately 90% of the first phase of the plan has been completed, and the next phase is under development as part of the broader update to the campus master plan.

The Public Realm Plan outlines the development of outdoor spaces that accommodate a range of activities, including performances, debates, outdoor classrooms, and individual study. Areas such as Fairview Square, Library Gardens, and University Square have been designated for these purposes, and the Buchanan Complex is being used as an example of integrating quiet and active spaces. The plan also includes pathway improvements aimed at supporting pedestrian flow and informal social interaction.

In addition, six campus gateways are planned at locations including Chancellor Boulevard, Wesbrook, and 16th Avenue. These gateways will combine architectural elements, landscaping, and signage to define the campus entrances. Planned upgrades to pathways and courtyards are included to improve access and connectivity across the university grounds (UBC, 2025).

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Designing for Well-Being: evaluating the impact of campus public spaces on student mental health

*Irina Di Ruocco**

Introduction

The mental health of university students has become an increasingly pressing global concern, with rising levels of stress, anxiety, and depression reported across higher education institutions. The demands of academic life, combined with financial pressures, social challenges, and urban constraints, contribute to significant psychological distress among students (Edwards & Mary, 2023). Universities have long been recognized as more than just educational spaces; they serve as social, cultural, and psychological ecosystems that influence student well-being (Damone, 2019). The design and quality of campus environments—including green spaces, open landscapes, and public areas—play a crucial role in shaping students' emotional resilience, cognitive restoration, and overall mental health (Liu et al., 2022). However, despite growing interest in campus design as a factor in mental health promotion (Fassi et al., 2016), there remains a lack of empirical research on how specific environmental characteristics contribute to psychological well-being, particularly in emerg-

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ing countries, where socio-economic disparities and urban constraints shape campus planning differently than in developed regions. This study introduces an original evaluation matrix that goes beyond existing single-variable or case-specific approaches by integrating both quantitative and qualitative indicators—such as green space availability, walkability, accessibility, and student participation—into a standardized, cross-regional framework. Unlike prior studies that focus narrowly on greenery or isolated design elements, this matrix allows for benchmarking campus environments across diverse socio-economic and urban contexts, particularly in emerging economies, thereby enhancing the comparability and policy relevance of campus planning strategies aimed at promoting student mental well-being.

A growing body of literature emphasizes the importance of biophilic design principles—the integration of nature into built environments—to enhance mental health and reduce stress among university populations (He et al., 2025). Research indicates that exposure to green spaces, access to natural light, and well-planned pedestrian networks can positively influence students' cognitive function, emotional stability, and social engagement (Gulwadi et al., 2019; Lau et al., 2014). For instance, studies in China and Malaysia suggest that campus green spaces are associated with higher academic performance, improved psychological restoration, and enhanced life satisfaction (Li et al., 2024; Malekinezhad et al., 2020). Additionally, evidence from post-pandemic studies indicates that students who engage with open spaces and natural environments exhibit faster psychological and physiological recovery from stress compared to those who primarily use indoor study areas (Zhang et al., 2022).

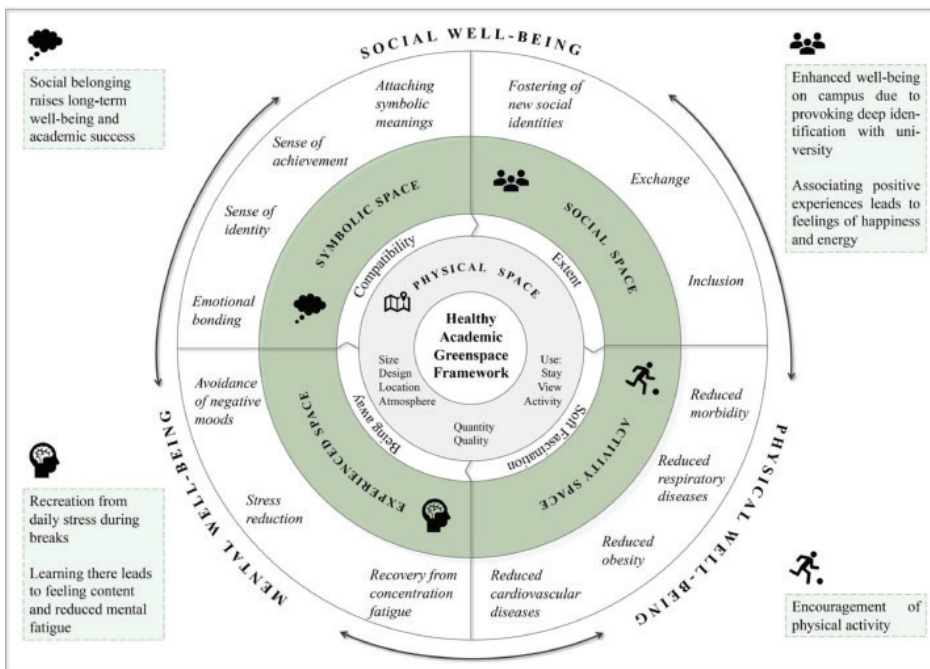
Despite these findings, current research is still fragmented in several key areas. Most studies focus on either psychological interventions (e.g., therapy, counseling) or the impact of green spaces in isolation, without considering the broader spatial configuration of university campuses (Guo et al., 2023). While the benefits of nature integration are well documented, there is limited understanding of how walkability, urban connectivity, accessibility, and campus inclusivity interact with environmental factors to shape mental health outcomes. Additionally, the role of faculty and staff well-being is often overlooked, despite their significant presence in university settings and their potential influence on the overall campus atmosphere (He et al., 2025). Furthermore, while universities in developed regions have increasingly integrated sustainable and health-supportive campus designs (e.g., LEED-certified (Leadership in Energy and Environmental Design) green spaces), there remains a significant research gap in

low- and middle-income countries (LMICs), where universities must navigate different financial, spatial, and infrastructural constraints (Zheng et al., 2024).

Another critical gap in existing research is the lack of standardized frameworks for cross-regional comparisons of campus design and student well-being. Most studies rely on single-case analyses, making it difficult to generalize findings across diverse campus environments. Additionally, while student engagement is recognized as an important factor in campus life, there is limited empirical evidence on the impact of student participation in the design and planning of public spaces on their mental health and sense of belonging.

This study seeks to bridge these gaps by evaluating the role of campus landscapes, open spaces, and environmental quality in fostering mental well-being among university students (He et al., 2025; Hipp et al., 2016), taking inspiration from Global South studies. By developing a weighted assessment matrix, this research will integrate key indicators such as green space availability, pedestrian movement, campus inclusivity, and stress-free design principles. Unlike previous studies that focus solely on greenery and mental health outcomes, this study will take a multi-di-

Figure 1 -
Perceived well-being with environment.
Source:
Foellmer et al.
(2021)



mensional approach—incorporating psychological restoration, accessibility, sensory experiences, and social interactions within campus environments.

Additionally, this study will place a particular emphasis on universities in low- and middle-income countries (LMICs), where spatial constraints and urban inequalities influence campus planning differently than in developed nations. By employing data normalization techniques and benchmarking methods, the research aims to provide empirically grounded, cross-regional recommendations for enhancing student mental health through evidence-based urban design interventions. Ultimately, this study contributes to the broader discourse on mental health-friendly university planning, offering a scalable and adaptable framework that can inform campus design strategies in diverse cultural and geographical contexts.

Theoretical background: urban and open spaces in university campus design for mental health

The relationship between urban spaces, open environments, and student well-being is an essential consideration in university campus planning. Universities are not only academic institutions but also living and social spaces that significantly shape students' psychological and emotional health. The presence of well-designed green and open spaces within these environments has been shown to contribute to cognitive restoration, mental well-being, and social integration (Li et al., 2024; Gulwadi et al., 2019). Research highlights that exposure to nature in university settings can enhance relaxation, reduce stress, and promote a sense of belonging. In contrast, campuses with poor urban planning—characterized by a lack of accessible green spaces, high-density infrastructure, and minimal outdoor social areas—tend to have higher reports of stress, isolation, and mental fatigue among students (Malekinezhad et al., 2020; Holt et al., 2019).

The psychological benefits of campus greenspaces have been widely studied. Recent research has demonstrated that general greenspaces contribute significantly to psychological restoration, mental health, and overall student satisfaction (Li et al., 2024). A systematic review confirmed the restorative effects of greenspaces across multiple geographical contexts, including Asia, Africa, North America, and Europe (Malekinezhad et al., 2020). These findings align with studies showing that the frequency of visits to green spaces directly influences their restorative potential.

For example, Bai et al. (2024) found that students who frequently engage with campus greenery report better psychological recovery. Another survey conducted on Chinese campuses indicated that the length of time spent in green environments positively correlates with mental restoration, and these areas tend to provide greater psychological relief than university squares or sports grounds.

In Malaysia, Malekinezhad et al. (2020) emphasized the association between perceived environmental qualities in green spaces and their role in mental restoration. Their findings reinforced the importance of key dimensions of Attention Restoration Theory (ART)—being away, fascination, and compatibility—in enhancing psychological well-being in university settings (Kaplan & Kaplan, 1989; Pasanen et al., 2018). Similarly, an Irish study provided empirical evidence supporting the idea that natural walks have a higher restorative potential than urban walks, promoting cognitive recovery and emotional relaxation. Research from the United States and Turkey has demonstrated that both objective and perceived greenness positively correlate with perceived restoration, suggesting that students benefit not only from physically engaging with green spaces but also from their visual presence (Gulwadi et al., 2019). A study in Spain further confirmed the reliability of different psychological restoration measures, reinforcing the validity of assessing campus environments through standardized tools.

The association between green spaces and mental health outcomes is well-documented across multiple studies. Findings from 18 independent investigations suggest that exposure to greenspaces is consistently linked to improved student well-being (Hipp et al., 2016; Ha & Kim, 2021). Two notable studies (Li, 2024) highlighted the impact of perceived greenness on students' quality of life, with research by Gulwadi et al. (2019) demonstrating that the effect of objective greenness is mediated through perceived restoration. Other studies have shown that the psychological benefits of green spaces extend beyond direct exposure. Holt et al. (2019) found that active engagement with green areas, such as walking or socializing outdoors, has a stronger positive impact on psychological well-being compared to passive use, such as simply viewing nature. However, findings by Ha and Kim (2021) suggest that biodiversity levels within a greenspace do not necessarily enhance mood states, potentially due to students' limited ability to differentiate between plant types.

The psychological and emotional effects of greenspaces are also influenced by environmental design elements, including water features, plant

styles, and spatial configurations. Elsadek et al. (2024) found that different landscaping styles, such as Japanese gardens or architectural gardens, can evoke distinct emotional responses among students. Other studies suggest that the design and maintenance of green spaces significantly impact their effectiveness as mental health interventions. Greenery that is well-integrated with physical activity spaces, such as jogging paths or communal relaxation zones, provides greater psychological benefits than spaces designed solely for aesthetic purposes (Liu et al., 2022). A study examining the combined effects of green space and physical activity on mental health found that while both contribute positively, the influence of green space alone was more significant than that of physical activity (Han & Ruan, 2019).

These findings reinforce the idea that urban design and environmental planning within universities should prioritize not just the presence of open and green spaces but also their quality, accessibility, and usability. Students who actively engage with green environments, whether through social activities, relaxation, or academic work, tend to experience greater psychological benefits. Moving forward, universities should consider adopting evidence-based urban planning strategies that enhance student well-being by integrating restorative landscapes, ensuring accessibility to natural spaces, and designing campus environments that promote both mental and social health.

Table 1 –
Main studies on the relationship between outdoor spaces, university campus and well-being. Elaboration of author.

Study	Country	Environmental Factors	Psychological Well-being Effect
Collins et al. (2022)	Germany	General green space in campus	Mitigates long-term mental health decline.
Gulwadi et al. (2019)	USA & Turkey	Perceived greenness	Increases perceived restoration and quality of life.
Guo et al. (2023)	China	Street trees & vegetation	Reduces heart rate, decreases stress levels.
Ha & Kim (2021)	USA	Biodiversity in open spaces	No significant effect, but perceived greenery matters.
Holt et al. (2019)	USA	Active vs. passive green space use	Active use improves well-being; passive use has limited impact.
Liu et al. (2022)	China	Perceived naturalness	Strong predictor of psychological restoration.
Malekinezhad et al. (2020)	Malaysia	Campus walkability	High walkability improves student mental health.

Despite evidence linking urban spaces to mental health, research gaps remain in identifying key environmental factors and optimizing social spaces. Future studies should explore long-term campus transformations across diverse contexts. For planners and policymakers, integrating open spaces, accessibility, and nature is crucial for student well-being. Interdisciplinary research is needed to develop holistic campus models that support both academic and mental health.

Methodology

This study employs a mixed-methods approach to assess the impact of campus public spaces on student mental health in low- and middle-income countries (LMICs). The methodology consists of three key phases: data collection, development of an evaluation matrix, and data normalization & benchmarking. This structured process enables a systematic comparison of university environments and their influence on student well-being.

Similar methodologies have been applied in previous studies. Rout and Galpern (2022) used a combination of questionnaires and smartphone data to assess how urban green spaces influence student mental health and cognitive function. Howarth et al. (2018) adopted a mixed-methods framework to evaluate the role of nature-based interventions in strengthening emotional resilience among students. These studies provide a strong foundation for the current research, demonstrating the value of integrating qualitative and quantitative methods in assessing campus environments.

Data collection

This study synthesizes peer-reviewed literature and case studies from Latin America, Africa, South Asia, and the Middle East, focusing on campus planning, green spaces and psychological restoration. By combining quantitative and qualitative assessments, the research examines environmental factors, student well-being indicators, and campus usability.

To ensure regional relevance, indicators are selected based on contextual urban characteristics and available research. The selection process involved:

- Identifying key sources on campus design and mental health in the target regions.
- Adapting indicators to account for urban density, socio-economic disparities, and campus infrastructure.

- Cross-referencing findings to estimate missing values from similar studies.
- Validating the indicators by ensuring consistency across multiple case studies.

This ensures a balanced, adaptable framework that accounts for regional specificities in evaluating how campus design influences student well-being.

Similar approaches have been used in previous studies, such as Rout & Galpern (2022) and Howarth et al. (2018), which evaluated the impact of green spaces on cognitive function and emotional resilience.

Development of the Evaluation Matrix

To facilitate cross-regional comparisons, data are standardized using normalization techniques:

- Quantitative Data (e.g., stress reduction percentages) are normalized on a 0-1 scale using min-max scaling.
- Qualitative Data (e.g., accessibility perceptions) are converted into ordinal scales (Low = 0.2, Medium = 0.5, High = 0.8).
- Averaging methods are applied for overlapping themes to ensure a balanced dataset.

A comparative matrix was then constructed, enabling benchmarking of university campuses based on their public space design and mental health impact. This process identified key patterns, strengths, and gaps in campus planning, offering insights into best practices and areas for improvement across diverse geographical contexts.

Data Normalization and Benchmarking

To facilitate cross-comparison across different studies, data are standardized using normalization techniques.

Quantitative Data, such as survey scores and stress reduction percentages, are normalized on a 0-1 scale using min-max scaling. For example, if Dong et al. (2023) reported a 2.5/5 rating for stress-free movement, the normalized value was calculated as $(2.5 - 1) / (5 - 1) = 0.375$.

Qualitative Data, including subjective assessments of accessibility or engagement, are converted into ordinal scales (e.g., Low = 0.2, Medium = 0.5, High = 0.8).

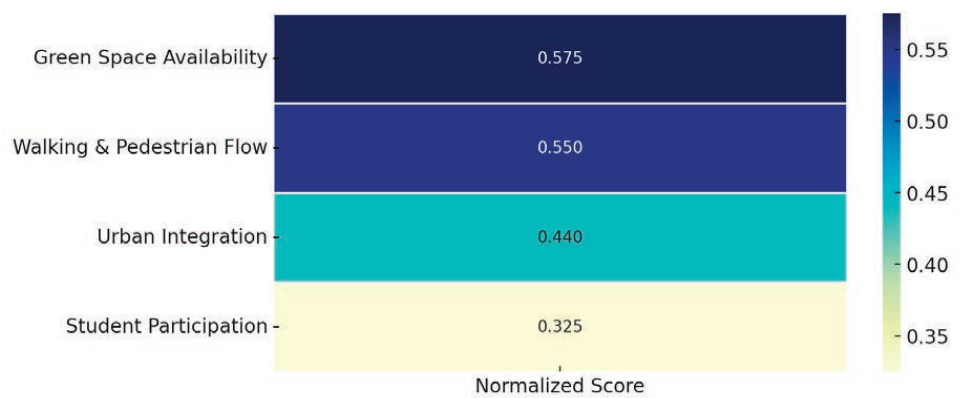
A comparative matrix was then constructed, allowing for benchmarking universities based on their public space design and mental health outcomes. This approach enabled the identification of patterns, strengths, and gaps in campus planning across various geographical regions. While the benchmarking and normalization process is clearly described, the methodology would benefit from a summary table detailing the evaluated indicators—including criteria, data sources, and applied scales—and a clearer specification of the university sample or case studies included in the comparative matrix.

Results and discussion

The evaluation matrix reveals green space availability (0.55) as the most influential factor in student mental well-being, reinforcing its role in stress reduction, cognitive restoration, and psychological resilience. Walkability (0.50) and urban integration (0.45) follow, highlighting the significance of accessible, well-connected campuses in fostering healthier environments. In contrast, student participation in campus planning (0.35) ranks the lowest, indicating a lack of engagement in shaping university spaces despite its potential benefits for inclusivity and mental health.

The normalization process ensures balanced comparisons across diverse university settings, accounting for differences in data availability and variability. While some studies report higher scores (e.g., 0.8 for green space availability in Li et al. (2024)), others present more moderate values, affecting the overall distribution. The use of statistical imputation and ordinal scaling further refines these comparisons, ensuring consistency in evaluating campus design factors.

Figure 2 -
Evaluation matrix: impact of campus design factors on student Well-Being. Elaboration of author



This research advances the field by quantifying campus environment impacts through a structured, multi-regional approach, integrating studies from Latin America, Africa, South Asia, and the Middle East. Unlike previous works that focus on case studies or single variables, this study applies a standardized evaluation matrix to compare campus designs comprehensively. The findings emphasize the need for participatory planning and evidence-based strategies to enhance student well-being, especially in LMICs where urban constraints and socio-economic disparities shape university infrastructure differently.

By demonstrating the measurable benefits of green spaces, walkability, and connectivity, this study provides a scalable framework for campus planning that prioritizes mental health and inclusivity. The results underscore the importance of integrating students into design processes and ensuring campuses are accessible, well-integrated, and psychologically supportive environments.

The study underscores the need for evidence-based campus planning that integrates green spaces, pedestrian-friendly infrastructure, and student participation in design. Universities should adopt biophilic principles, ensuring accessible and well-maintained green areas that support mental well-being. Additionally, promoting participatory planning can foster a sense of ownership and inclusivity among students.

Conclusions

This study highlights green space availability, walkability, and urban integration as key factors in fostering student mental well-being, while student participation in campus planning remains an overlooked yet critical element.

Findings suggest that evidence-based campus planning should prioritize biophilic design, pedestrian-friendly infrastructure, and stronger student engagement in shaping university spaces. Expanding this approach to LMICs can help address urban constraints and socio-economic disparities, making campuses more inclusive and supportive of mental health. Future research should investigate the long-term mental health impacts of campus design and further refine methodological tools to improve cross-regional comparability and policy relevance. Limitations include reliance on secondary data sources and variations in data availability across regions. Future research could incorporate longitudinal primary data collection and participatory design experiments to validate and refine the proposed matrix.

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Difference Between European and Chinese Campuses: A Learning Opportunity

*Daria Fontana**

Introduction

The university campus, as a microcosm of urban life, plays a pivotal role in shaping the academic, social, and cultural experiences of students, faculty, and the broader community. University campuses are not only educational settings but also social, cultural, and spatial microcosms that reflect broader historical, political, and ideological trajectories. The built environment of a university influences student identity, pedagogical style, administrative priorities, and community relationships (Altbach, 2004). While campuses worldwide share common goals of fostering education, research, and community engagement, their design, functionality, and cultural significance often reflect the unique historical, social, and economic contexts of their regions. In the era of globalization, comparing and learning from different campus typologies becomes essential in order to foster innovation and inclusivity in higher education planning. European and Chinese campuses offer compelling contrasts in design philosophy, governance, spatial integration, and sociocultural expression. European and Chinese campuses, in particular, offer fascinating contrasts that provide valuable learning oppor-

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tunities for understanding how public spaces, architecture, and cultural values influence the university experience. While European campuses tend to develop organically over time and exhibit a blend of historical continuity and civic engagement, Chinese campuses are characterized by rapid, state-led construction, monumental scale, and holistic planning. Understanding these differences offers a unique opportunity to reimagine university spaces that meet the needs of diverse student populations while addressing pressing global challenges such as urban sprawl, sustainability, and digital transformation. By examining these differences, we can identify best practices and innovative approaches to designing inclusive, accessible, and vibrant university environments that enhance learning and community well-being.

From personal experience, the differences between campuses in Europe (specifically Southern Europe) and China are tangible especially for students, to whom the campuses become like a second home for the period of studies. On one hand, a lot of European universities don't have a defined campus and the university buildings are integrated in the urban fabric of the city. So, as a consequence, while students may not have designated exclusively for them public spaces, they have to make use of the urban public spaces, interacting with the locals and "living" the city like the residents. That stimulates the development of urban spaces, especially in cities with big universities or university-centered, like Padua in Italy for example with University of Padua, sometimes called "the students' city". Contrary, Chinese universities have a specific area for the campus of their universities that has all the facilities to function almost as a small city inside the main city. And while nowadays a lot of campuses open for public especially during the weekends and festivities for the general public, the area is still designated to be independent and offer all the necessary utilities to students, professors and the university staff. And while such approach guarantees public spaces designed specifically for the needs of students and eliminates external competition for the space, it also limits the integration of students with the urban environment, which can be damaging both for the students (especially foreign students) and the city, as the two exist independently, not benefiting from each others possible cooperation.

This paper explores the contrasts and convergences between European and Chinese university campuses from an interdisciplinary perspective, combining architectural theory, urban studies, cultural analysis, and policy evaluation. The aim is to highlight how spatial configurations, and cultural practices shape academic life and to identify best practices that can

inform future developments globally. The comparative analysis provides insight into the symbolic and functional aspects of public spaces, the role of institutional governance, and the ways in which educational environments mediate societal values.

Historical and Cultural Contexts

The historical roots of European universities are deeply entrenched in medieval scholasticism and the liberal arts tradition. These institutions were often founded by religious authorities and supported by monarchs or city-states. For instance, the University of Bologna, widely regarded as the first university in the Western world, emerged from guilds of students and teachers advocating for mutual protection and academic freedom (Rüegg, 1992). Over time, universities became centers of humanist inquiry during the Renaissance and enlightenment laboratories during the 18th century.

Architecturally, this historical trajectory is reflected in layered campuses featuring cloisters, lecture halls, libraries, and chapels—spaces that encouraged individual reflection and collective debate. European campuses thus bear the marks of historical accumulation, ideological evolution, and urban integration.

Chinese universities, by contrast, trace their lineage to imperial academies and Confucian learning halls such as the Taixue and Guozijian. The modern university system began to take shape during the late Qing Dynasty with the adoption of Western pedagogical models, culminating in the establishment of institutions like Peking University (Beida) in 1898. This period marked a tension between tradition and modernity, nationalism and internationalism (Hayhoe, 1996).

The Communist era, particularly after 1949, transformed Chinese campuses into engines of ideological dissemination and state-led development. Socialist planning principles emphasized large, regimented campuses with functional zoning and collective living arrangements. Post-1978 reforms introduced market elements, leading to a hybridization of socialist legacy and neoliberal ambition in campus development (Postiglione, 2015). Thus, Chinese campuses are both products of historical rupture and continuity.

Moreover, both contexts have experienced substantial reforms in recent decades. European universities have responded to the pressures of international rankings, neoliberal governance, and demographic change

by reconfiguring spatial and organizational structures. Similarly, Chinese universities are navigating the challenges of massification, global competitiveness, and digitalization. These parallel developments provide a fertile ground for comparative inquiry and policy learning.

Campus Layout and Public Spaces

The spatial organization of a campus plays a critical role in fostering educational equity, intellectual curiosity, and community life. European campuses, often interwoven with historic city centers, tend to promote permeability and adaptive reuse. Open squares, courtyards, and pedestrian corridors enhance civic engagement and interdisciplinary collaboration. For example, the University of Oxford's quads serve both symbolic and functional roles, delineating academic communities while remaining open to public exploration (Bender, 1988).

Public spaces in European universities are typically multifunctional, accommodating protests, festivals, informal gatherings, and recreational activities. Such spaces embody democratic ideals and support student agency. This design ethos aligns with the Humboldtian model of higher education, where spatial freedom is integral to intellectual freedom.

Italian universities, such as the University of Bologna and the Politecnico di Milano, exemplify the integration of academic institutions within the urban fabric. The University of Bologna, established in 1088, is interwoven with the city's medieval core, with faculties and departments dispersed throughout the city center. This arrangement fosters a symbiotic relationship between the university and the city, promoting accessibility, cultural exchange, and economic vitality.

The Politecnico di Milano's campuses, including Città Studi and Bovisa, demonstrate a blend of historical preservation and modern development. The Città Studi campus has undergone regeneration efforts to enhance its integration with the surrounding urban context, creating semi-public spaces that encourage community engagement (Faroldi & Vettori, 2021). The Bovisa campus, located in a former industrial area, has transformed into a hub for innovation and design, contributing to the revitalization of the neighborhood (Faroldi, 2019).

In contrast, Chinese campuses are frequently designed as enclosed ecosystems with controlled access points, hierarchical spatial arrangements, and clearly demarcated functional zones. The separation of academic,

residential, and recreational areas reflects a modernist planning ethos. Architectural elements often draw from traditional Chinese aesthetics—symmetry, axuality, and courtyards—but are scaled to accommodate tens of thousands of students.

Public spaces in Chinese campuses serve more prescriptive functions: morning assemblies, flag-raising ceremonies, mass physical education, and state commemorations. While aesthetically pleasing, these spaces may lack the spontaneity and heterogeneity found in their European counterparts (Wang, 2014).

Chinese university campuses have traditionally been developed as self-contained entities, often located on the outskirts of cities. This planning approach has led to campuses that are physically and functionally separated from urban life. However, recent trends indicate a shift towards greater integration with the city.

For example, the development of university towns in China aims to create educational hubs that are more connected to urban infrastructure and services (Zhang, 2005). Additionally, studies have highlighted the importance of designing campus public spaces that respond to natural landforms and promote spatial complexity, enhancing users' subjective experiences (Zhu & Wei, 2007).

One of the most striking differences between European and Chinese campuses lies in their layout and the design of public spaces. European campuses often emphasize compact, walkable environments that encourage interaction and socialization. Public spaces such as courtyards, plazas, and gardens are integral to the campus experience, providing areas for students and faculty to gather, study, and relax. These spaces are typically designed to be inclusive and accessible, fostering a sense of community and belonging. For example, the Sorbonne University in Paris features iconic courtyards and gardens that serve as hubs of academic and social life (Bender, 1988).

Chinese campuses, on the other hand, tend to be more expansive, with a focus on creating self-contained environments that accommodate large numbers of students. Public spaces in Chinese universities often include large open squares, sports facilities, and landscaped gardens that reflect traditional Chinese aesthetics. These spaces are designed to promote physical activity, relaxation, and cultural activities, aligning with the holistic approach to education that emphasizes both academic and personal development. For instance, the campus of Zhejiang University features

a vast central lake surrounded by walking paths and pavilions, creating a serene environment for study and reflection (Chen, 2003).

An emerging trend in both contexts is the reactivation of underused or liminal spaces. Pop-up installations, student-run cafés, and maker labs are transforming residual spaces into vibrant nodes of creativity. In Europe, this trend often aligns with tactical urbanism principles, while in China it reflects entrepreneurialism within rigid administrative frameworks. The potential of such bottom-up interventions should not be underestimated in shaping inclusive and dynamic campuses.

Integration with the City

The relationship between the campus and the surrounding city also differs significantly between Europe and China. In many European cities, universities are deeply integrated into the urban fabric, with campuses often located in the city center. This integration fosters a dynamic exchange between the university and the broader community, with students and faculty actively participating in city life. Public spaces such as cafes, bookstores, and cultural venues serve as bridges between the campus and the city, creating a vibrant and interconnected environment. For example, the University of Cambridge is seamlessly woven into the fabric of the city, with colleges, libraries, and public spaces interspersed throughout the urban landscape (Bender, 1988). European universities generally maintain a high degree of spatial and cultural integration with their host cities. Institutions such as the University of Vienna and the University of Salamanca are embedded within urban contexts, making academic spaces accessible to non-academic publics. This integration fosters urban vitality and encourages knowledge spillovers into civic life. The permeability of European campuses often results in a symbiotic relationship where the university and city co-evolve (Shattock, 2012).

From an urban theory standpoint, this configuration aligns with Henri Lefebvre's concept of the "right to the city," wherein urban space is co-produced by inhabitants and users rather than dictated solely by capital or authority (Lefebvre, 1996). Such openness enhances the democratization of knowledge and enables lifelong learning beyond formal enrollment.

Conversely, Chinese universities are often located in peri-urban or suburban zones due to land availability and urban sprawl. Although this spatial detachment allows for extensive master planning, it also leads to social insularity. The result is often a "university town" model that reproduces the logic of sat-

elite urbanism—well-equipped but isolated from organic urban life (Zhang, 2005). In China, universities are often situated on the outskirts of cities or in dedicated educational districts, reflecting the country's rapid urbanization and the need to accommodate large student populations. While this separation can create a sense of isolation, it also allows for the development of self-sufficient campuses with comprehensive amenities and facilities. Chinese campuses often feature their own shopping centers, restaurants, and recreational facilities, reducing the need for students to venture into the city. However, efforts are increasingly being made to enhance connectivity between campuses and urban centers, with improved transportation links and the development of mixed-use spaces that encourage interaction between the university and the community (Chen, 2003).

Recent initiatives, such as the Greater Bay Area University initiative and the development of integrated research-innovation zones, aim to remedy this disconnection. Transit-oriented development and mixed-use planning are becoming more common, facilitating better integration between academic and urban spheres.

Furthermore, the emergence of third spaces—cafés, co-working hubs, public art zones—at the university-city interface signals a new direction for campus-urban integration. These liminal spaces foster collaboration between students, residents, and professionals, blurring the boundaries of formal and informal learning.

Italian universities often exhibit a high degree of integration with their surrounding urban environments. Institutions like the University of Bologna are interwoven into the city fabric, with colleges, departments, and facilities dispersed throughout the city center. This embeddedness fosters a symbiotic relationship between the university and the city, promoting accessibility, cultural exchange, and economic vitality.

Public spaces within these campuses, such as courtyards, gardens, and pedestrian pathways, serve as communal areas that encourage interaction among students, faculty, and the public. The design of these spaces often reflects historical and architectural continuity, enhancing the aesthetic and cultural value of the urban landscape.

In contrast, Chinese university campuses have traditionally been developed as self-contained entities, often located on the outskirts of cities. This planning approach has led to campuses that are physically and functionally separated from urban life. However, recent trends indicate a shift towards greater integration with the city.

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Social and Cultural Dynamics

The use and perception of campus space are profoundly shaped by social norms and cultural expectations. In European settings, students often enjoy high degrees of autonomy, with informal peer learning, student-led associations, and liberal activism as defining features of campus life. Public spaces are animated by pluralistic activities—debates, music performances, sit-ins—which contribute to a vibrant intellectual culture (Altbach, 2004).

The social and cultural dynamics of European and Chinese campuses also reflect broader societal values and norms. European campuses often emphasize individualism, critical thinking, and academic freedom, with public spaces designed to facilitate debate, collaboration, and intellectual exploration. Students are encouraged to engage in extracurricular activities, join student organizations, and participate in cultural events, fostering a diverse and inclusive community. For example, the University of Amsterdam's campus features numerous public spaces that host lectures, exhibitions, and performances, creating a vibrant cultural hub for students and the wider community (Bender, 1988).

In contrast, Chinese campuses tend to prioritize collectivism, discipline, and academic achievement, with public spaces often serving as venues for group activities, ceremonies, and cultural events that reinforce national identity and values. Students are encouraged to participate in organized activities such as sports competitions, cultural festivals, and volunteer programs, fostering a sense of unity and shared purpose. For instance, the campus of Fudan University in Shanghai features a grand auditorium and a central square that host national celebrations and cultural performances, reflecting the university's role in promoting social cohesion and national pride (Hayhoe, 1996). Chinese campuses, furthermore, exhibit a more collectivist and institutionally mediated social structure. Residential life is organized in dormitories with strict curfews, and student activities are typically channeled through Communist Youth League branches or university clubs. This structured approach fosters

unity and discipline but may limit the expression of dissent or individuality (Marginson, 2011).

Additionally, gendered use of space can vary. European campuses increasingly implement gender-sensitive planning (e.g., well-lit paths, inclusive restrooms), while Chinese campuses are beginning to address gender disparities, especially in STEM participation and leadership roles. Cultural festivals, language exchange corners, and ethnic minority centers are emerging as inclusive initiatives on both continents, albeit at different paces.

Internationalization has also impacted campus culture. European universities have long histories of academic mobility and are home to diverse student populations. Chinese universities are catching up, with increasing numbers of international students and joint degree programs. The spatial and cultural implications of internationalization—language signage, halal canteens, interfaith spaces—are now part of the campus design agenda.

Learning Opportunities and Best Practices

The differences between European and Chinese campuses offer valuable learning opportunities for designing university environments that enhance learning, well-being, and community engagement. European campuses demonstrate the importance of preserving cultural heritage, creating inclusive and accessible public spaces, and fostering a dynamic exchange between the university and the city. These practices can inspire Chinese universities to incorporate more historic and cultural elements into their campus designs, enhance connectivity with urban centers, and promote greater individualism and academic freedom (Rüegg, 1992).

Conversely, Chinese campuses highlight the benefits of scalability, functionality, and holistic development, with public spaces that promote physical activity, relaxation, and cultural activities. These approaches can inform European universities in addressing the challenges of accommodating growing student populations, integrating modern amenities, and fostering a sense of community and shared purpose (Chen, 2003).

So, to summarize, the comparative analysis of Italian and Chinese university campuses reveals several learning opportunities:

Designing for Integration: Italian campuses demonstrate the benefits of integrating academic institutions into the urban fabric, promoting accessibility and community engagement. Chinese campuses can adopt similar strategies to enhance connectivity with their host cities.

Enhancing Public Spaces: The multifunctional public spaces in Italian campuses serve as models for creating environments that support social interaction, cultural activities, and academic collaboration. Chinese campuses can incorporate such designs to enrich campus life.

Adaptive Reuse and Sustainability: Italian universities often repurpose historical buildings for modern use, balancing preservation with innovation. This approach can inform sustainable development practices in Chinese campuses.

Community Engagement: Both contexts can benefit from fostering partnerships between universities and local communities, encouraging shared use of facilities and collaborative initiatives.

Conclusion

The differences between European and Chinese campuses reflect the unique historical, cultural, and social contexts of their respective regions, offering valuable insights into the design and functionality of university environments. By examining these differences, we can identify best practices and innovative approaches to creating inclusive, accessible, and vibrant public spaces that enhance the quality of life for students, faculty, and the broader community. Ultimately, the exchange of ideas and experiences between European and Chinese campuses can contribute to the development of university environments that foster effective learning, social interaction, and community well-being in an increasingly interconnected world.

The design and integration of university campuses significantly influence the educational experience and the relationship between institutions and their host cities. Italian campuses, with their embedded urbanism and vibrant public spaces, offer valuable insights into fostering community engagement and cultural continuity. Chinese campuses, through planned development and emerging integration efforts, present opportunities for innovation and sustainable growth.

By learning from each other's experiences and best practices, universities worldwide can create inclusive, dynamic, and resilient campuses that serve both academic and societal needs.

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Responsive Open Campus Savona

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Framework

In the emerging society of information, knowledge, and environmental and social awareness, traditional spaces for research and knowledge dissemination require new synergistic approaches with the increasingly polycentric city, strategically reorganizing itself through physical and virtual networks of exchange, interconnection, and nodal hubs of attraction and interaction.

The concept of the University Campus itself, traditionally seen as a specific functional space dedicated to study and research, must now align with contemporary challenges that necessitate a more open and inclusive re-

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lationship with environmental, ecological, social, cultural, economic, and productive factors. These challenges demand new spaces and multifunctional redefinitions. Spaces thus transform into new attractive polarities or mixed multi-relational nodal points capable of interacting with nearby potentials such as landscapes, heritage sites, public structures, infrastructure networks, recreational-gastronomic systems, and mobility flows, among others, to foster new urban-strategic “clusters.” The old paradigm of Inner-Campuses (closed and centralized) is evolving towards Open-Campuses (open and inclusive).

Within this context, particularly in Europe, several projects are emerging that aim to redefine, convert, and/or reactivate existing university campuses. Significantly, many of these campuses are situated in contexts characterized by qualitative environmental factors, such as proximity to the coast, sea, or beaches. Increasingly complex “knowledge” not only calls for the traditional necessity of “concentration” (mental, spatial) but also evokes a new desire for “expansion” (transversal, relational) and “interaction” (social, territorial).

Urban renaturalization processes have led to a “hybrid” redefinition of former university spaces, such as: the Polytechnic University of Barcelona, divided between Diagonal North and South of Barcelona; the new territorial challenges faced by the Rovira i Virgili University campuses and their intermediate relationship in Reus, balancing urban environment and agricultural gardens; the expansion of the International University of Catalonia campus and its interaction with educational, cultural, and university centers along Ronda de Dalt (a ring road transformed into a virtual “axis of knowledge” connecting shared structures); the mixed potentials of the new Montpellier University campus with its urban-territorial vocation; the diversification and interconnectedness of new university centers at Leibniz University Hannover; the multiple eco-systemic circuits (sea-mountain) associated with the University of Genoa’s various campuses; and, notably, the new pivotal role of the Savona Campus with respect to the city itself. Its environmental-landscape redesign, proximity relationship with the municipal stadium, revitalization of industrial heritage, and interactions with other urban nodes exemplify a new networked approach emerging today, facilitating the exchange of models and experiences.

This research theme has been and continues to be developed through existing inter-campus agreements between UNIGE and UIC (International University of Catalonia, Barcelona), URV (Rovira i Virgili University, Reus-Tar-

ragona), ENSAM-Montpellier, and Leibniz University Hannover, alongside contributions from Design and Urban Planning Laboratories within the Master's Degree in Architecture (Department of Architecture and Design, UNIGE) for academic years 2021-2022 and 2022-2023, and the Master's Degree in Product and Event Design for the academic year 2022-2023.

University common spaces as links between University and City

The strategic role of Italian universities within the urban and territorial context is at the center of the study "Università e città" by the Conference of Italian University Rectors (CRUI), which highlights universities' potential as catalysts for innovation, sustainability, and urban regeneration, emphasizing the cultural economy of cities. Indeed, university spaces can become authentic hubs connecting academic knowledge with urban reality, promoting joint initiatives among universities, local administrations, and civil society.

A significant historical example is Giancarlo De Carlo's project for the university colleges in Urbino. Here, the university was conceived as an articulated, multipolar system where the settlement principle finds a balance between private, public, and semi-public spaces. This approach fostered active interaction between students and residents, creating an inclusive and open environment. The project, born from innovative collaboration between the Superintendency, Municipality, and University, resulted in a settlement meeting the needs of both the academic community and local residents. De Carlo envisioned the university college as an open and dynamic system, replicating the urban elements of the historic city and thus anticipating modern concepts of student housing (Didonna, Renzullo, 2024).

In recent years, numerous redevelopment projects have aimed to integrate university campuses with their surrounding urban fabric, transforming them into tools for connection, regeneration, and innovation in public space usage. A notable example is Columbia University's Manhattanville Campus. Located in Harlem, this campus was designed not merely as a place for study and education but as an accessible and inclusive urban space. The project, conceived by Renzo Piano Building Workshop in collaboration with Skidmore, Owings & Merrill (SOM) and Diller Scofidio + Renfro, transformed an abandoned industrial periphery into an open environment without gates or walls, accessible to citizens and enriched by cultural programs for neighborhood residents.

The master plan involves constructing new buildings across four contiguous blocks, integrating public and private spaces fluidly. The buildings' ground floors extend the urban space, creating continuity between green areas, gardens, and squares. Project objectives include creating 6,000 new jobs and strengthening the local economy. This campus exemplifies an innovative integration model between academia and the city, fostering an environment conducive to collaboration and sharing (Columbia, 2022).

Similar projects in Italy have also demonstrated how transforming university spaces can enrich the urban fabric. An emblematic case is Milan's new Bocconi campus, designed by SANAA studio on the former Centrale del Latte industrial site. This decommissioned industrial area has been converted into an urban park accessible to both the university community and citizens. Covering 35,000 square meters, including 17,000 square meters of greenery, the campus features open spaces with internal courtyards typical of Milanese architecture, ideal for socializing, studying, and meeting (Tedesco, 2019).

The project creates a green axis connecting Parco Ravizza to Parco Baravalle, extending to the Parco delle Memorie Industriali. The buildings' porticoes protect garden paths, making spaces usable year-round. Access to buildings is facilitated by the SDAB Life app, offering services such as event and news consultation, access to educational content, and personal QR code entry for course or event participants, replacing traditional badges. The app also allows space reservations (classrooms, offices, lockers) and guest invitations via QR code. An interactive map aids navigation, while electronic access is managed directly through the app (Tedesco, 2019).

An integrated approach can transform university campuses into catalysts for urban regeneration and innovation. Promoting synergies among universities, cities, and local communities creates spaces that meet academic needs and drive social and economic development.

The Savona Campus as a relational hub

The educational experience described was conducted during the 2022/2023 academic year at the Savona Campus of the University of Genova, as part of the Urban Design course undertaken by first-year Master's students in Product and Event Design. Students developed designs for collective, accessible spaces, incorporating facilities not previously

available. In addition to enhancing campus usability, students also devised design strategies aimed at reconnecting the campus with the city of Savona, utilizing various digital tools.

The establishment of the Savona Campus has been a significant opportunity for the city, transforming the area formerly occupied by the Bligny barracks. From 1930 to 1990, the entire 55,000 sqm area was enclosed by a high wall, which still stands today outside the current university campus. Urban redevelopment in the 1990s converted existing structures into university buildings.

Each year, nearly 1,700 students live and study in this environment, reinforcing its role as a hub for knowledge and progress. With a strong focus on advanced research, technological innovation, and sustainability, the campus serves not only as a center for academic excellence but also as an economic development driver. The campus hosts start-ups and innovative companies, particularly in the IT and green technology sectors. It provides an excellent experimental context, featuring numerous energy-generation systems such as Smart Polygeneration Microgrid (SPM), photovoltaic systems, solar thermodynamic systems, electric storage systems, and electric vehicle charging stations.

Opening the campus to the wider community further amplifies its role as an attractor and catalyst for best practices. Permanently removing barriers between university spaces and the city was therefore a primary design objective for the students. This task presents challenges, given the campus's peripheral location relative to Savona's urban center. However, leveraging digital connectivity and integrating new mobility and accessibility strategies can bridge the gap between campus and city.

Through innovative solutions, students envisioned a network of shared spaces and pathways designed to foster more direct and fluid interactions between the campus and urban fabric. These interventions aim not only to enhance space usability but also to encourage greater involvement from the local community, thus strengthening the connection between the university and the city of Savona.

Responsive Campus: the common space in-connection with the city of Savona

In reviewing the individual projects presented, the transformation of the campus into a responsive environment emerges as a long-term strategic

goal, both for the university and for the city, aiming to foster necessary connections and openings for better spatial integration. At the end of the course, an on-site workshop was conducted, enabling students to create project prototypes through the construction of physical elements as well as experimentation with digital applications or augmented reality.

Students' projects identified three scales of intervention:

1. Object-scale interventions within the common campus spaces designed to enhance social life and equip currently unorganized areas.
2. Urban connectivity scale, both physical and digital, intended to strengthen the relationship between the campus and the city by designing specific applications linking physical spaces to digital environments.
3. Communication scale, involving campaigns to engage citizens in the identified projects through physical means such as banners and posters, and digital channels via social media campaigns.

Savona OnLines (Gabriele Coldani Filippo Gentilini Silvia Lagomarsino Matteo Macciò Irene Ratti)

The project was initiated with the intention of creating a network of diverse pathways connecting the Savona University Campus to the city center.

The thematic areas analyzed to identify design solutions included:

- Access to the facility
- Users of the facility
- Potential opening to external audiences
- Possibility of multifunctional uses of the Campus
- Campus openness towards the city
- Creation of pathways connecting the Campus with the city

Beginning with the design and implementation of a prototype study area in the campus's outdoor spaces to optimize common open areas, the project expands the connectivity possibilities of the Campus. It develops pathways designed as connecting threads throughout the city of Savona, embracing the University Campus. The element designed within the campus can be extended into urban spaces, adapting them according to the identified pathways to engage the local community.

The identified pathways, linked by signage and street indicators, connecting the campus to the city, are:

1. Neighborhood Path (yellow): connects the Campus to the city through exploring local traditions specific to each neighborhood involved.
2. Social Path (green): connects the Campus to the city emphasizing social interaction and collaboration among local residents.
3. Natural Path (blue): brings the Campus closer to the city through nature-related experiences.
4. Gastronomic Path (purple): utilizes the theme of gastronomy to link the Campus and city.
5. Cultural Path (pink): connects the Campus to the city through cultural activities.
6. Sports Path (orange): links the Campus with the city through sports-related activities.

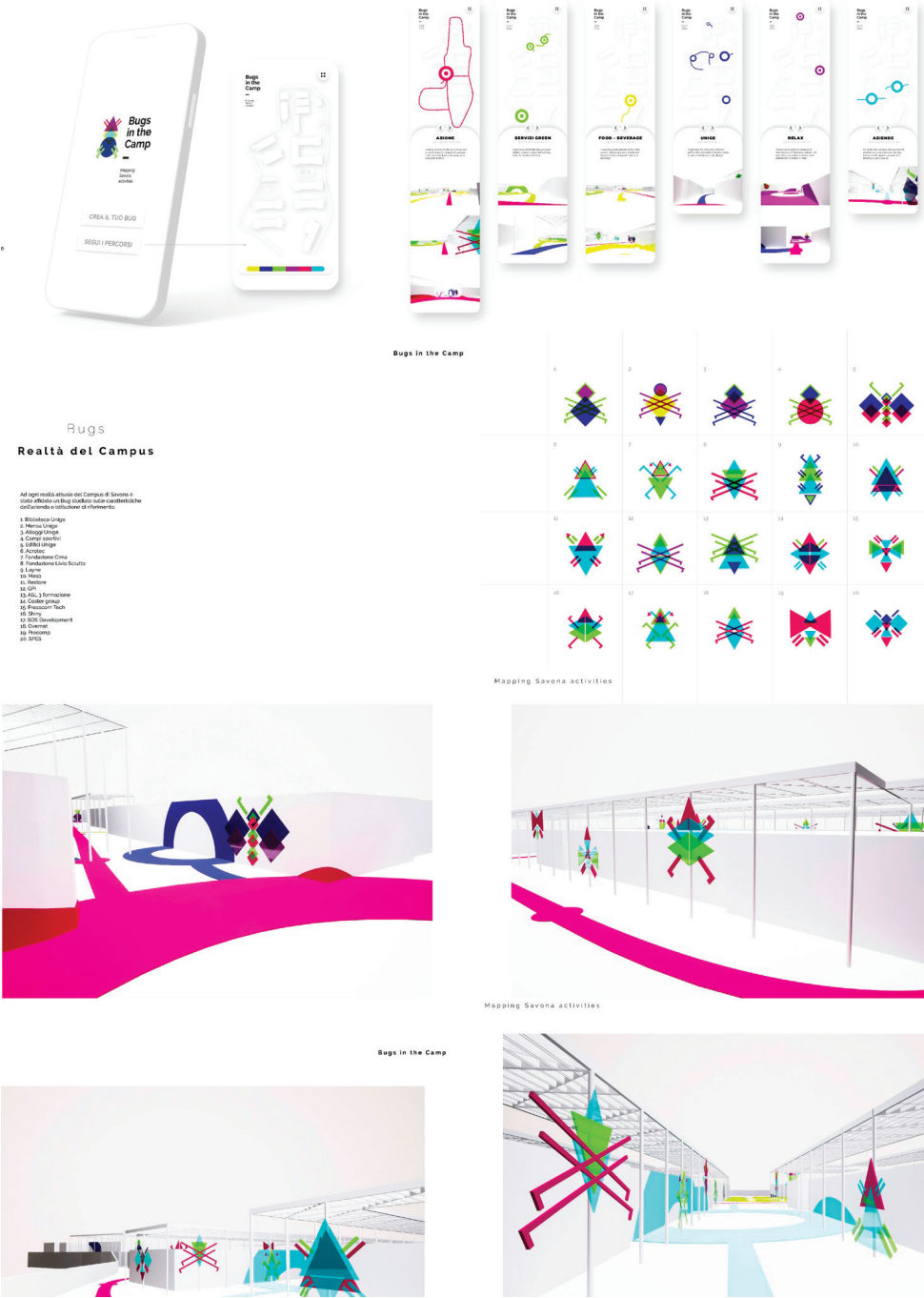
Additionally, the “OnLines App” was developed to enable the monitoring and reservation of city and campus spaces, using the thematic paths as a backdrop for exploring the city.

Bugs in the Camp. Mapping Savona activities. (Tiziana Iorio, Arianna Matassini, Raffaella Parodi)

The origin of the term “bug” is ancient and uncertain, but the most popular anecdote dates back to September 9, 1947, when a Harvard University team led by Lieutenant Grace Hopper was working on the Mark II, one of the earliest computers in history. The researchers detected several malfunctions, ultimately identifying the cause as a moth that had infiltrated the machine. Thus, the first computer “bug” in history was literally a bug!

“Bugs in the Camp” aims to breathe new life into the Savona Campus by enhancing its usability and interaction with the city through a series of visual elements bridging reality and virtuality. The intervention, designed to be quickly and easily implemented, includes graphic symbols identifying interactive pathways and “bugs,” symbolic markers of actions, places, and people.

The technological essence and sustainable approach of the Savona Campus merge in the “bug” concept. The bug provides each location with a strong visual identity and delineates pathways and actions. Composed of simple geometries and vibrant colors, bugs become the campus mas-



cots, accompanying those engaged in campus activities: study, work, relaxation, and sports.

Each part of the bug, from body to legs, has an assigned meaning explained on a legend, enabling customized creation based on specific characteristics. These little insects serve as connectors between the physical world and software, swiftly moving across campus and interacting with individuals.

Inspired by the London underground map, pathways color the spaces, identifying different zones and guiding exploration and use of the Savona Campus. In physical spaces, these paths can be simply painted on sidewalks and roads. Specific areas designated for relaxation, businesses, and food and beverage can feature seating, loungers, and tables designed as extensions of parts of the pathway itself.

Colors differentiate various activities, while shapes indicate gathering spots, resting areas, or transition zones like entrances.

Both bugs and pathways exist in physical and virtual realms. The app's "My bug" section allows users to create their personalized bug through simple steps, selecting shapes, legs, and colors based on their inclinations, personality, or role. Once completed, the customized bug can be shared on social media, boosting engagement with the Savona Campus and actively involving users and visitors in shaping its identity.

The "Follow the pathways" section provides an overview of all pathway types, offering detailed insights. Clicking on a pathway's color reveals information about its theme, allowing users to virtually follow it.

Fold-up (Alice Acquisgrana, Marta Leita, Valentina Massari, Arianna Mustafà)

Fold Up is an urban installation designed for the Savona University Campus. The project's name blends the concepts of folding (fold) and lifting/opening (pop-up), inspired by origami—the ancient Japanese art of paper folding used to create three-dimensional forms. This concept merges origami with contemporary graphic elements inspired by the Campus layout, generating a strong visual identity.

The graphics and origami installations aim to revitalize perimeter walls and anonymous buildings within the Campus, transforming surrounding spaces into artistic compositions. However, Fold Up transcends mere

Figure 1 -
Bugs in the
Camp. Map-
ping Savona
activities. Im-
ages by Tiziana
lorio, Arianna
Matassini, Raf-
faella Parodi.

decorative installation. Central to the project are floral origami structures, two of which incorporate smart sensors to monitor various environmental parameters:

- Wet Fold Up, detecting humidity
- Air Fold Up, measuring air pollution
- Light Fold Up, illuminating campus areas

Additionally, a fourth origami, Music Fold Up, will function as a campus radio in various locations. The idea for these technological origami emerged because similar sensors already exist on campus.

Some origami structures react dynamically, opening and closing based on sensor data, thanks to motorized mechanisms. Users can access collected data for study purposes through QR codes placed near the installations.

The origami are strategically positioned at intersection points of graphic lines on the walls, emphasizing interconnectivity within the university campus. This arrangement fosters visual continuity and harmony among the installations, strengthening campus identity and promoting community belonging.

Fold Up represents an ideal blend of contemporary design's strong, modern lines and origami's inherent delicacy. This combination of technology, art, and design creates a unique atmosphere for students, faculty, and visitors to experience and interact with. Fold Up enriches the academic environment, transforming it into a vibrant, stimulating space that reflects the innovation and identity of the Savona University Campus.

Catch me – never stop – lay me down Savona (Alina Anzola, Chiara Caprioli, Siting Shao, Viviana Spina, Francesca Venturi)

The project consists of a university mural featuring characters representing each faculty, with raised installations created using reclaimed tables and stools affixed directly to the wall. The structure is designed to be modular and storable, allowing students to reconfigure the space as needed, while also enabling them to clear it entirely for greater organization when necessary. The murals introduce vibrant color to the area without adding cumbersome structures.

The Campus hosts the faculties of Medical and Pharmaceutical Sciences, Social Sciences, and Polytechnic School. The mural aims to reflect these fields of study through relevant illustrations, emphasizing interdisciplin-

ary connections among students. Depending on their requirements, students can move and reposition tables and chairs, using them for dining, studying, or socializing.

This equipped wall, designed to enhance conviviality and social interaction on Campus, also serves as the primary interface for a game application. Through a QR code, users can access augmented reality, select their preferred character, and share it on social media using Instagram filters. This approach reinforces Campus identity and boosts student engagement, encouraging digital interaction among students and strengthening the campus community.

Savona.net (Boyu Chen, Sara Gualtieri, Patrizia Puzzanghera, Teresa Trovatelli)

Savona.net is an urban project conceived to provide a visual identity to the city of Savona and connect it with its University Campus. The theme of the network is what links the project, Campus, and city; the network is understood not only physically but primarily socially, as a web capable of connecting city streets, campus faculties, and students. Within the Campus, along its perimeter wall, a system representing this interconnected network has been developed, resulting in a dynamic, inhabitable, interactive, and multifunctional wall composed of fixed structural elements and modular mobile components.

The entire composition maintains a unified and coherent appearance through a consistent style and a specific color palette, granting the system a distinct and personalized identity. A variety of modules, specifically designed for students' needs, are attached to the metal mesh support structure.

Each object must be exceptionally lightweight to be supported by the structure and minimal in size to avoid excessive protrusion from the wall. Bulky items such as chairs and tables are designed to be foldable and transformable, allowing them to hang flat on the grid as two-dimensional panels when closed. Collectively, these closed panels form an iconic monochrome mosaic.

Students are free to select the panel they need, transform it into a three-dimensional object, and use it to personalize and inhabit their own spaces. Each module is organized according to the categories and colors of the four zones within the Savona.net system: study area, mobility area,



relaxation area, and green area. Each space is characterized by a strong, bright, and distinctive color, contributing collectively to the Campus's visual identity. The Campus thus creates an authentic knowledge network linking diverse disciplines, universities, and businesses in a single, multi-faceted entity. To become part of the virtual community, users can simply scan the QR Code on each object attached to the grid, which leads to an interactive board where everyone can leave and receive messages, sharing favorite songs, books, films, or meaningful quotes.

Figure 2 -
Savona.net.
Images by
Boyu Chen,
Sara Gualtieri,
Patrizia Puz-
zanghera, Te-
resa Trovatelli.

The Savona Campus as a relational hub

The university campus is evolving towards a more inclusive and integrated vision with its urban and territorial context. In contemporary society, characterized by high levels of physical and digital interconnectedness, student projects are transforming the campus into an open and responsive environment, moving beyond the traditional concept of a closed academic space, thus promoting sharing, interaction, and collaboration with the surrounding environment.

Projects aimed at redeveloping spaces to enhance internal livability strengthen the connection with the city of Savona, seeking to eliminate both physical and digital barriers between the campus and the urban fabric, effectively positioning the campus as a relational hub between the university and the city.

This open and responsive approach fosters dialogue between the academic community and local citizens, promoting dynamic and inclusive exchange. This type of transformation makes the campus not merely a place for study and research but also a catalyst for urban regeneration, linking physical and digital spaces to make them accessible and attractive to the broader community, thereby strengthening the bond between the university and the city.

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University Campus in cities for regeneration of urban and public spaces: three case studies (Florence, Milan, Venice)

Giulio Hasanaj^{*},
Sandra Carlini^{**}

Models of campus integration between cities and universities

Universities, as centres of education, research and innovation, are a key element in the cultural, social and economic development of cities. Integration between university and city is a crucial issue, as campuses are not isolated entities, but integral parts of a larger urban system. In this context, the design of open and public spaces assumes a central role. These spaces, in fact, are not only passageways or leisure, but real 'catalysts' of social relations, which promote the university community's well-being and strengthen the link between the university and the city (Annese et al., 2023).

If we think of the well-known campus model in the Anglo-Saxon tradition, this is characterised by being an independent, low-density settlement with wide green areas, generally outside the urban fabric and mainly connected to the university institution. In this context, a whole

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series of monofunctional buildings are distributed around the spaces for education and research, for student and lecturer residences (dormitories and accommodation) and for complementary services such as libraries, auditoriums, canteens, gyms, sports facilities, study and meeting places. In contrast to this model, the settlement pattern of universities historically widespread in Italy is that of the model integrated with the city. This model expresses a logical evolution of the history of the Italian university system in which universities have consolidated in their locations, often located within what are now our historical centres, over time. According to this approach, the Italian university reality is generally not, as in the case of the campus, an independent and closed context but, on the contrary, strongly integrated with their urban context. Thus, in a vital and continuous relationship, university students become an active part of the cities that host universities, making use of their wide variety of services (shops; restaurants and eating places; contexts of culture, entertainment, recreation; sports facilities, gyms, swimming pools; green spaces and public parks), sometimes strongly motivating their presence with positive benefits for the entire community. In this way, the university institution, in a reciprocal contamination, contributes to a social revitalisation of the spaces in which it is inserted and triggers virtuous processes of redevelopment, offering an important contribution to the cultural and social life of the urban context that hosts it (Carlini, 2009).

The settlement model of the university campus has long remained foreign to the Italian tradition. In fact, it was only in the last century that the concept of the university campus began to be considered in our country with the construction of the first university campuses proper. With specific reference to 'universities with a residential character' in which, in addition to educational facilities, residences for students and lecturers with related services (canteens, libraries, theatre, cinema, sports centre, laundry, post office, bank) have been associated, one may mention the significant case of the University of Calabria campus, built in the municipality of Rende in accordance with Law No 442/68 ('Istituzione di un'università statale in Calabria').

The revision of the urban plans of some cities and the processes of rationalisation of the educational and scientific programmes undertaken by various universities, in order to satisfy the need to centralise the facilities serving university students that were previously spread out in the urban fabric, have led to a progressive increase in the number of Italian university campuses. These university hubs, however, have often significantly continued to remain within the cities themselves and, sometimes being

located in areas of urban sprawl and in peripheral and marginal areas, have made possible interesting and virtuous redevelopment processes.

Environmental sustainability and nature-based solutions in urban university settings: the case of student residences

With regard to the focus on environmental sustainability, there is a new interest in outdoor spaces serving university students. These spaces for recreational, sporting and cultural activities are proving to be very important in fostering a process of social integration among all potential users by establishing a 'continuum in the social context and services'. This term was already used at the beginning of the new millennium in Annex A, 'Minimum quality standards' concerning guidelines in the purpose of the student housing service, to Ministerial Decree No. 118/2001 implementing Law No. 338/2000 of 14 November 2000 'Provisions on accommodation and residences for university students' (Carlini, 2016).

It is precisely Law 338/2000, which established a multi-year programme of state co-financing for the construction of new student residences, defining, for the first time at national level, qualitative-quantitative parameters and benchmarks for this type of building (Carlini, 2014). Moreover, with its latest implementation (5th call: Ministerial Decree 1256/2021 and 1257/2021), it has incorporated the EU directives on sustainability, promoting actions that contribute to the implementation of the Paris Agreement and the UN Sustainable Development Goals, aligning itself with the European Green Deal. Within this regulatory framework, compliance with the principle of Do Not Significant Harm (DNSH), a direct consequence of the planned use of European funds from the PNRR (National Recovery and Resilience Plan, Next Generation EU), combined with the Minimum Environmental Criteria (CAM), becomes fundamental for the co-financing of the projects presented. In this context, sustainability according to DNSH is investigated with respect to climate mitigation and adaptation, sustainable use of resources towards a circular economy, pollution prevention and reduction, and protection and restoration of biodiversity. Similarly, CAM represent environmental requirements for the identification of better design solutions, products or services from an environmental point of view along the life cycle. From the preliminary examination of the technical-administrative documentation of the projects received in the 5th Call for Proposals, it can be seen that nature-based solutions represent design solutions involving both open spaces and

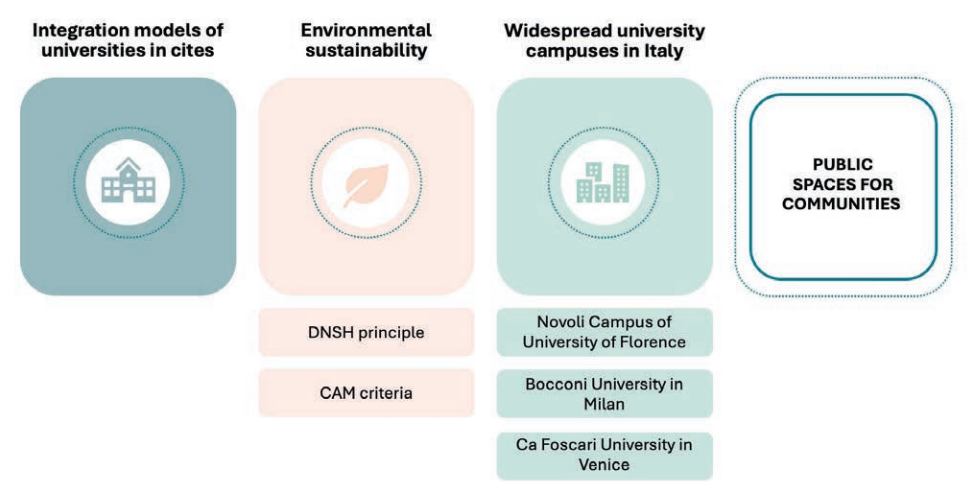
buildings. These solutions mainly concern new construction, focusing on roofs, with green roofs, and external areas for climate mitigation and adaptation. The latter include pavement renovation through the replacement of asphalt with permeable stabilised soil and an increase in vegetation and trees to improve soil quality and lower the level of pollutants reaching the water aquifer. An intervention uses a CLT (Cross Laminated Timber) support structure and includes a reforestation programme for the campus in which new trees will return the wood mass used for the construction within thirty years.

What in terms of sustainability applies to university residences is also reflected in the broader urban context that hosts them. And in this sense, also starting from the analysis of a number of student residences, we have identified a number of university hubs configured as urban campuses that are particularly interesting for the capacity they held to redevelop the urban areas in which they were built. These have constituted, due to the open spaces they have generated, new meeting places and green areas for the use and benefit of students and all citizens (1).

The social sciences campus of the University of Florence in Novoli

Figure 1 -
Conceptual
outline of the
contribution
(Source:
Authors' elabo-
ration).

Around the early 1990s, the University of Florence, noting a shortage of space for teaching and research, began a process of rationalisation and redistribution of its facilities based on a policy of decentralisation. In the context of the University of Florence's Building Plan of those years, an



ambitious project for the transformation of the university and urban system was launched. The project envisaged four new university hubs integrated with the development of the city: the scientific-technological campus in Sesto Fiorentino, the social sciences campus in Novoli, the biomedical campus in Careggi and the humanities faculties in the historical centre. This urban renewal process was based on the redevelopment and enhancement of the historic centre in synergy with the neighbouring productive context. Among other objectives of the Plan was the dissemination of knowledge across the entire city through the creation of permeable and attractive university libraries, the enhancement of existing university science museums and the extension of university activities on a provincial and regional scale. These actions also included an expansion of residential services and mobility infrastructure with new urban lines, revision of road layouts, extension of the number of bicycle lanes and more (Del Nord R. et al., 2005).

Of the four university hubs planned and realised by the University of Florence, the Social Sciences Campus in Novoli has emerged as an emblematic example, catalysing the attention not only of the university and city administration, but also of residents, students and planners.

The Novoli university campus was created from the conversion of the former FIAT disused industrial area, which until the mid-1990s occupied a large central area between Via Forlanini, Via di Novoli and Viale Guidoni. The intervention site, despite being perceived as an identity element of the area because it was strongly linked to the workers' movements of the 1970s and 1980s, has undergone significant building interventions that have radically changed its original urban and architectural layout. In fact, the redevelopment project of the area involved the total demolition of the pre-existing buildings, with the exception of the Central Heating Station (today's Urban Center) and the construction of a settlement with mixed functions (university, tertiary, residential, office, commercial) with a large central park (Giovannini, Potestà, 2004).

The project for the Social Sciences University Hub in Novoli (which is part of the mixed functions assigned to university activities) dates back to the early 1990s (1993-94) on the basis of Leon Krier's Master Plan and Gabetti and Isola's Recovery Plan. The project led to the construction of buildings for the Faculties (now Departments) of Economics and Business, Law, Political Science and the Interfaculty Library of Social Sciences of the University of Florence. The latter, in particular, represents an added value for the campus as it can accommodate up to 1,000 students at the same time and has over

900,000 volumes dedicated to economics, law, sociology and politics.

The Novoli Campus is organised into seven buildings containing administrative offices, classrooms for teaching, auditoriums, research areas, student centres, secretariats, study rooms, libraries and a canteen. This functional concentration of environments allows students to enjoy all the services necessary for university life within a few hundred metres of the Campus.

The architectural design of the Novoli Campus is by the Natalini Architetti Firenze studio, which conceives the campus buildings as palaces inspired by Florentine Renaissance architecture, a sort of 'city palaces' where academic spaces are integrated with the surrounding urban context. The buildings are characterised by a clear volumetry, respectful of the street alignments, with a clear division between basement, main floor and attic. The blocks face a central internal street that ends with the university library, with its monumental book tower and open loggia at the base. The university complex ends with a square with trees that opens up the view of the nearby San Donato Park (Savi, 2002).

The proportions and materials of the campus buildings are inspired by the forms of the historic city: brick façades, evoking the warm tones of Florentine buildings; colonnades and loggias, as typical elements of the Tuscany tradition that create spaces for students and lecturers to interact; green areas and internal squares, designed as places for gathering and socialising. The project combines in itself the didactic function and a socialising place.

The San Donato public park located on the west side of the campus represents the reconnecting element of the entire urban context: a total area of approximately twelve hectares around which the 36 urban blocks separated into two sectors, east and west, has developed. Designed as a multifunctional space, it offers large green areas, pedestrian and bicycle paths, children's play areas and spaces for recreational activities. The park has become a landmark for residents and students, integrating with the nearby university campus and representing an example of how urban redevelopment can combine sustainability, well-being and sociality.

The Bocconi University campus on the site of the former Centrale del Latte in Milan

In Milan, the area of the former Centrale del Latte was selected as the site for the New Bocconi Campus, inaugurated in 2019 and covering a

total area of approximately 3.5 hectares. The winner of the international competition launched in 2012 for this project was the SANAA studio, led by Japanese architects Kazuyo Sejima and Ryue Nishizawa (recipients of the Pritzker Prize in 2010). Their design proposed a cohesive and integrated campus, seamlessly connected with the urban fabric and open to the city, demonstrating a strong sensitivity to the landscape.

The interest of this large intervention of cultural and functional scope and of high architectural and urbanistic quality consist in the regeneration and redevelopment of a large semi-central city area. Thanks to the presence of green areas and services, the site becomes a new attractive hub for the urban context and a driver for the realisation of new projects of social interest for the neighbourhood and the city. A tangible example is the agreement established by Bocconi University with the solidarity organisation for people in difficulty, Pane Quotidiano.

The buildings that make up the campus include the new headquarters of the SDA Bocconi School of Management, the Castiglioni student residence (DORMS), developed in a nine-storey cylindrical tower, and a Recreation Centre featuring a multifunctional sports complex accessible to the community, including swimming pools, a fitness area, and a basketball/volleyball court. These structures are set within a public park covering nearly two hectares, where pathways are defined by arcades and canopies that seamlessly follow the organic forms of the architecture. The natural context, recreated through the selection of native species such as white hornbeams, black poplars and oaks, ideally penetrates and dialogues with the interior spaces through the light and views provided by the transparent façades of the buildings and their curved volumes that are inspired by traditional courtyard buildings. The pedestrianisation of certain public areas and the creation of the park have improved accessibility and connection with the surrounding urban spaces. This intervention has also established a long green corridor between Parco Ravizza and Parco della Resistenza, extending southwards to the Parco delle Memorie Industriali in the former OM area (Todesco, 2019).

Among the interventions carried out on the campus, the university residence was notably awarded the "Romano Del Nord Best Residence Award" in 2020. Among the reasons for this award, the jury highlighted not only the quality of the project but also the broad scope and urban impact of the intervention. It was recognised for its ability to contribute to the characterisation of the context and to serve as a model for other future similar experiences of urban transformation. Additionally, it was

noted that the residence has become an important quality-driven attraction, even from a tourism perspective (Carlini, Hasanaj 2023).

The campus of Ca' Foscari University in the former macello San Giobbe area in Venice

The San Giobbe Campus in Venice, designed by architect Vittorio Spigai, stands on the site where Le Corbusier, in the 1960s, had envisioned the design for the city's hospital. It is located in a highly visible area at the edge of the lagoon city, between the Cannaregio Canal and the railway line, which has been connected to it since 2017 by a specially constructed metal bridge (Toffolon, 2021).

The site of the intervention included disused industrial buildings used as the Slaughterhouse of San Giobbe, the Passuello Mills and other disused areas on the lagoon front characterised by severe degradation.

The unrealised hospital project by Le Corbusier was intended to be an innovative building, accommodating 1,200 beds. The design was to be inspired by the Venetian city, with a modular, horizontal structure, integrated into the urban context and surrounded by water, in which the starting point was to be the accommodation (Bonelli, 1976).

It is not a coincidence that, for the San Giobbe university hub of the Ca' Foscari University's Economics Campus, housing has been a fundamental point of arrival. The complex, inaugurated in 2021, is the result of restoration and new construction works, providing 229 student accommodation units as well as extensive open spaces. The structure consists of seven buildings, spans five above-ground floors, and has a total surface area of 6,600 square metres.

The campus is integrated into the city context by offering a wide range of residential spaces for students and many common service areas for both students and residents. The ground floor is dedicated to services (bar-cafeteria, music and theatre rehearsal rooms), which are also open to the city thanks to an agreement between the University and the municipality. Here there is a large internal courtyard, which forms a connection between the campus and the city. The upper floors are used for accommodation and related services. The rooms, 79 single or 75 double, all equipped with private bathrooms, are intended for meritorius students with limited financial resources who come from outside the region and abroad. There are many common areas, designed according to the spe-

cific needs of the occupants: 4 study rooms, relaxation and living areas, 5 meeting rooms, a gym, an internal laundry, a periodical archive, a reading room, various kitchens distributed across the floors, and a panoramic terrace with a view of the lagoon (Bologna & Piferi, 2024).

The building, classified in energy class A2, is equipped with systems and technological solutions to optimise energy consumption. It features solar thermal and photovoltaic panels, systems for rainwater recovery, and magnetic contacts on the windows, directly connected to the room management system, which automatically deactivate the heating and air conditioning when the windows are opened. Additionally, presence and light sensors regulate the lighting in rooms with natural light and in the corridors, ensuring further energy efficiency (Toffolon, 2021).

The brick facades are alternately topped with copper roofs for the new buildings and traditional tiled roofs for the parts to be preserved. The sense of the San Giobbe university campus is particularly reinforced by its courtyards and covered open spaces, which, thanks to the presence of vegetation, benches, and tables, contribute to the educational offer for the many communities in the area. Notably, the campus was awarded in the sixth edition of the Professor Romano Del Nord Prize in 2023 for the best Italian university residence for its “quality of design and the solutions adopted, which result in an ideal integration within the urban context, from an urban planning, architectural, and detailing perspective. [...] as well as for its ability to generate social impacts, including through processes of refunctionalisation and urban regeneration”.

Conclusions

In recent decades, the reorganisation of Italian universities has led to the centralisation of educational and scientific activities. This has, in many cases, enabled the recovery and reuse of abandoned, disused and degraded urban areas with generally positive outcomes in various respects. The three case studies presented are significant examples of conversion projects. These projects address the challenges and opportunities of re-developing disused areas. By adopting an integrated approach involving institutions, designers, and local communities, it is possible to generate value, improve the quality of life and create new identities for the areas involved (2).

University campuses and hubs, when open to the public, can sometimes provide services to neighbourhoods that lack them (such as gyms and



Figure 2 -
Views of public spaces in the contexts of the Bocconi campus in Milan, the San Giobbe campus of the Ca' Foscari University in Venice, and the Social Sciences campus of the University of Florence (Foto: Archivio Centro TESIS).

sports facilities). In response to the increased demand generated by the presence of students, new facilities can be created, giving these urban areas renewed attractiveness and, within the city, a new centrality.

In the context of the quality offered by urban regeneration projects, green spaces, especially if they can be used not only by the university community but also by citizens, actually prove to be an important added value. Due to the size they often have, their potential can be seen in their ability to trigger a dialogue with the context in which they are inserted. This process generates positive impacts at the urban planning level, stimulating further redevelopment and reorganisation processes. Moreover, it increases the value of their surroundings and effectively contributes to social integration capable of making spaces vital for the benefit of all users.

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Reimagining University Campuses: Spaces for Innovation, Learning, and Community

*Alvisi Kirimoto**

Reimagining University Campuses: Spaces for Innovation, Learning, and Community

Introduction

University campuses are complex and articulated spaces, comparable to urban microcosms in which different and complementary dimensions intertwine. They are not limited to being places of education and research, but present themselves as multifunctional ecosystems in which work activities, socialization dynamics, cultural production, innovation and, last but not least, community gathering processes coexist. This plurality of functions is fundamental for the construction of a dynamic and inclusive university community, capable of fostering interaction between the multiple actors involved and the urban context in which the campus fits, to the point of becoming a true extension of the city fabric.

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The interconnection between people and spaces, as well as the permeability between the academic and urban environments, contribute to a more dynamic and unconventional educational experience, going beyond the traditional didactic model. This character is made possible, among other factors, by the presence of accessible public spaces, such as squares, gardens and green areas, which, in addition to offering alternative places of study, can act as catalysts for events and initiatives open to citizenship, strengthening the link between the university and the territory. In this perspective, such environments assume a crucial role in informal learning, stimulating knowledge sharing and fostering interdisciplinary and interpersonal synergies.

In light of these considerations, rethinking the university campus model requires an innovative approach that takes into account not only functional and architectural requirements, but also the pedagogical and social principles underlying the design of learning spaces. In this respect, the reflections of Fernand Deligny offer a particularly stimulating contribution. Although his figure is not commonly associated with the world of architecture, his thinking and research on educational space, understood as a tool for well-being and inclusion, are extremely relevant to imagining the campus of the future. Transferring his theories to the university context, a spatial model emerges as a 'living map' in which mobility, interaction and sustainability are configured as pivotal elements of the educational experience. This perspective paves the way for new modes of design, capable of responding flexibly and dynamically to the needs of an evolving community.

The Creative House. 5 points for the Student Housing of the future

The design of university spaces represents a complex challenge that requires careful consideration of multiple aspects in order to create environments that not only meet the functional needs related to learning, but also support the well-being and integral development of students. In this context, it is necessary to consider a variety of factors that go beyond the purely educational aspect, such as environmental quality, inclusiveness, sustainability and the ability to adapt to ongoing social and technological changes.

University campuses are no longer seen as simple places where lectures and academic activities take place, but as complex ecosystems in which students live, work, socialize and grow. In this sense, the design must re-

spond to the needs of an entire community, taking into account not only the study spaces and university residences, but also those dedicated to sociability, relaxation, sport, culture and interaction between different disciplines.

A crucial aspect is the creation of environments that foster students' psychological and physical well-being. For example, it is crucial to integrate green spaces, quiet study areas and stimulating common spaces that can encourage peer exchange, collaboration and creativity. The quality of the environment, in terms of natural lighting, ventilation, air quality and thermal comfort, thus becomes a determining factor in creating an atmosphere conducive to learning and recovery.

Furthermore, the social and technological changes of recent years require a design approach that can adapt to the new needs of students. The increasing prevalence of remote working, hybrid study modes and the growing use of digital technologies require the creation of flexible and dynamic spaces that can transform according to specific needs. For example, environments that can be easily reconfigured to accommodate both traditional lectures and collaborative activities, workshops, or cultural events.

The design approach must, therefore, look to the future, anticipating the transformations that may occur in the way the university is experienced, and make campuses inclusive, welcoming and stimulating places for all. A well-designed campus that responds to these needs becomes a place where students not only increase their knowledge, but also develop social, emotional and professional skills, finding a space where they can express themselves and build meaningful relationships.

A significant contribution in this direction is offered by the pamphlet *The Creative House - 5 points for the student housing of the future*, prepared by the Alvisi Kirimoto studio, which, through an analysis of emerging trends and needs in the student housing sector, has identified innovative models and solutions. The project is structured around five fundamental guidelines, outlining a new concept of the university campus, understood not only as a place of education, but as a dynamic, inclusive space permeable to the urban context.

The first aspect, called "Contemporary Living", focuses on redefining student living requirements. University residences of the future must be sustainable, innovative and go beyond traditional housing standards. This implies solutions capable of ensuring affordability through rent-controlled policies and an optimization of living spaces, together with strate-

gies aimed at reducing land consumption, environmental impact and the use of non-renewable resources. Moreover, the use of advanced technologies makes it possible to develop intelligent housing solutions, improving the comfort of indoor and outdoor spaces and overcoming a merely functional conception of living.

The second point, "Studying Contemporary", focuses on identifying the needs of users, with particular attention to learning dynamics and how students interact. Spaces for study and learning activities must be flexible, shared and inclusive, promoting an environment that fosters individual and collective development. With this in mind, it is essential to create multifunctional environments, intended not only for traditional teaching, but also for forms of collaborative learning, such as co-working, laboratories and start-up incubators. Furthermore, the design of spaces must guarantee accessibility and usability under conditions of equity and safety for all people, regardless of any disability conditions or cultural and generational differences.

The third aspect, "Creative Home Design", focuses on defining the living parameters in relation to the needs of the students. The objective is to create environments that combine domesticity, a sense of community and affordability, while providing adequate space for both rest and study. Student housing must be a safe and welcoming place, capable of fostering relationships between tenants and stimulating forms of sharing and collaboration. The design must therefore envisage the creation of common domestic services, adopting strategies to rationalize consumption and optimize shared spaces through advanced technological solutions and domotic management systems.

The fourth point, "Prototype Housing Design", concerns the technical and construction aspects of student living. Modularity, flexibility and replicability of spaces are essential features to ensure dynamic adaptation to changing needs. The possibility of declining and multiplying housing modules makes it possible to optimize building interventions while ensuring environmental and economic sustainability. In this context, the use of low-impact materials and the adoption of innovative construction technologies make it possible to reduce construction times and costs, contributing to greater overall efficiency of the housing system.

Finally, the fifth aspect, "The Creative Home in the City", addresses the relationship between the university campus and the urban context. Student residences and, more generally, university spaces must be con-

ceived as elements integrated into the city fabric, capable of interacting with the local community and contributing to the social and economic vitality of the city. This is made possible through the design of permeable and accessible spaces, with particular attention to the ground floors, which must act as an active interface between the university and the surrounding urban environment. The presence of functions open to citizenship - such as services, cultural spaces and gathering areas - makes it possible to transform the campus into an urban garrison, favoring the creation of an inclusive and safe ecosystem, capable of enhancing even peripheral and marginal areas.

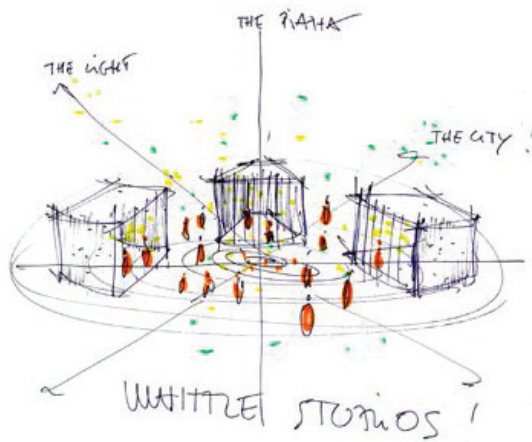
In conclusion, rethinking the university campus means overcoming the concept of the university as an isolated entity to imagine it as a system integrated into the city and society. The design of open, public and usable spaces encourages interaction, knowledge sharing and collaborative working, contributing to the building of a sense of belonging and community. A well-designed campus not only ensures a richer and more inclusive academic experience, but also acts as a hub for social and cultural innovation, creating virtuous connections between the university and the city.

Concrete examples of best practice in universities: the case of the Whittle School and Studios

Numerous university projects, both nationally and internationally, testify to the importance of innovative design that combines functionality, aesthetics and sustainability. An emblematic example of this trend is the Whittle School and Studios campus, realized in collaboration with the architectural firm Renzo Piano Building Workshop (RPBW). This ambitious project envisages the creation of a global network of educational institutions with 30 campuses in different locations around the world. Currently, two campuses are operating in Shenzhen, China, while an additional nine-story multifunctional complex is being built in Washington D.C.

One of the distinctive elements of the project is its ability to adapt to different geographical and cultural contexts, while maintaining a coherent architectural identity. The campus is conceived as a 'soft machine' for education, characterized by a design inspired by the principles of openness, efficiency and flexibility. The building is configured as an interactive and educational space for future generations, in which architectural and pedagogical design converge to offer a dynamic and stimulating learning environment. Aesthetically, the structure's industrial language, with

Figure 1 -
Whittle Studios
sketch representing the
relationship between
the light, the
"Piazza" and
the City. Image
©Alvisi Kirimoto.



exposed elements and an abundance of natural light, contributes to a bright and welcoming interior atmosphere.

The ground floor, defined as 'the city level,' represents a point of interaction between the school and the urban fabric, fostering dialogue between students and the local community. At the center of the complex, the 'Piazza' serves as an aggregative hub and meeting space. The choice of colors plays an essential role in stimulating students' creativity: colors are carefully selected and applied to architectural details, furniture and finishes, both inside and outside. The green areas, extensively integrated inside and outside the building, include equipped spaces on the ground floor and green terraces above the educational areas. A forest of native trees envelops the perimeter of the campus, giving the complex a distinctive character in harmony with the surrounding landscape.

The functional distribution of spaces includes an educational center, a central square, a kindergarten, an athletics center, an auditorium and spaces for artistic performances on the lower levels. The upper floors house classrooms and laboratories, divided by school grade (elementary, middle and high school). Each classroom is equipped with flexible furniture and interactive teaching walls, with sliding glass panels and multifunctional wooden surfaces that can be used for writing, hanging materials or containing teaching aids. The adaptability of the classrooms allows the spaces to be configured according to different teaching methodologies, enriching the educational experience through state-of-the-art technology. One level of the campus is entirely dedicated to students'

recreational activities, with leisure areas, dining areas, study rooms and relaxation zones. Finally, the upper floors accommodate student residences and faculty housing, consolidating the community character of the campus.

The innovation of this project lies in its ability to harmoniously integrate nature and technology, creating environments that encourage social interaction and informal learning. The flexibility and dynamism of the spaces, in combination with the green areas for study and relaxation, contribute to improving the students' psychophysical well-being, reinforcing the concept of an inclusive school open to the world.

Concrete examples of best practice in the university environment: the case of The Dome. The New University Pavilion for LUISS – Rome

The new LUISS Guido Carli pavilion in Rome, designed by the Alvisi Kirimoto studio, is a significant example of innovation in the design of university spaces. Located in the heart of the Parioli district, close to Villa Ada, the building stands out for its ability to integrate harmoniously with its natural surroundings, emphasizing the relationship between architecture and landscape. This project represents a profound reflection on how educational spaces can be rethought with a view to innovation, sustainability and openness to the community.

Figure 2 -
The Dome.
Designed by
Alvisi Kirimoto
in collaboration with
Studio Gemma.
Image ©Marco
Cappelletti.



The project involved the demolition of a pre-existing landscape-restricted structure and the construction from scratch of an educational building that would expand the potential of the campus, meeting the needs of a modern university. The design of this new pavilion is based on a simple but extremely powerful idea: to create a versatile macro-structure, suspended among the trees, that promotes an immersive and dynamic educational experience. The building, developed on two levels for a total area of 1,500 square meters, can be described as a contemporary 'tree house', in which transparency and spatial permeability are key elements. This design choice not only responds to an aesthetic vision, but also a functional one, aiming at an architecture that becomes an integral part of the surrounding landscape and does not subtract from it, but enhances it.

The ground floor of the pavilion has been deliberately set back from the upper volume, creating a covered but open space, perfect for outdoor activities, interactive workshops, courses and informal get-togethers. This outdoor area, in continuous relation with the interior, is configured as a meeting point for students, where practical activities or moments of relaxation can be organized. On the first floor, the building houses an Amphitheatre and two lecture rooms, designed to accommodate face-to-face teaching modes, but also to facilitate courses in hybrid and digital modes, thus responding to the new needs of modern teaching.

Another distinctive element of this project is the interior design, which was conceived to ensure maximum flexibility of use. The basic idea is to make the spaces adaptable to the most diverse functional requirements: from lectures to workshops, from conferences to cultural events, as well as socializing activities between students and professors. The advanced technological systems, together with the integrated audio-video systems, make it possible to implement innovative teaching strategies that involve students in more dynamic and interactive ways, facilitating active participation. Furthermore, the configuration of the Amphitheatre, open to the surrounding environment and endowed with optimal visibility and acoustics, favors new ways of interaction between students and teachers, creating continuous intellectual stimulation.

The focus on sustainability is another key aspect of this project. The building has achieved LEED Platinum certification, the highest international accolade for sustainable architecture, thanks to the use of natural materials, the optimization of energy efficiency and the design of environments that promote users' psychophysical well-being. The exterior cladding of natural wood strips and glass creates a visual continuum with

the surrounding greenery, while the warm tones of the wood combine harmoniously with the metal and scratched plaster, emphasizing the dialogue between construction and nature. The use of environmentally friendly materials, together with the adoption of advanced technological solutions for energy saving and improved environmental performance, contributes to making this pavilion a model of sustainable architecture.

Particular care was also taken in the design of the outdoor spaces, conceived not only as study or relaxation areas for students, but also as places for socializing and interacting with the city. In particular, the outdoor square below represents one of the most significant elements of this project. This square is not just a simple transit space or a connecting area between the building and its surroundings, but a true reference point for the entire university community and citizens. The square is designed to host extracurricular activities, public events and cultural initiatives involving not only the students, but also the citizens, creating a dynamic link between the university and the Parioli district, but also with the entire city of Rome.

Conceived as a versatile space, the square allows for a variety of events: from markets to exhibitions, from lectures to live performances. This not only enriches university life, but also contributes to making the campus an open and inclusive place, where interaction between students, lecturers and citizens occurs naturally and spontaneously. The square, with its large open space and design that encourages visual permeability, not only becomes a place for socializing but a true extension of urban life. A decking path, shaded by a row of holm oaks, connects the square to the pavilion structure, providing a further connection between the various spaces on campus. The stabilized gravel paving contributes to creating a permeable and welcoming environment, suitable to be experienced spontaneously by users.

The new LUISS pavilion represents a paradigmatic model of how university architecture can go beyond the simple concept of functional buildings, becoming a place where learning merges with social and cultural experience. Attention to integration with the surrounding environment, the flexibility of the spaces and the promotion of users' psychophysical well-being contribute to redefining the spaces of learning, making the building a point of reference not only for students and faculty, but for the entire community, fostering creativity, discussion and cultural growth. The new pavilion is not only a place of academic education, but also a symbol of openness to the outside world, capable of stimulating dialogue between the university world and the city.

Conclusions

In conclusion, the evolution of university campuses towards models integrated with the urban and social context is a fundamental element for the redefinition of the contemporary educational experience. The multidisciplinary approach, which combines architectural innovation, environmental sustainability and social inclusiveness, is essential for the design of spaces capable of responding to global challenges and the needs of an increasingly diverse student community. The case studies examined, including the experiences of the Whittle School and the new LUISS pavilion, demonstrate how the campus cannot be understood exclusively as a place of academic training, but must be conceived as a living ecosystem, capable of stimulating interaction, creativity and collective well-being.

In light of the pedagogical and architectural theories analyzed, the need for a radical rethinking of the ways in which university spaces are designed and experienced emerges. The integration between the physical and social dimensions of spaces, together with a growing focus on sustainability, represents not only a response to contemporary challenges, but also a forward-looking vision of an education that overcomes physical barriers and opens up to the outside world, stimulating active and inclusive participation. Ultimately, the design of university campuses of the future will have to face the challenge of combining functionality, aesthetics, sustainability and accessibility, favoring the creation of environments that can respond to the changing needs of global society, while promoting the well-being and integral development of students. The quality of university spaces, therefore, does not only represent an architectural aspect, but constitutes a determining element for the construction of a dynamic and forward-looking academic community.

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Sustainability and collective well-being: a comparative study of UC Berkeley and UCSF Mission Bay public spaces

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Introduction

In recent decades, the issue of university public space has gained increasing relevance in international discourse concerning urban design, environmental sustainability, and the promotion of collective health. In a context shaped by ecological, technological, and social transformations, universities are no longer regarded solely as institutions for education and research, but also as territorial agents capable of significantly influencing urban quality of life, social cohesion, and the development of new spatial paradigms (Bagnato, 2021; Działek et al., 2023; Schmertz, ed., 1972).

Within this framework, the analysis of public space on university campuses offers an opportunity to investigate how educational, environmental, cultural, and relational dimensions are articulated through spatial configurations, usage practices, and governance models.

Building on these premises, this research aims to explore and compare how public space on university campuses is designed, inhabited, and

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transformed within two distinct but emblematic contexts. By integrating field observation and document analysis, the study examines not only the morphological and functional aspects of these spaces but also their experiential, symbolic, and community-related dimensions. The case studies concern the main campus of the University of California, Berkeley (UC Berkeley) and the Mission Bay Campus of the University of California, San Francisco (UCSF). These two institutional contexts differ markedly in terms of history, disciplinary orientation, and urban morphology, yet both employ public space as a strategic instrument for urban regeneration, design innovation, and the promotion of collective well-being.

Founded in 1868, UC Berkeley is among the oldest and most prestigious public universities in the United States. The structure of its campus has evolved over time and is deeply embedded within the urban fabric of Berkeley. It represents a layered spatial palimpsest characterized by historical, symbolic, and environmental significance, where academic life intersects with political activism, everyday social practices, and collective spatial appropriation. The network of plazas, lawns, paths, and gardens—from Sproul Plaza to Faculty Glade, from Memorial Glade to the Eucalyptus Grove—reflects a conception of public space as a hybrid ecosystem in which natural, cultural, and social dimensions are dynamically interwoven.

The UCSF Mission Bay Campus presents a contrasting case. Opened in the early 2000s as part of a broader urban regeneration initiative in southeastern San Francisco, UCSF is a leading institution focused exclusively on the health sciences. Mission Bay was conceived as an integrated urban campus where biomedical research, clinical care, postgraduate education, and community well-being converge within an open and sustainable spatial framework. Key elements such as Koret Quad, the multifunctional William J. Rutter Center, the accessibility of Mission Creek Park, and the system of pedestrian and cycling paths define an innovative model of university public space in which physical well-being, environmental integration, and social inclusion are central spatial components.

The significance of these two campuses lies not only in their academic distinction but also in their capacity to embody alternative and complementary spatial models: on the one hand, the sociological and historical evolution of UC Berkeley, rooted in the civic and humanistic traditions of the East Bay; on the other, the emergence of a paradigm centered on “health urbanism” and interdisciplinary integration at UCSF Mission Bay, reflecting a vision of applied research and environmental innovation.

Methodology

The comparative investigation of the University of California, Berkeley (UC Berkeley) and the University of California, San Francisco – Mission Bay Campus (UCSF Mission Bay) was developed through a qualitative and interpretative methodology, based on a multi-scalar and interdisciplinary approach. The objective of the analysis was to understand how university public space—conceived as a socio-cultural and environmental infrastructure—contributes to the production of well-being, collective identity, and urban cohesion in two highly differentiated institutional and functional contexts.

To this end, a thematic comparative methodology was adopted, juxtaposing two distinct spatial models: on the one hand, the historically layered and spatially consolidated UC Berkeley campus; on the other, the UCSF Mission Bay campus, a recent urban project intentionally integrated into the surrounding metropolitan fabric. The comparison does not aim at classification or hierarchy but seeks to reveal the morphological, functional, and symbolic differences through which each campus builds and negotiates its relationships between environment, social body, and territory.

The research was structured into the following steps:

Documentary analysis: A systematization of primary and secondary sources was carried out, including master plans, urban planning guidelines, institutional documents, promotional materials, and scientific publications. Particular attention was given to both universities' sustainability plans, Campus Planning Office materials, and reports from operational units dedicated to green management, wellness, and mobility.

Field observation: Through site visits, the main public and semi-public spaces were explored, analyzing their formal articulation, use modalities, degree of accessibility, and experiential dimension (Gehl, 2010, Sepe, 2023). Special attention was paid to everyday space use as well as to the architectural, naturalistic, and symbolic elements that influence perception and spatial appropriation (Lefebvre, 1974; Pallasmaa, 2005).

Community dimension: A key element of the analysis was the recognition of university public space as a relational device (Franck, Stevens, 2007). Beyond physical and performance aspects, the study considered participatory dynamics and the campuses' capacity to act as catalysts for civic culture.

Finally, the comparative reading aimed to reveal the situated specificity of each campus, understood as the result of a unique mix of institutional mission, urban history, disciplinary structure, and governance models (Dovey, Pafka, 2017; Mehaffy, 2020; Mitchell, 2003).

The case studies

University of California, San Francisco (UCSF)

The University of California, San Francisco (UCSF), founded in 1864, is recognized as one of the leading academic institutions worldwide, exclusively dedicated to the health sciences. Unlike generalist universities, UCSF focuses its activities on postgraduate education and research in the fields of medicine, pharmacy, dentistry, nursing, and biomedical sciences. Among its various campuses, the Mission Bay Campus stands out for its architectural quality, sustainability-oriented design, and particularly for the extent and quality of its open public spaces, which constitute central elements of the site's spatial and cultural identity.

Inaugurated in the early 2000s on a site formerly occupied by railway infrastructure and industrial warehouses, the Mission Bay Campus (fig. 1) covers more than 60 acres in the southeastern quadrant of San Francisco. Its development represented a significant step in the city's urban regeneration processes, acting as a connective element between academic and civic dimensions (Dovey, Pafka, 2017). In contrast to traditional models of enclosed or hierarchical campuses, Mission Bay was conceived as an open and permeable space—walkable, accessible, and integrated into the surrounding urban and social fabric (Gehl, 2010).

Morphologically, the campus is organized around Koret Quad, a large central green space that serves as a node of aggregation for the university community. Key buildings such as the William J. Rutter Center, Genentech Hall, and Rock Hall are located around this area. Koret Quad is daily frequented by students, researchers, visitors, and local residents, offering grassy areas, mature trees, integrated seating, and paved paths that host seasonal events, outdoor study activities, and informal social interactions.

Adjacent to Koret Quad is the William J. Rutter Center, one of the campus's main functional hubs, housing the Bakar Fitness and Recreation Center, a multifunctional facility dedicated to promoting physical and mental health. Unlike traditional collegiate athletic centers, the Bakar Center is



conceived as a wellness hub for the entire UCSF community and is also open to the general public (Franck, Stevens, 2007).

The center's facilities include a regulation-size indoor pool, fully equipped rooms for cardiovascular and functional training, spaces dedicated to yoga, pilates, spinning, and tai chi, as well as recovery rooms and programs for light rehabilitation. Guided courses are also offered by UCSF experts in sports medicine, promoting an integration between physical activity and clinical or therapeutic practices.

Among the initiatives offered are mindful fitness programs, combining physical exercise with breathing techniques and meditation, and therapeutic dance workshops aimed at patients, caregivers, and community members affected by chronic or neurodegenerative conditions. The center also organizes community events such as Wellness Wednesdays, thematic health days featuring free activities, workshops, health screenings, and opportunities for social interaction (Pallasmaa, 2005).

The Mission Bay Campus is characterized by an extensive network of open and equipped spaces that extend beyond formal sports facilities, forming a continuous green infrastructure supporting a variety of activities related to movement and quality of life. Walking, jogging, urban cycling, light hiking, and educational recreational activities are made possible through the

Figure 1 -
UCSF's Mission
Bay Cam-
pus (Source:
<https://www.toocb.com/ucsf-mission-bay>).

campus's integration with Mission Creek Park, a linear urban park adjacent to a waterway bordering the campus (Carmona et al., 2010).

Along these routes, users encounter modular calisthenics equipment, outdoor fitness stations, areas for stretching and urban yoga, as well as tables with chessboards and interactive surfaces. The daily use of these spaces by hospital staff, students, and local residents highlights the strong connection between athletic activity and academic and clinical life, representing a natural extension of UCSF's wellness pedagogy. The campus's green areas are also activated through occasional events such as outdoor cinema screenings, chamber music concerts, Saturday farmers' markets, and temporary art installations organized in collaboration with artists and community groups. These initiatives transform the campus into a public health plaza, where knowledge, art, and movement co-exist within an inclusive urban landscape.

Located within the Rutter Center, the FAMRI Library is a key resource for learning and collaboration. Open 24 hours a day, it provides both digital and physical resources and is designed with diverse spaces adapted to different needs: silent reading rooms, coworking areas, ergonomic individual workstations, "napping pods" for short rest breaks, and The Hub, a modular group workspace equipped with advanced collaborative technologies.

This spatial configuration supports flexible modes of study and interaction, fostering informal and self-directed learning. The library also hosts regular workshops focused on mental health, time management, memory techniques, and well-being strategies for coping with the intensive phases of medical education.

The Mission Bay Campus is also distinguished by its integration of landscape design and environmental responsibility. All buildings meet high energy-efficiency standards, certified according to LEED criteria, while open spaces incorporate bioswales, sustainable urban drainage systems, native vegetation, and recycled materials. The design includes natural microclimates through shaded courtyards, green roofs, and strategically placed trees to mitigate the urban heat island effect.

Community engagement is further encouraged through initiatives such as "LivingGreen", involving UCSF students and staff in the sustainable management of shared spaces and the promotion of eco-friendly lifestyles.

The University of California, Berkeley (UC Berkeley)

The main campus of the University of California, Berkeley (UC Berkeley) is located in the city of Berkeley, in the East Bay of the San Francisco Bay Area, California (fig.1). Founded in 1868, UC Berkeley is a leading institution in higher education and research, and also serves as an important example in the study of public space design, management, and use within the university context. Covering approximately 178 acres within the urban core of Berkeley, the campus forms a complex spatial ecosystem where historical, environmental, social, and cultural dimensions converge, fostering a multifunctional environment that supports various forms of learning, social interaction, recreational activities, and psycho-physical well-being.

A central space within this system is Sproul Plaza, composed of Upper Sproul and Lower Sproul, which together represent the symbolic and functional heart of campus life. Designed in 1962 by landscape architect Lawrence Halprin, the plaza gained historical and political importance as the center of the Free Speech Movement in 1964, becoming a dense urban space for collective expression (Mitchell, 2003). Its open and flexible design, proximity to institutional buildings such as Sproul Hall, and direct connection to Sather Gate and Zellerbach Hall enable it to accommodate a variety of events, including assemblies, artistic performances, student markets, and informal gatherings.

Within the campus's ecological and landscape system, Faculty Glade is an area of significant environmental and perceptual importance: a large grassy clearing intersected by a branch of Strawberry Creek, and surrounded by a dense canopy of mature trees. It functions as a contemplative and multifunctional landscape, promoting outdoor study and informal social activities. Its environmental value is further enhanced by its proximity to the Eucalyptus Grove, a large wooded area with one of the highest concentrations of eucalyptus trees in North America. These natural features contribute to a favorable microclimate and to the preservation of biodiversity, strengthening the ecological character of the campus (Franck & Stevens, 2007).

From a socio-political perspective, People's Park, located at the edge of the campus, is historically associated with the protest movements of the 1960s. Established as a self-managed space for communal gathering and political activism, the park is currently undergoing a regeneration project that plans the construction of housing for students and vulnerable populations, while preserving over 60% of the area as accessible public space.



Figure 2 -
*University of
California,
Berkeley, San
Francisco*
(Source: Ma-
richela Sepe's
Archive)

The events of 1969, during which People's Park (fig. 3) became a site of intense student activism, underscore its historical significance. According to Peter Allen (2011), the conflict surrounding the park reflected divergent approaches to architecture and urban space. The initiative to create the park emerged as a response to the University's plans to demolish existing structures for the construction of new modern housing. Faculty and students from design disciplines supported People's Park as an example of community-based development practices (Allen, 2011).

The redevelopment of People's Park is proceeding according to schedule, with construction on the student housing component, initiated in July 2024, expected to be completed by 2027.

Following project approval, UC Berkeley enclosed the site with shipping containers to facilitate construction. The project also includes commemorative elements recognizing the site's Indigenous history and its role in the social movements of the 1960s. This initiative seeks to balance social needs, residential functions, and the maintenance of the park's public character (Lefebvre, 1974).

Similarly, Ohlone Park, located north of Hearst Avenue, represents an example of civic appropriation of urban space. Originating from grassroots



occupation and later formalized, the park currently features pedestrian and cycling paths, playgrounds, sports fields, and spaces for informal social activities. Its structure and historical roots link it closely to both civic and university identities.

Figure 3 -
*People's Park,
Berkeley, San
Francisco
(Source: Assunta Martone's
Archive)*

Several educationally significant spaces are situated beyond the main campus. Blake Garden, located in Kensington, serves a strategic role in the training of landscape architects and urban planners. It functions as an open-air laboratory for ecological and morphological experimentation, hosting microenvironments dedicated to research and teaching and serving as a model of accessible educational landscape.

Another important site is the Lawrence Hall of Science, a science outreach center located on the hills east of the campus. Founded in 1968 in memory of physicist Ernest Lawrence, the center combines museum functions, interactive exhibits, and educational programs, offering a location with a panoramic view of the San Francisco Bay. This center further connects academic activities with the general public.

In addition to its symbolic, environmental, and cultural elements, the UC Berkeley campus includes a wide variety of spaces dedicated to recreation, sports, and health promotion. These areas are integrated into the

campus morphology and support both formal and informal uses.

The Berkeley Recreational Sports Facilities (Rec Sports) system is central to this network. The Recreational Sports Facility (RSF), located in the southern part of the campus, includes gyms, swimming pools, dance and martial arts studios, yoga rooms, basketball courts, and functional training areas. It supports a wide range of physical activities, from amateur to competitive, individual and group sessions, as well as wellness programs and social opportunities.

The sports facilities are complemented by Memorial Stadium, a historic venue for football and community events, and by the trail networks and hiking routes in the Berkeley Hills, which are popular for outdoor exercise and recreation. Other important facilities include the Hearst Gymnasium and Hearst Pool, examples of historically and architecturally significant sports structures designed by Julia Morgan and Bernard Maybeck.

Spaces such as Memorial Glade and various open lawns also play an important role in campus life, functioning as transitional areas between academic spaces and social activities. Memorial Glade, in particular, is used for spontaneous recreation, artistic events, reading, and outdoor study, fostering a continuum between cultural and physical engagement.

The area near the Student Union hosts musical performances, markets, debates, artistic installations, and public events, contributing to the formation of public space as a platform for social interaction and collective expression.

The UC Botanical Garden, located in the nearby hills, serves an environmental and educational function. With over 10,000 plant species, the garden provides a space for both therapeutic experiences and scientific study, promoting mental well-being and a connection between nature and culture through its diverse internal landscapes, including forests, thematic gardens, trails, and research plots.

Sustainability initiatives are also evident throughout the campus, including permeable surfaces, green roofs, water management systems, shared gardens, and photovoltaic panels. These strategies are often accompanied by educational components, fostering environmental awareness and collective responsibility. Programs such as the Green Campus Program engage students and staff in sustainable space management and the promotion of environmentally responsible practices. The vitality of campus public spaces is further supported by the activities of student associations and athletic or disciplinary clubs, which contribute to the

everyday production of space and promote co-creation as both a method and a value.

Conclusions

The comparative analysis of the UC Berkeley and UCSF Mission Bay campuses illustrates how university public space can function as a relational, cultural, and ecological infrastructure capable of structurally influencing both academic and urban life. Despite notable differences in mission, spatial morphology, historical development, and organizational structure, both campuses demonstrate—each through its own configuration—how the intentional design of open space can reinforce institutional identity, foster community cohesion, and contribute to territorial sustainability.

The UC Berkeley case highlights the value of historical layering and functional diversity as key components in shaping a complex spatial ecology. The campus presents itself as a palimpsest in which nature, culture, and civic participation intersect: from emblematic sites such as Sproul Plaza and People's Park, which have played central roles in activism and social change, to contemplative and ecologically significant spaces such as Faculty Glade and the UC Botanical Garden. In this context, the public dimension of space is not merely a passive backdrop to academic functions but rather an active symbolic and operational extension of them. The plurality of spatial types and practices renders the campus permeable and inclusive, reflecting values of openness, democracy, and experimentation that are integral to California's academic culture.

In contrast, UCSF Mission Bay exemplifies an emerging spatial model in which the public realm is shaped by a strategic alliance among urban design, health, and innovation. The emphasis on psycho-physical well-being, the integration of scientific and collective infrastructures, the permeability of urban boundaries, and the pedagogical role of the landscape establish a paradigm that is distinct yet complementary to that of Berkeley. Mission Bay is not simply a site hosting academic activities but operates as a platform for care and exchange between the university and the city. Here, spatial quality is conceived as an instrument for prevention, accessibility, and inclusion. This approach illustrates how university space can serve as infrastructure for public health, anticipating forms of cohabitation and co-production aligned with the challenges of the 21st century.

Both case studies point to the necessity of rethinking the university campus, no longer as a self-contained enclave or disciplinary silo, but as a hy-

brid and interdependent environment embedded within the urban and social fabric. The analysis underscores that public space design should be understood as a situated and strategic practice—capable of translating cultural, institutional, and ecological specificities into spatial form. Key criteria emerging from this comparative study include permeability, multifunctionality, biodiversity, usability, and symbolic activation, which together inform the evaluation and evolution of contemporary university space.

A prominent cross-cutting theme concerns the role of campus users—students, faculty, administrative staff, citizens, and patients—not merely as users but as co-producers of space. On both campuses, everyday practices, informal appropriations, associative activities, and public events transform abstract spaces into lived environments, enriched with memory, desire, and social relations. It is through this lived dimension that public space acquires affective and cultural density, becoming both a platform for coexistence and a pedagogical tool. From this perspective, the university emerges not solely as a site of knowledge production but also as a laboratory of citizenship, where new forms of collective habitation are tested.

Finally, sustainability is affirmed in both cases as a foundational principle in spatial planning and governance. At UC Berkeley, environmental practices are rooted in a long-standing tradition of ecological activism, articulated through initiatives such as community gardens, green roofs, and integrated green infrastructures, all of which support ecological awareness and shared responsibility. At UCSF Mission Bay, sustainability is embedded in the design strategy itself, informing material choices, technological systems, spatial configurations, and social practices, with the goal of linking individual health and well-being to broader urban resilience.

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Universities and Their Public Open Spaces: Variations on Two Longstanding Traditions

*Emily B. Marthinsen,
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Western universities trace back to two traditions. One separates the campus from the surrounding community, the other embeds itself in it. These models are exemplified by universities like Oxford and Cambridge in England, on the one hand, and those of Bologna and Paris, on the other. The madrasa, originally attached to a mosque, is another model that can take either form. Let's consider three variants on these two traditions.

Planning and designing public open spaces on the U.C. Berkeley Campus

At first glance, the U.C. Berkeley Campus seems comprised of randomly placed buildings and open spaces. There is no neat geometry: no series of interlocking quadrangles; no large central area defined by the buildings facing it; no single significant building around which others cluster. Yet the campus is unquestionably beautiful. How to understand its special character?

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In the early 1980s, the Campus Planning Study Group (CPSG), led by College of Environmental Design Dean Richard Bender, began looking closely at the campus to understand its design holistically and identify a framework for its conservation, sustainability, and future development. The goal of CPSG was “to explain the campus to itself.”

CPSG considered the U.C. Berkeley Campus as a park in which the natural landscape and the buildings engage in a kind of mediated conversation. The campus slopes downward from east to west, toward the San Francisco Bay. The two branches of Strawberry Creek follow the topography. The varied public open spaces of the campus—intentional and serendipitous, large and small—create settings for buildings that, together with those public spaces and the natural landscape, define the campus’s character.

U.C. Berkeley’s first Campus Architect, John Galen Howard, based its first campus plan on Émile *Bénard’s* competition-winning plan, which placed a series of neoclassical buildings and open spaces within a central Beaux Arts “core.” CPSG’s studies confirmed that the open spaces of the Howard Plan, as well as the more recently created open spaces—the result, intentionally or not, of building placement and design—shaped the campus as a whole. In addition, these interconnected open spaces gave a rhythm to the campus as a whole, allowing for grand campus-wide gestures, local, precinct identities, and ways in and across the campus for pedestrians. Howard was influenced by Bernard Maybeck to see Strawberry Creek’s two forks as loose borders between the formal Beaux Arts core and the less formal areas to its north and south.

Although these insights continue to inform campus planners and were further defined in Long Range Development Plans, Campus Landscape Plans, and Heritage Plans, campus open space and public realm design has been secondary to the design and planning of individual buildings. Despite this, precinct open spaces created by the happenstance of building siting, by visionary campus leaders, and by the renewal of existing campus open spaces support both Howard’s vision of a park-like campus public realm and a contemporary, urban sense of place.

Currently, four strategies create public outdoor space on the campus. These strategies illustrate the methods and tools campus planners at Berkeley use to ensure that the physical environment of the future campus supports and creates a robust and beautiful public realm.

1. Integrating the building program and design of multiple new and/or renovated buildings to establish an integrated public space. (College of Engineering Center)
2. Redesigning an existing, but intentionally designed, open space to address current context and program goals. (Lower Sproul Plaza)
3. Incrementally adding elements that, over time, create a sense of place (College/Bancroft Plaza)
4. Making a single bold move to take advantage of space defined by the seemingly random siting of buildings. (Arts Quad)

The following four examples describe public open spaces shaped by these four strategies. The first, the College of Engineering Center, shows that opportunistic planning with a clear, long-term goal can result in an important precinct and campus public space amenity. Lower Sproul Plaza, the second example, was intentionally designed as part of an ensemble: buildings and open space considered together as a multi-project concept. The last two examples, College/Bancroft Plaza and the Arts Quad, use contemporary design elements to echo the Howard Plan's rhythm, setting up a sequence of spaces into the campus that start at its urban edge and move toward the natural landscape of Strawberry Creek.

The College of Engineering Center: The College of Engineering (COE) was a collection of some 20 buildings and departments. Although this area of the campus included one of Howard's grand gestures—the Hearst Mining Circle—and his Hearst Mining Building, his first and arguably his best campus building, it was set apart from the rest of COE's mixed bag of unrelated buildings. In consequence, COE lacked a public open space.

Anticipating a significant building program—including seismic corrections of multiple buildings, demolition of another, the preservation of a historic building, and new construction for advanced research—the COE Dean commissioned a master plan. It focused on creating connections among the buildings: patios, pathways and public uses that would be incorporated into the programs for both new construction and renovation. A new building which stepped down the hill with entries at multiple levels provided opportunities for vertical connection. Stairs and ramps contributed to creating “found” open spaces at required landings. Also important was the commitment to provide much-needed site furniture. Although COE's public open space isn't a conventional plaza-like “town square,” seating and tables in expected and unexpected places underscore the public nature of the area as a whole.

Accessible program elements also contribute. There is a cafe, exhibit space, and lecture hall on the public floor of the research building. Along a grand exterior stairway, there are large glazed openings that make a fabrication laboratory visible. Significantly, that grand exterior stairway also forms a community connection—an entrance to the campus and a link to COE buildings across Hearst Avenue, the campus park's northern boundary.

Lower Sproul Plaza: The result of a 1954 competition for a student union, four associated buildings, and a parking garage, Lower Sproul Plaza was an integral part of the winning design. In the spirit of the Howard Plan, the concept was an ensemble that integrated buildings and outdoor public space. But the plaza itself proved to be decidedly unsuccessful as public space. An office building along its south edge shaded the plaza, making it seem dark and dreary. Its connections to the lively Southside commercial area and student housing were limited, as the plaza was a full story below sidewalk grade along Bancroft Avenue, the southern border of the campus park. Although the campus's main performance space, Zellerbach Hall, had a wide and welcoming front door onto the plaza, activities in the other buildings all faced away.

The entire plaza and its surrounding buildings were completely reconceived and renovated in the last decade. The tall, shadow-casting office building was demolished and replaced. Four of the five original buildings still shape the plaza, it was transformed by an integral ramp and stairs that lead to Upper Sproul Plaza, and a rain garden pathway, connecting pedestrians to Southside and the central campus. New paving and site furnishings were added. Lower Sproul Plaza is now a true public open space, used for gathering, performances, and events.

Bancroft/College Plaza: Starting at the north side of Bancroft Avenue, across from College Avenue, the plaza is a gateway. Buses along College stop here, and students cross back and forth from the Southside dorms and other housing. It was formed by the three buildings—Anthropology and Art Practice, Bauer Wurster Hall, and Berkeley Law—that adjoin it. Crowds of people pass through it during the school year. A series of small projects have defined it as a public open space with its own identity. A curved retaining wall with seating and greenspace, adjacent to Bauer Wurster Hall, provides relief from the hardscape of the rest of the plaza. A fountain with a sculpture close to Bancroft Avenue provides a convenient meeting point, as do stepped seating and an outdoor patio by the law school. Trees shade benches next to the Anthropology and Art Practice Building and its outdoor courtyard sometimes hosts events.



Arts Quad: Four of the five buildings that comprise the Arts Quad were designed with little attention to the public open space that was being created by their construction—or to the specific programs in those buildings. That said, by the time a fifth building, the Hargrove Music Library, was added, precinct identity was a key concept for campus planners. They frame an irregular open space crisscrossed by often crowded campus pathways. Each of the buildings offers something to the public open space it faces but, only a recently added patio in front of Bauer Wurster Hall helped it finally to cohere. The quad now includes many community-serving elements in addition to pedestrian pathways. The stained glass of the Music Library glows at dusk. People gather under the Morrison/Hertz portico awaiting concerts at Hertz Hall, and Bauer Wurster’s new patio provides seating and drought-resistant planting.

Figure 1 -
*U.C. Berkeley’s
revived and
activated
Lower Sproul
Plaza.*

With a few notable exceptions and despite wide-spread acknowledgement of its importance, public open space design at U.C. Berkeley takes a back seat to the design and construction of buildings. Mission, program, and funding sources determine campus development priorities. When these align with elements of the overall campus landscape and open space plans, the public realm can be improved, enhanced, even elevated. What is missing is a mandate for the campus’s public open spaces, reliably funded independently of buildings and maintenance.

John Galen Howard envisioned the campus’s public realm as a way to connect its precincts to each other and to the communities that adjoin them. Like Frederick Law Olmsted, who also weighed in on the campus’s early

development, Howard saw it as a park whose public open spaces would vary in character but reinforce both the natural beauty of the setting, with its vistas of San Francisco Bay and the Golden Gate, and the distinction it makes between the Beaux Arts core and the less formal settings north and south of Strawberry Creek's two forks. All of this still reads as a public realm, and CPSG's efforts in the 1980s did much to preserve it. Yet it remains constantly vulnerable to the growth pressures of being one of the world's leading public research universities. Real advocacy for it, with a budget to match, would help secure it for future generations—the kind of stewardship CPSG reinforced with a framework for growth that reflected the farsighted intent of its original planners and its first Campus Architect.

Arizona State University: open space in the context of a desert metropolis

One of Arizona's two public universities, Arizona State University (ASU) consists of its original campus in Tempe and an extensive downtown Phoenix campus developed more recently at the initiative of ASU President Michael Crow. ASU is a hybrid institution with a mix of online and in-person classes, a trait it shares with other universities but has leveraged to fuel its considerable growth. The City of Phoenix's investment in the 32-acre, freeway-bridging Margaret T. Hance Park added community open space to an area that was in need of reactivation and dramatically renewed downtown Phoenix's "destination value."

Margaret T. Hance Park: In 1979, Phoenix voters passed a bond measure to cover a portion of the I-10 freeway in an effort to reduce its environmental and urban impact on the downtown area, and create an open space and park on top of the tunnel as a public amenity. Initially conceived of as a bus terminal, or elevated highway overpass, the project looked closely at the walkability of the downtown core as an essential quality of an urban landscape. Part of the voter-passed bond measure also funded several civic projects including a public library and science center popular to this day. The large-scale urban intervention of the tunnel and deck park was initially unpopular with some who questioned its validity as an approach, but in hindsight it made large portions of downtown Phoenix more walkable and provided much lacking open public amenity space in the downtown core. This scale of the Hance Park (Deck Park) intervention challenges normative planning principles by rethinking uses of infrastructure in an urban context, and provides a critical example of what is possible regarding urban open space, connectivity, and

carefully considered infrastructural modifications as an ongoing and informed process based on historical precedent.

The long-term results of the bond measure and subsequent deck park tunnel, with Hance Park located above it, led to ASU's investment in downtown Phoenix as a second campus. ASU President Michael Crow saw the value in a civic-minded downtown area that the university's presence could help to activate. In a desert context, this means speaking to ways of building in the desert which have been cultural practices for generations, long adapted to such environments. ASU Dean John Meunier of The Design School was instrumental in passing the bond measure that paid for Hance Park's development. His 2007 article, "Making Desert Cities," points to the need in Phoenix for awareness of historical context, resilient approaches to regeneration, shade, pedestrian scale development, courtyards, water, natural ventilation, energy use, and compact urban form. These key ideas combine to allow for a truly long-term sustainable vision to take root in any design process to be undertaken in a desert context, given a sensitive approach¹.

Sustainable strategies for urban desert cities include a range of approaches to long-term livability which have also been recently demonstrated in the Phoenix area. Open space plays an important role in this. Culdesac, a recently completed residential neighborhood, draws on traditional precedents to create a shaded, walkable interior that, at the height of Tempe's brutal summer, is 40 degrees Fahrenheit cooler than the sidewalks nearby. The deck park was also a strategy for other desert contexts to follow, drawing on ancient practices and knowledge of sustainable desert living. Shade in this context is a critical public resource for livability and remains a lacking reality in much of our sprawling metropolis².

¹ Meunier, J., "Making Desert Cities (2007/2020), in Lynch, P., ed., *On Intricacy*, Canalside Press, 2020. Hanish also interviewed John Meunier about Hance Park on 18 February 2025.

² Parman interviewed Karen Parolek of Opticos Design, the planner and architect of Culdesac Tempe, about the project on 20 February 2025.



Figure 2 -
The Faculty of Management's plaza at the University of Tehran.

University of Tehran and Sharif University of Technology: Two Iranian Public Spaces

Iranian universities are deeply rooted in the historical and cultural contexts of Persian architecture, which emphasize courtyards, gardens, and open-air corridors as fundamental design elements. They have been modified to correspond with current urban demands in Iranian universities, balancing historical legacy with the best international standards by addressing accessibility, sustainability, and social inclusiveness. These are walkable, car-free settings for academic debates, student meetings, and cultural events, supporting active involvement in university life and a sense of belonging.

Both universities integrate their public spaces with their campus architecture, combining traditional Persian architectural features with contemporary urban planning ideas. Green spaces, walkways, and open-air meeting places enhance student well-being and learning opportunities. Their sustainability and accessibility meet global best standards for campus architecture. By including more smart technology, enhancing ecological sustainability, and building stronger connections with surrounding metropolitan settings, future developments in Iranian university campuses may help to further enrich these public areas. They also show the importance of cultural identity. While Sharif is much less traditional, it retains elements of it in its approach to sustainability and its support of the formal/informal mix on which innovation depends.

University of Tehran: Inspired by Persian gardens, the campus has large green areas, walkways, and open courtyards encouraging interaction.

With its traditional ponds and covered resting spaces, the university's central park is suited for recreation and contemplation. Many points of access link the campus to the city, helping to mix academic and urban life³. By combining historic buildings and landscape elements with contemporary ones, it takes a holistic view of integrating past and present⁴. Inherited from Persian architectural traditions, the main courtyard is a venue for formal and informal gatherings. Shaded study areas and outdoor amphitheaters support social and academic activities. Linked green spaces with "smart" seating structures help keep the air fresh and temperate in every season.

Sharif University of Technology: One of the main characteristics of this campus is sustainable design approach, with green roofs, energy-efficient lighting, and smart urban design. The public spaces host interdisciplinary events aimed at collaboration. Digital displays and innovation kiosks reinforce the importance of open, dynamic communication for technological advancement⁵. Yet there is room for relaxation and informal sports. Organized into open plazas and social zones, the campus seems to ignore tradition, but it's there in the way classroom discussion easily spills outside like a Persian courtyard house and also in its water-efficient landscape, with drought-resistant plants suited to an arid climate.

The Nature of Universities' Public Spaces Today

The relationships between buildings and open spaces each tradition sets up differ markedly. In the Oxbridge tradition, open spaces create an organizing framework for the buildings around them, defining glades, quads, and yards, for example, that give these settings their identity. In the Bologna/Paris/madrassa tradition, the university is an integral part of its district and uses its streets and squares as gathering places. Courtyards and other enclosed open spaces are closely associated with individual buildings and, being essentially private, do not form a larger setting, although they may reinforce and distinguish the identity of individual colleges or faculties.

³ Habibi, S., & Mirmoghtadaee, M. (2015), "The role of Persian gardens in university campus design: Case study of the University of Tehran," *Architectural Heritage Review*, 8(2), 112-129.

⁴ Tavassoli, M. (2001), "Traditional and contemporary urban planning in Iran," *Iranian Journal of Architecture and Urbanism*, 5(1), 67-83.

⁵ Bahreini, S. H., & Aminzadeh, B. (2016), "Sustainable urban design strategies in Iranian university campuses," *Journal of Urban Studies*, 12(3), 45-63.

The Berkeley and Tehran campuses all have defined boundaries that set them apart from their adjoining cities. ASU's downtown Phoenix campus is the result of a conscious and successful effort on the City of Phoenix's part to recapture what was lost when a freeway cut off part of its central district. Restoring the connection with a substantial park that is a real amenity for those who live and work downtown attracted ASU's attention and ultimately its investment in a second campus, one that is integral with its surroundings and uses that context, including Hance Park, in lieu of the contained public space of a traditional campus.

Forests and community spaces on the Vilnius University Campus

*Donatella Scatena**

The Vilnius University campus and its branch campuses are located in an area close to the historic city, but immersed in an area rich in forests and woods. The university complex was built, like the one in Kaunas, between the 60s and the 70s of the 900s, as a result of the social policies of the then Soviet Union.

It is interesting to note how the Vilnius campus, like the Kaunas campus before it, responds to the logic of Soviet urban planning but at the same time reflects contemporary values of public space: "Thus, public spaces, especially open ones, when properly designed, can significantly enhance the quality of life for students, faculty, and the wider university community".

Before going into the description of the campus and analyzing its close relationships with open and shared spaces, it is necessary to understand how Lithuanian urban space was transformed in the second half of the twentieth century. Especially in the two large cities of Vilnius and Kaunas.

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Vilnius is the capital, Kaunas was the temporary capital from 1919 to 1939 and was declared a UNESCO World Heritage Site in 2022. Both share a long history, also made up of many dominations, which, however, have not destroyed their strong identity which over time has if anything been enriched, transforming the impositions, including urban impositions, into a driving force.

A great social and political change took place in the second half of the twentieth century, under the Soviet dictatorship, which, with the construction of workers' and residential suburbs near the factories located outside the consolidated city, introduced a morphologically new character. The development of the city in the outer areas, where before there were only peasant houses and farms, has made it possible to maintain a certain integrity of the historic centers and has allowed the new inhabited nuclei to extend into the natural and agricultural territories, in contact with the woods and forests.

And if the peripheral location initially led to a certain isolation, today the Lithuanian citizens of Vilnius¹ and Kaunas can benefit from a unique and positive relationship between residence, neighborhood and forest.

Not only the residential areas of the mycorayons, but also the large public building complexes, such as university campuses, botanical gardens, scientific laboratories and hospital buildings today enjoy an optimal relationship with the anthropic and natural open space.

The choice of areas outside the historic center, as mentioned above, has given the possibility of developing university places up to the present day, with grafts of contemporary languages and architectures, always in the direction of an integration between public space, the place of study, work and nature.

The decisions for the planning of the newly built centers were, in fact, political and it is therefore necessary to briefly remember, before describing the Vilnius university campus and the branch offices, which arose in the 60s, how the rules were decided and established by the then dominant system.

¹ D. Scatena (2019). *Paesaggi urbani lituani. Il rapporto tra architettura e boschi nella città di Vilnius in epoca sovietica ed in alcuni luoghi del contemporaneo*. Roma, Orienta Editore.

Socialism with a human face and the thaw of Khrushchev

It is useful to recall here that Lithuania, together with the other two Baltic republics, Latvia and Estonia, joined the Soviet Union in 1940. Soviet building and urban planning policies led to a great transformation of population centers. As a result, from 1940 to 1990, during the years of Soviet domination, architecture also underwent great changes: at the choice of the Communist Party, large-scale design and the development of prefabrication intensified.

The Lithuanian historian Marija Drėmaitė² tells us how for the construction of the new parts of Vilnius and Kaunas, after the Second World War, the US controlled and sent its professionals, in particular from Leningrad and Moscow; the preferred style was, at the beginning, the sumptuous and monumental Neoclassical, symbol of the Stalinist totalitarian regime that shaped many areas of the Soviet federations, including Lithuania.

It is with Nikita Khrushchev and the consequent “thaw”³ that the first attack on neoclassical aesthetics is inflicted: the decree on industrialization encourages the opening of reinforced concrete factories in the suburbs of the Baltic cities and encourages building prefabrication with the massive use of materials such as concrete, glass and metal. This marks the beginning of that International Modernism as we know it today, which goes from about 1950 to 1990 and which is currently encountering a phase of historical in-

² M. Drėmaitė, *Baltic Modernism. Architecture and Housing in Soviet Lithuania*, Dom Publishers, Berlin 2017.

³ The change from Stalinist social realism towards “modernity” has taken place, however, less in aesthetic terms and much more in ideological terms with repercussions on organizational and housing resolutions. This occurred in the decade known as the Khrushchev thaw (1954-1964) which, although it was intended as a direct attack on architecture, was actually intended to boost technological progress for the larger purpose of creating a real welfare program. Khrushchev’s speech on December 7, 1954, at the Conference of the Union of Soviet Builders, Architects, and Workers became famous for the decree “On the Elimination of Excesses in Architecture and Construction.” But the real message was contained in the other decree, “On the development of improving, industrializing and reducing the costs of construction”, which aimed to speed up and make the building process cheaper by favoring prefabrication and the increase of new, healthy, modern houses for all workers. Great attention was paid to new lifestyles and the consequent well-being for citizens, with the planning of social services in the 60s, when the Kaunas and Vilnius campuses were also built. After the construction of inhabited and industrial centers and after the increase in factories, it was the turn of educational and health facilities considered of capital importance.

terest and revisionism⁴), even if already at that time the Soviet Union was able to convey its image to the rest of the world, and through the *grandeur* of the construction of the modern metropolis it also managed to spread the healthy and integrated lifestyle of the Soviet citizen. In 1969, the French magazine *L'Architecture d'Aujourd'hui*⁵ dedicated a special edition to Soviet architecture, showing the “socialism with a human face”, the result of a skillfully constructed image, but also the result of the thaw that had been taking place for more than a decade in international relations.

Baltic Modernism on Lithuanian University Campuses

Born as the most advanced expression of Soviet society that had given a strong boost to welfare, the welfare state and education, the two University Campuses of Vilnius and Kaunas today represent a typical example of the architecture of Baltic Modernism. Built starting from the 60s of the last century, they are part of the brutalist aesthetics and testify, together with many other building complexes built in those years, to the change that took place from the end of the 50s of the 90s, to the greater interest, attention and efforts made in the construction of structures for health, education, leisure and leisure for the Soviet citizen and worker. As for the Baltic republics and Lithuania in particular, they also demonstrate that particular propensity towards Western culture of which the historian and critic Yuri Gerchuk speaks⁶. Called the “Soviet West,” their proximity to a more European model led Gerchuk to say that they had “actively contributed to the transformation of the aesthetic milieu of Soviet daily life and the formation of a new style. Annexed to the Soviet Union only on the eve of World War II, they had little time to submit to policies of leveling official culture and, during the Khrushchev era, recovered faster than those eastern territories that were under the Soviet Union from the beginning. For us, the products from the Baltic bore the unmistakable mark of the European culture we dreamed of so much”⁷.

⁴ Summer School “Cultural Landscape: Concrete Heritage, Vilnius and Palanga, 23-27 September, 2024, VGTU, Sapienza

⁵ M. Drémaitė (2017), *Baltic Modernism. Architecture and Housing in Soviet Lithuania*, Dom Publishers, Berlin

⁶ M. Drémaitė (2017), *Baltic Modernism. Architecture and Housing in Soviet Lithuania*, Dom Publishers, Berlin

⁷ M. Drémaitė (2017), *Baltic Modernism. Architecture and Housing in Soviet Lithuania*, Dom Publishers, Berlin

But how did the great citadels of culture and research come about? The Communist Party's programme (1961) states that "men's leisure time will be predominantly devoted to social activities, cultural interaction, mental and physical development, and creative, scientific, technical and artistic pursuits" and in 1967 the number of working days will increase from six to five.

Urban planning was divided into four hierarchical levels: in the first level the educational and cultural services with small rooms very close to the houses and in any case within walking distance. In the second level, services for entire neighborhoods or regions with the possibility of 600, 800, 1000 and 1200 places. Since all the activities were often placed together in the same very large building, large-scale, standardized buildings were mostly opted for.

In the third level we find very large cultural institutions that served entire districts. Among them are facilities reserved for the Communist Party's Youth League, the Pioneers and 6000-seat mega-halls for large public meetings. Finally, the fourth level included services that could extend to entire areas or extra-urban or suburban areas, such as tourist centers, large campsites for the youth league, sanatoriums and university citadels such as that of Vilnius.

The fruits of a better lifestyle and less work pressure also brought a demand for education in the USSR and so, at the beginning of the 60s, the demand for university classrooms, laboratories and research centers intensified. In addition, confidence in the future suggested choosing areas for possible expansions; health facilities, hospitals and university campuses were located in open and green areas. The state planning institute recommended opting for land that could count on at least 10-15 hectares free.

The Soviet University Campus in Kaunas

Between 1960 and 1970, the architect Vytautas Jurgis Dičius was the first to introduce the criteria of a modern university in Lithuania by designing the Kaunas Polytechnic Institute (now the Technical University of Kaunas).

In the university created for Kaunas, what would later be the pre-eminent feature of the Vilnius campus was already expressed. Once a plot of land away from the intensive flow of city traffic was identified, in 1961 the construction of the university complex consisting of four departments began, where a role of great importance was assigned to the places of the community: the canteen, the dormitories for the students and then the stadium with a large sports area. The first building, the Department of Construction, was based on the standardized indications of Giprovuz, the

Soviet Institute of Planning. The compositional procedure adopted was based on the principle of the free plane, with the assembly of various elements. In addition, a late adherence to the aesthetics of the Bauhaus had led to the use of pure rectangular shapes and the use of large stained-glass windows and black and white colors. Although this later became the pre-eminent taste of all Soviet Modernism for the image of public buildings, Kaunas is one of the first attempts to overcome the Stalinist style, adhering to the canons of the International Style.

Aesthetics of Brutalism on the Vilnius University Campus

Vilnius already had an ancient university in the historic center built by the Jesuits, but the demand for more space for higher education led to the new university center being moved outside the city. A huge area was identified in Saulėtekis, north of the town, and in 1963 the League of Lithuanian Architects announced a competition won by Rimantas Dičius, Zigmas Jonas Daunora and Julius Jurgelionis, who took care of the entire vast layout of the campus. The wooded area was divided into three parts: an educational district with the various departments of the University, an area with a sports center and cafeteria of 600 seats and, a little more detached, the dormitories for students and teachers, all within forests with avenues, walks, squares and rest points among the trees.

In 1966, the first building on the Campus, the Institute of Engineering and Construction, was built, which has now become part of the GVTU, Vilnius Gediminas Technical University. Built according to the principles of Functionalism, it has a façade characterized by a protruding, vertical staircase, on the sides of which the two wings of the pure prism present the alternation of horizontal bands of solid gray wall and bands of ribbon and glazed windows. The regular rhythm is broken only by a plastic and monumental canopy. A large glass window creates the connection between the interior, characterized by a large foyer, and the outdoor space. In 1970 the architect J. Jurgelionis added the auditorium wing, in red brick.

In 1970, new buildings for the faculties of law, economics and other disciplines were built on the campus by R. Dičius. Three parallel eight-storey box buildings used for teaching are connected at the rear to a low, expressionless two-storey red brick building with data processing rooms and reading rooms. Although these are three parallelepipeds with flat facades, some features such as the hollowing out of the entrances on the ground floor and the glazed façade create a relationship with the vast nature of the gardens, lawns and open spaces of the area. Long avenues and paths con-



Figure 1 -
*Brutalist
Aesthetic in
Vilnius Univer-
sity Campus
(photo by D.
Scatena).*



Figure 2 -
*Vilnius Univer-
sity Library and
its Information
and Communi-
cation Centre
(photo by
Palekas Studio)*

nect the various old and new buildings, create stops and open-air squares, and enter small groves. The large structural pillars that shape the entrance to the three departments are massive, made of reinforced concrete and represent the true mood of the aesthetics of brutalism that is very present throughout the campus. They frame the external panorama and frame the open areas, creating a further relationship of the spaces.

Six dormitories⁸ are also located in the middle of the forests and stand out among the trees with their sixteen floors. Each has a reinforced concrete frame skeleton and prefabricated infills, floors and stairwells. The plastic image of the façades is obtained thanks to a very cadenced rhythm of the balconies and the particular skyline of the towers so close together has led to the renaming of the area “New York” and has represented a model for the subsequent multi-storey blocks of residential districts throughout the perimeter area of Vilnius.

Large university hospital complexes on the bottom of the hills

The mega university hospitals were located in the vast area of Antakalnis, north of the city, right on the road leading to the campus. Between 1960 and 1966, Eduardas Chlomauskas and Zigmantas Liandzbergis designed two hospitals which, based on rational and functional principles, were real health factories, both ideologically and aesthetically: in fact, they were to evoke the well-being and hygiene of the Soviet people even in the free plan, in the free façade and in the use of reinforced concrete.

Since these were hospitals of national level, the architects, as per the regulations, had to refer to the Institute of Construction and Urban Design and had a limited possibility of experimental and creative elaboration.

Despite this, these hospitals were strongly affected by the relationship with the hills that make up the orography of Vilnius, and the hills act as a backdrop and produce terraces skilfully exploited by the designers.

Like the Fourth State Hospital for the Directory, so called by the party, built in 1960, 1966 and 1973, which was reserved exclusively for the Soviet nomenklatura. Its large green area was once a botanical garden; Following the same compositional principle used on the university campus, the four-level volumes are neatly arranged on the free floor; The wards face south away from the road, the connected clinic is lower down and the connection between the bodies is made by one-story wings. The southern part facing the hill had a series of sloping flower terraces and the inner courtyard for visits was also configured as a garden. But what characterized this hospital at the time of its construction was the level of privacy: “almost all Soviet hospitals adhered to the norm of having rooms with four to eight beds each, but the Fourth Hospital for the Directory could have rooms with only two beds”.

⁸ The student hostels, designed by B. Krūminis in 1974, are west of the long Saulėtekio Avenue

In the University Hospital on Antakalnio Avenue, 57 of 1966, the relationship with the place plays a fundamental role and here too the hill of Antakalnis has served as a natural backdrop. A little further on, the 300-bed pediatric clinic from 1984 is a project by architect Regina Masilionytė; Here the open and common space is characterized by a volume with a circular wall that contains a swimming pool (now under restoration) and a semicircular colonnade that directs towards the entrance.

The complex of hospital services from the Soviet period ends with the Polyclinic, also from 1984, one of the last works of Liandzbergis who was probably one of the most important architects in Lithuanian public institutions. The polyclinic, located on the corner of Antakalnio Avenue, is the most urban of the university hospitals, but what characterizes these large buildings is the open space, which acts as a link between the pure prisms and exploits the beauty and healthiness of nature.

MKIC, a covered square and an open-air theater in the Library in the woods

Let's go back to the university campus of Saulėtekio: its open floor plan of the was interpreted by Lithuanian architects and urban planners as a dynamic project in which services and residences could expand freely. This utopia did not come true, nor did the socialist hope, and both the expensive universities of Kaunas and Vilnius were only partially completed later.

The third millennium saw a resumption of work in Vilnius with the Sunrise Science Valley Headquarters in 2008, which today marks the northern entrance to the open campus and the Technology Park, which with its rectangular triumphal arch shape and the use of metal, glass and steel, voluntarily marks the detachment from the rest of Soviet architecture.

In 2011, with the Vilnius University Library and its Information and Communication Centre, designed by one of the most famous contemporary Lithuanian architects Rolandas Palekas⁹, we witnessed a qualitative leap, also in the use of community spaces.

The contemporary library is a paradigm of similar values in every part of Europe: a public space with a strong emphasis given to the social, cultural

⁹ D. Scatena, (2019). *L'idea e la sua forma. Una lista di strumenti per la progettazione di Rolandas Palekas - Idea and its implementation: a list of design tools by Rolandas Palekas.* In A&A 44/45 Magazine, Sapienza

and even leisure program. Accessibility and flexibility are the keywords. Being part of the university, the new Vilnius library is a building that fully responds to the contemporary vision of a house open to all, inspiring ideas with a dual mission: to give access to information to every user and at the same time stimulate communication between people.

The library, which is located in the Sunrise Valley, is located at the intersection of an important pedestrian path and a road that separates it from the densely urbanized territory through the thick pine forests. It consists of three white volumes similar to stones with irregular shapes. The library is accessed from a square slightly carved into the ground, bordered by steps that wind around the perimeter, reminiscent of the seats of the amphitheater. After the rainy and icy winter, the square, covered with jointless concrete, comes alive with people, artistic events, sculptures and installations and tables in the cafeteria that has direct access from the outside. On the opposite side of the promenade, the lawn becomes an oasis for relaxing in solitude and picnicking. The atrium serves as an intermediate place between inside and outside; The impression is underlined by the same pavement used in the square and the glass roof, which filters the daylight. On the ground floor, the conference room, cafeteria, bookshop and newspaper library pass uninterruptedly from one room to another. The upper levels are dedicated to reading and the open environment is divided into small sections by shelves and tables. A large, glazed wall provides a soothing view of the trees swaying outside; Small cabins are used for individual or group work, with computerized workstations. On the top floor, contemporary design armchairs open up and become comfortable chase-longs that allow you to stay and read and study 24 hours a day.

The library contains the rich and ancient collection of academic texts from Central and Eastern Europe and was built in the wooded area along the main pedestrian boulevard of the university campus, which also visually connects it to the large Soviet palaces. Organic and expressionist, it turns towards the forest to confirm the privileged relationship that modernity and, in particular, Lithuanian architecture, has always had with nature.

The 'recreational chaos' of the Research Centre in Kairėnai

We conclude with the University Research Center, which is located in a regional park, where the most important common space is located at the top of the building, on the garden terrace that communicates directly with the vast park.

The project, also by the Palekas studio, is a redevelopment of an old Soviet stable converted into a Research Center of the Botanical Garden, also belonging to the University of Vilnius.

Winner of the Mies Van de Rohe Prize, the building not only attempts a dialogue with the neighboring architectures but also finds its *raison d'être* in the relationship with nature in which it is immersed. If the Soviet stable differed from the adjacent buildings in height and in the presence of elements that affected the linearity of the façade such as chimneys and projecting roofs, the intervention of the Palekas team was to purify the shape of the building, equalize the height to the pre-existing ones and expand the volume in a new, absolutely compact rectangular plan. The interior spaces have been completely revisited to make room for the new function and the adjoining laboratories, so a glass body with a greenhouse, staircase and elevator has been added along the south wall. The imposing display case, completely transparent and exposed on three sides, dematerializes the perimeter of the building and cancels the boundary between inside and outside. The inside/outside relationship is thus reversed: the old Soviet masonry building closed in on itself, whose only contact with the outside was entrusted to small regular windows, now becomes an absolutely permeable structure that through its transparency and its extraordinary skin makes it difficult to understand where the Park ends and where the building begins.

A decisive design choice is the transparent skin completely wrapped in green roofs, composed of a metal grid with a 1.30 m wide module that is constantly repeated in 3 rows. Within these rectangular partitions a series of vertical elements are arranged. All columns are designed as moving elements, which can be removed or moved if necessary. In this way, it is possible to regulate solar radiation according to the seasons of the year or even according to the time of day. The columns have a load-bearing pipe also equipped with an irrigation system. Around the tube a wire mesh cylinder with vegetal soil allows vertical flowering. In the summer, the luxuriance of the plants reduces the spaces between the columns, thus protecting the rooms from overheating while, in winter, the rows become bare, allowing the total passage of light. Kairėnai¹⁰, therefore, with its new lines and its green skin, becomes a real continuation of the Kairėnai Botanical Garden and Regional Park in which it is immersed and from which it takes its name. Above the greenhouse there is an orangery.

¹⁰ D. Scatena, (2023), *Forme di natura baltica. Tre terrazze e un'aia sui paesaggi lettони e lituani*. In: A. Gherzi, S. Melli (a cura) *"Nuove forme di Natura. Il verde pensile per rigenerare le città"*, Genova University Press;

The two volumes of the stairs divide the roof into three equal parts: a central open space, a covered terrace to the south and a garden to the north, which transform the roof into an area of 'recreational chaos' in which, through a walk at high altitude, it is possible to observe the entire 199-hectare Botanical Garden with 9000 plants, 886 types of peonies, lianas, rhododendrons, liches and dahlias, rightly called the largest garden in Lithuania.

Conclusions

University Campus of Vilnius and its branch offices was designed as "a city on a smaller scale and, like a city, require large open public spaces". In the projects presented, through the relationship with nature, the strength of the place re-emerges overwhelmingly.

The regular and monotonous prisms of Soviet architecture are however placed on the free floor so as to be crossed by greenery, meadows, tree-lined avenues, realizing the Le Corbusier utopia of a free floor available to the modern citizen. Northern Europe, in which Lithuania is located, does not hide its desire for light, for outdoor life. This is therefore achieved thanks to new technologies, also through the use of large glass cases that seem to eliminate the difference between inside and outside. The internal squares take light from the large windows and as in Kairėnai, the roof-garden and the plant columns interpret and continue the design of the regional park, as in the best landscape tradition. As well as the Campus Library, where the entrance is a square and the stairs are uphill paths, from which to look out towards the transparent wall to embrace the woods.

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My-CamPus. A Community Project for the Palermo University Campus

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Introduction

The paper proposes a reflection on the opportunity to consider university spaces as a “common good”, i.e. not only as the neutral physical space in which the daily actions of a certain number of users take place, but rather as the place of identity in which an academic community lives, recognises itself and intends to take care of.

On the other hand, with respect to the theme of community, university campuses often reproduce the main functions of a city on a smaller scale and, as in cities, such spaces require attention: to improve the provision of services, to reduce forms of degradation and/or inappropriate use, to enhance functions that are relevant and potentially useful to the entire community.

Within this scenario, in particular, the university’s open public spaces play a significant role not so much (or not only) for the education of students, but rather as areas of socialization, contributing directly to the quality of life of the entire academic community (students, lecturers, technical-ad-

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ministrative staff, temporary users). Campus life, in fact, is not only study and work, but also a combination of relationships and sociability. In addition to fostering favourable conditions for more effective learning, the quality of campus spaces also contributes substantially to students' personal and relational growth.

Starting from these preliminary remarks, the paper intends to report on the process and initial results of a design experiment applied to the University of Palermo Campus, proposing in particular a reflection on the opportunities offered by a teaching activity that directly involved students and teachers in the relationship between campus and community. The experimental project is focused, in particular, on the community map's construction.

The community Map: Notes for a Disciplinary Focus

In the international literature, community maps are known as a product-process of participatory practices for self-representation of identity and recognition of places' values, in which settled communities, or otherwise perceive themselves as an integral part of those places, are involved. The identity component of the community and the perception of places are essential elements of a cartographic representation, usually paper, but increasingly digital, that however it changes from the language of the traditional technical representations, preferring representation codes and informal iconographies that allow to all (especially the not experts) the immediate comprehension of the places's characters/values.

A wide literature identifies and differentiates at the same time the fields of application, highlighting a great versatility and use of this tool, even outside the planning. It ranges from references that give an overview of this practice and its applications (Lydon, 2003; Chambers, 2005; Perkins, 2007; Wood, 2010), to those that analyse its transposition into GIS (Dunn, 2007; McCall et al. 2015), even according to more qualitative approaches (Wridt, 2010), up to those that analyze the relative social influences (Shkabatur, 2015).

In the context of participatory practices within planning processes, contributions range from more general ones (King and Clifford; 1985) to those addressing different sub-areas of planning in different contexts (Wood, 2005; Perkins, 2007; Fahy and Ó Cinnéide, 2009; Thompson, 2015).

Most of the cited references, and the related described applications, identify community mapping as an interactive, often incremental process in

which the inhabitants of a place recombine the link between themselves and the spaces in which they live, assuming specific responsibilities, not only in the recognition of the places' identity, but precise commitment to their preservation and/or transformation. For this reason, the path leading to the construction of a map is essentially participatory and involves all inhabitants, in an exercise of identity self-representation and community values recognition in relation to the places where one lives (Summa, 2009; Madau, 2015). Due to the process' nature and the involved actors, the context that is generally taken as a reference constitutes "the smallest arena" in which the community's social life develops (Clifford, 2006). This happened in the eighties of the century XXI in the first experiments of "Parish Maps" activated by the environmental association Common Ground, founded in the County of West Sussex in Great Britain, to promote and protect the local distinctiveness (King and Clifford, 1985; Clifford, 2006; Leslie, 2007).

In the following years, the Parish Maps methodology was tested in many other countries (Wood, 2005; Perkins, 2007; Fahy and Ó Cinnéide, 2009; Thompson, 2015) and in different contexts, including Italy (Summa, 2009; Magnaghi, 2010; Madau, 2015; Esposito, 2017). Here the British model has been exported since the early 2000s, especially in the context of the eco-museums' experiences of (including those of the IRES in Piedmont, of Vernole in Puglia, of Orvietano in Umbria, of Cervia in Emilia Romagna, of the Valle dei Laghi in Trentino-Alto Adige; of the Valle di Trompia in Lombardia etc.) to promote the role of the community in the places conservation.

Among the main differences between the British and Italian models, Borghi (2016) recalls the nature of the instrument and how it is represented. If in the UK experience they prefer the dimension of informality, which concerns both the purpose of practices (identification of identity and action of territory), as the actors involved; in the case of Italian experiences applied to eco-museums prevails the technical dimension of the safeguarding project where the same representation is placed at an intermediate level between artistic production (typical of the British Parish Maps) a technical analysis of a given territorial context. The direct consequence of this difference in approach can be seen not only in the participants' profile in the process (ordinary people in the case of the British Parish Maps, ordinary people supported by technical experts and facilitators in the case of the Italian experiences), but also in the different nature of representations: sketches, bird's eye views, aerial perspective, out-of-scale plants in the first case; informal representations that are later "translated" in interdisciplinary technical documentation useful to the

public administration, in the latter case.

More recently, also in Italy, in application of the guidelines of the European Landscape Convention (Florence, 2000) which understands the landscape as “a part of the territory as perceived by the inhabitants” (art. 1), community maps have been used in participatory practices activated in the elaboration of the Italian regions landscape plans.

Among the most significant experiences can be remembered those of the Apulia’s Territorial Landscape Plan (TLP) (Magnaghi, 2016) and that in the way of potential experimentation on the Ischia’s island committed, after the earthquake of 2017 and the landslides of 2023, in the reconstruction plan that becomes an integral part of the Campania Regional Landscape Plan (RLP), referred to the Landscape Area 15 (Island of Ischia).

My-CamPus Project for the University of Palermo

The My-CamPus Project (“Community mapping”) was born within a renewed interest by the University of Palermo academic community towards improving the quality of life of all its components, activated in particular after the Covid-19 experience. This focus is not only on the University’s governance political/technical-administrative level, which is committed to improving quality assurance processes, but increasingly on the effective interaction between this governance dimension, the innovative teaching experiences, and the free students’ action, always sensitive towards the issues concerning the university spaces’ quality.

In relation to this reference context, the My-CamPus Project was born as an learning experiment within the Urban Analysis Studio into the Degree Course on Urban Design for the City in Transition (Department of Architecture, University of Palermo), drawing on experiences of participatory practices and projects (community visioning, service learning, guidance activities with schools) that a group of lecturers and researchers with their own students were carrying out for years.

The Project took advantage of these sensitivities, stimulating the “community sense”, understood as a belonging sense to the University of Palermo academic community, with particular reference, in the first phase, at the University Campus in Viale delle Scienze in Palermo, as a place, and to the student community, as a privileged component. In full awareness of the structural and methodological limitations of the case, it is therefore a first experimental phase of a broader and articulated path

that has informally tried to initiate a dialogue within a “partial” segment of the academic community (students) that in the future will certainly be better structured and extended to the entire academic community (teachers, researchers, administrative technical staff) and to the other spaces of the University.

In relation to these limited purposes (and limits), the experiment aimed at a general goal that is to stimulate a critical reflection on the need to take care of the physical spaces of the university campus, understood as “common good”, from the first to experience them every day. This general goal has been made operational through the construction of a “community map” that involved students who attend the Campus daily. Thus, the construction of the “community map” responds in particular to the following needs:

- a) to contribute to the strengthening of the belonging sense to the university, through the strengthening of the Community dimension;
- b) to recognize and identify the quality of the campus open spaces in order to consider them as “common good”;
- c) to activate any regeneration practices with particular attention to the green spaces quality (environmental dimension).

Tools and Method

The project experiment has been promoted by an interdisciplinary working group mainly concerned with ERC SH7_8 (Land use and regional planning) and PE8_10 (Manufacturing engineering and industrial design). In particular, the working group is made up of 2 senior researchers, 3 junior researchers, 10 students of the Bachelor’s Degree in Urban Design for the City in Transition and 20 students of the Bachelor’s Degree in Industrial Design, all belonging to the Department of Architecture, University of Palermo.

Although within the limits of experimentation, the working group’s interdisciplinary profile and the participants different competence levels made it possible to explore the subject in a broad manner and from multiple perspectives, thus facilitating the realization of a process/product articulated and consistent with the above-mentioned goals. In particular, senior researchers have taken over the methodological and organizational coordination of the project; junior researchers have prepared operational actions and supported students in analysis and project actions; students from urban planning area worked on the construction

and implementation of initial (Google My Maps) and final support (QGIS) for the map, while design area students were mainly concerned with the graphics and icons design to be used in the mapping. The latter was subsequently developed by a total of 80 participants also from other degrees courses (in particular humanities, psychological sciences, engineering, political science).

The above experimental application took place between March and May 2024, with the following timing:

1. March-April 2024: Conception and actions/activities planning;
2. 06/05/23, 10/05/23, 12/05/23: Co-working meetings with students on the operational tools development;
3. 15/05/2024: Experimental construction of the “community map” as a collective event, through a crowdsourcing system for the collection of territorialized data and photos, using digital technologies to support the map (Google My Maps).
4. End of May 2024: Construction of the GIS and analysis of collected data.

Activities was divided into the following stages:

Step 1: Preliminary project activity

Construction of the Google My Maps database for community mapping and provision of icons (Fig. 1) to be used for identifying points in the map.

Step 2: Community event

On 15 May 2024 (from 10.00am to 12.00am) within the activities of the Community Fair (public event organized by the University), the interested academic community (about 80 students from different degree courses) participated in the community mapping in an about 2 hours, accessing the Google My Maps platform, through QR-code from mobile devices (tablets and mobile phones).

Step 3: Data collection and cataloguing

The mapping was developed during a “walk” within the campus, during which students, autonomously organized in groups of between 3 and 5, mapped on the Google My Maps platform spaces that were significant to them. The mapping was carried out as follows:

- a) Identification and selection of the site: Through comparison on the characteristics of the site, students selected it for the map;
- b) Georeferencing: Each item has been associated with its geolocated location on the Campus’ map.
- c) Cataloguing: Each item has been classified as “positive”, “negative”



Figure 1 -
Icons' system
produced for
the community
map by the
Degree Course
in Industrial
Design's stu-
dents.

or "significant" for students.

- d) Photo production: The students photographed the place, inserting the photo in the map.
- e) Description: The students included a short descriptive text explaining the choice of the place and, in the case of "negative" elements, suggesting possible improvement actions.

Step 4: Data analysis

Following the mapping operations, the following actions were carried out:

- f) Data export: The mapped items were exported from Google My Maps through a KML file, a file format used to display geographic data in an Earth browser, such as Google Earth or MyMaps.
- g) Integration with QGIS: The data was uploaded to QGIS implementing both the map and the database.
- h) At the end of the work, a final report was produced that shows the data analyzed.

First results of the project and possible future work prospects

The community map project on 15 May 2024 recorded in two hours about 1,400 accesses from mobile devices to the Google My Maps platform. Specifically, 200 spaces on the Campus were georeferenced, catalogued, photographed and described. Of these, 68 identified places as

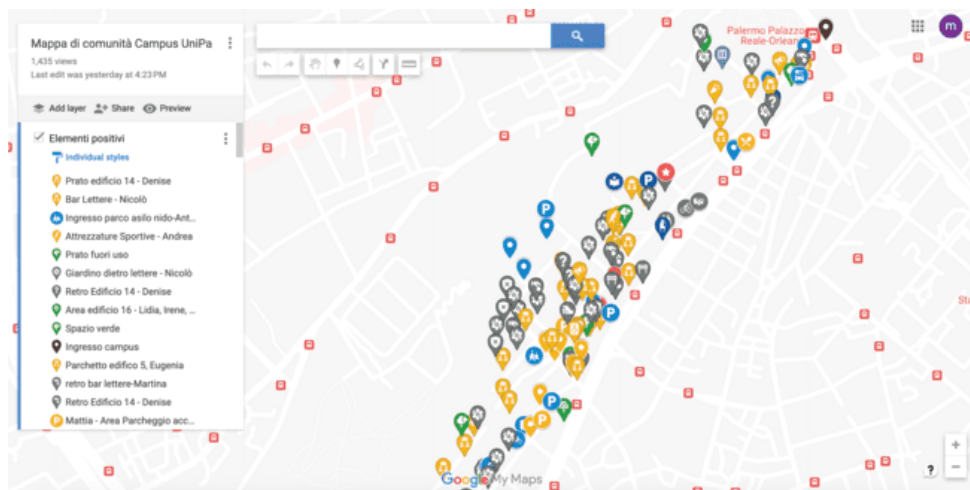


Figure 2 -
*The mapping
at the end of
the event on
15.05.2024.*

“positive resources”, 121 as “negative elements” and 11 as significant to the participating student community. Their distribution, for logistical reasons and because of the time required to travel on foot, is mainly concentrated in the Campus central area (about 100 elements), while the remaining part is distributed in the North-East zone (60 elements) and the South-West zone (about 40 elements), with a generally homogeneous distribution of the “negative” and “positive” elements. The places considered of significant interest for the whole community are mainly concentrated in the Campus central area.

Although within the limits mentioned above, this first experiment showed that in a relatively limited time and with the involvement of a minimum number of students (80), it was possible to collect a significant number of data and information which gave a first, but articulated, mapping the Campus areas, also allowing to identify areas where the lack of basic services is most evident.

The collected data has been structured in a report and they are available as a database, so that it can be used for future analysis and planning of possible interventions to improve the Campus.

At the operational level, project has enabled:

- a) The participatory construction of the community map as a collective event, through a crowdsourcing system for the collection of territorialized data and photos, using digital technologies to support the map (Google My Maps).

- b) The construction of the GIS (QGIS) with the collected and processed data, stabilising the mapping and defining the database's contents for further uses, also technical.
- c) The interpretative analysis of the data collected during the mapping with the identification of the "positive", "negative" elements and particular relevance spaces for the community.
- d) The progressive use of the map in GIS environment (QGIS), not only as a tool for interaction of the academic community, but also as a governance tool for "participatory" planning of future Campus redevelopment interventions.

More generally, the project has significantly contributed to the construction of a shared vision of the university campus by students. Despite the experimental nature of the experience and its limited (time, place and participants) application, the project has demonstrated the full potential of community mapping, aimed not only at building a community's sense, but more generally to raise the awareness of the student community in the common spaces taking care.

Extending this first experiment on a larger scale and with adequate funding could enable the initiative to become an instrument of active participation and effective governance, also available to the University for the management and planning of future interventions of redevelopment of spaces, starting from the real needs that the academic community manifests. A possible development of the initiative could see its inclusion in one or two days per year (one per semester) dedicated to such activity that involves the entire academic community and allows a more articulated and thorough mapping of Campus spaces.

Finally, the My-CamPus project represents a first step towards a participatory and innovative management of the Palermo University's Campus, with the potential to become a model for other academic institutions, being (probably) the first trial in Italy carried out on a university campus.

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Public Space in the Contemporary Chinese Campus: two case studies

*Marichela Sepe**

Introduction

In recent decades, the role of public open spaces within university campuses has gained increasing attention in international discourse, particularly in the fields of urban design, environmental sustainability, and collective health promotion (Ali, Kim, 2020; Fassi, Galluzzo, Rogel, 2016). In contexts marked by rapid ecological, technological, and social transformations, universities are increasingly recognized not only as centers for education and research but also as territorial actors that significantly influence urban quality of life, social cohesion, and the development of new spatial paradigms (Sepe, 2023).

Against this backdrop, university public spaces are conceptualized not merely as aesthetic or ecological amenities, but as fundamental infrastructures that shape learning environments, foster identity, and enable social interaction. In China, where processes of accelerated urbanization intersect with deep-rooted cultural traditions and evolving educational paradigms, university campuses emerge as critical laboratories of spatial experimentation (Sun, 2020; Ping, Ozawa, 2020). These campuses

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embody hybrid environments where heritage and innovation are synthesized, and where architectural form and landscape design together influence collective life (Liu, 2025; Yang, Farrell, 2022).

This study presents a comparative analysis of two emblematic case studies: Wuhan University and Xi'an University of Architecture and Technology (XAUAT). Despite their differences in disciplinary orientation, historical development, and spatial articulation, both institutions demonstrate a strategic investment in the design and use of public open spaces. Rather than establishing a hierarchical comparison, the research investigates how different spatial models contribute to the construction of academic identity, spatial legibility, and user experience (Bagnato, 2021; Haar, 2011).

Wuhan University, one of China's oldest and most prestigious institutions, is characterized by its integration into a prominent natural landscape formed by LuoJia Hill and East Lake. The campus emphasizes the continuity between built form and natural environment, producing a spatial experience marked by scenic immersion and environmental harmony. Public spaces here foster contemplative, recreational, and academic uses within a coherent naturalistic framework.

In contrast, XAUAT, located in the historically rich city of Xi'an, reflects a more academically structured campus model. As a leading institution in architecture, planning, and environmental engineering, XAUAT integrates its open spaces—courtyards, promenades, experimental gardens—into its academic project, using them as active sites of learning, interaction, and critical experimentation.

The methodology

The methodological framework for this comparative study is based on a qualitative, interpretive approach, integrating spatial analysis, field observation, and document-based research. The objective is to understand how public open spaces at Wuhan University and XAUAT operate as infrastructures for academic life, social interaction, and environmental integration.

Primary data were collected through site visits, visual surveys, and photographic documentation. Secondary data included institutional reports, urban plans, academic publications, and official descriptions of campus spatial systems. Field observations focused on the use of space, the articulation between built form and landscape, the integration of ecological features, and the experiential qualities perceived by users.

The study adopts a thematic comparative structure, examining cross-cutting aspects such as: the relationship between architecture and natural landscape; the articulation of movement, gathering, and contemplation spaces; the symbolic use of botanical and water elements; the incorporation of sustainability strategies.

Wuhan University was analyzed with particular attention to its integration into the surrounding natural topography, emphasizing sensory immersion and environmental continuity. The Cherry Blossom Avenue, the lakeside promenade, and Luojia Hill were observed as key spaces where memory, seasonality, and identity converge.

At XAUAT, analysis focused on the many roles of open spaces. Key spatial elements—including courtyard buildings, exhibition corridors, and ecological infrastructures (such as rain gardens)—were examined as didactic devices that foster learning through spatial experience.

A user-centered perspective guided the interpretation of informal practices, such as student use of lawns, informal performances, and temporary exhibitions. Users were conceptualized as co-creators of spatial meaning through their daily actions.

Two Case Studies

Wuhan University Campus

Wuhan University, located in the capital city of Hubei Province, is considered one of China's leading academic institutions, notable for its historical development and the integration of architecture and landscape within its campus. Positioned between Luojia Hill and East Lake, the campus features a spatial organization in which natural topography and built structures are closely interwoven.

During the Nanjing Decade (1927–1937), the National Government of China prioritized education as a foundation for national strength, leading to the establishment of several national universities, including Wuhan University (WHU). Under the leadership of Cai Yuanpei, the building process began in 1928. The initial site at Dongchangkou, located in downtown Wuchang, soon proved inadequate due to its small size and poor condition. After multiple revisions, the southern area of Luojia Mountain was selected, offering a natural setting conducive to the establishment of a prestigious academic environment.



Figure 1 -
*Wuhan
University
cherry blossoms*
(font: [https://
en.whu.edu.cn/
info/1050/4379.
htm](https://en.whu.edu.cn/info/1050/4379.htm))

The campus planning evolved through several stages. Initially, the Construction Equipment Committee proposed a conservative scheme based on traditional layouts. Architect Francis Henry Kales was subsequently invited to design the campus, introducing a Beaux-Arts-inspired plan emphasizing symmetry, axuality, and visual order. Although Kales's early designs prioritized monumental classical forms, they were initially less sensitive to the natural topography of the site.

Later revisions, incorporated elements of traditional Chinese memorial architecture, adapting the design to better integrate with the terrain and cultural context. By 1936, the final campus plan achieved a synthesis between Beaux-Arts principles and environmental sensitivity, resulting in a spatial structure described as "open yet enclosed." The campus was organized around a cross-axis system, supported by a hierarchical road network and a radial layout centered on a sunken core (Tong et Al., 2020).

The overall planning emphasized environmental integration, the creation of multiple functional centers, and the promotion of interdisciplinary interaction. Public spaces, such as plazas and terraces, were carefully designed to enhance both social and academic life, while the library on Shizi Hill emerged as a symbolic and visual landmark. WHU's final campus configuration reflects a distinctive combination of Western planning methodologies and Chinese cultural values.

Within this spatial framework, Luojia Hill serves as the primary geomorphological feature of the campus. It provides the topographical structure around which circulation paths, stairways, and vegetative corridors are organized, structuring areas for recreation, contemplation, and informal social interaction. The summit of the hill offers panoramic vistas, becoming a key site for gathering and reflection.

The wooded slopes of Luojia Hill are interspersed with a network of small-scale built and vegetative spaces—such as pavilions, clearings, and rest areas—that accommodate solitary study, group activities, and physical exercises. Among the prominent landscape elements, Cherry Blossom Avenue stands out as a linear corridor that becomes a vibrant axis of circulation and social activity during the cherry blossom season, reinforcing its symbolic importance within the campus environment.

East Lake, another key natural feature, further defines the campus landscape. The lakeside promenades, bordered by willows and flowering plants, offer settings for low-intensity physical activities and passive recreation. Benches and viewing platforms enhance individual and group engagement with the lakefront scenery. The proximity of East Lake to both academic and residential zones fosters a hybrid landscape where educational and leisure uses coexist, supporting activities such as Tai Chi, musical performances, sunset viewing, and ecological initiatives.

In front of the historic library building, a large open square functions as a multifunctional civic space. Designed with references to traditional Chinese architectural principles, the square and library forecourt accommodate academic fairs, ceremonies, and daily social interactions (Sun, 2020).

Sports fields and recreational areas distributed across the campus further illustrate the integration of open spaces into university life. These facilities support both organized sports and informal recreational activities, with amenities like fitness equipment, table tennis areas, and shaded seating offering a broad range of opportunities for everyday use (<https://en.whu.edu.cn>).

Throughout Wuhan University's campus, the design of open spaces consistently maintains a strong relationship with the surrounding natural and historical contexts. Monumental trees, inscribed stones, and culturally symbolic sculptures punctuate the landscape, reinforcing institutional identity and collective memory.

The active use of these open spaces by students highlights their role in supporting cognitive, social, and recreational practices. Wuhan Uni-

versity's spatial organization thus embodies an approach where natural elements, architectural form, and cultural memory are integrated to promote well-being, environmental awareness, and a strong sense of institutional belonging.

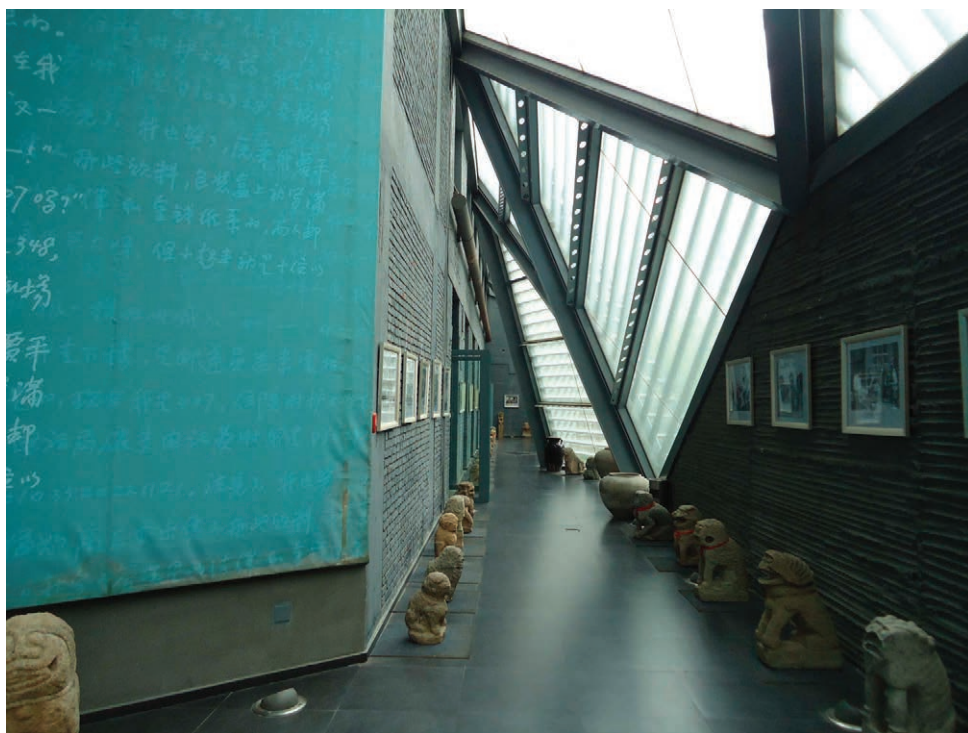
Xi'an University of Architecture and Technology (XAUAT)

Xi'an University of Architecture and Technology (XAUAT), located in the historically layered urban context of Xi'an, occupies an area of 3.1 million m² near significant landmarks such as the Big Wild Goose Pagoda from the Tang Dynasty and the Ming Dynasty city wall. Renowned for its picturesque environment and rich academic atmosphere, XAUAT traces its origins to 1895 with the founding of Beiyang University. Following the nationwide restructuring of higher education in 1956, it consolidated leading programs in civil engineering, architecture, and municipal engineering, and was officially renamed in 1994. Today, it stands as a prominent institution specializing in engineering and architecture, while also maintaining strong academic traditions in liberal arts, sciences, economics, management, art, and law (<https://www.xauat.edu.cn/en/>)

The campus of XAUAT presents a model in which physical infrastructure is aligned with educational objectives, supporting academic activities, practical experimentation, and daily student life. Its spatial organization is structured around a grid-like layout with courtyard buildings and connective paths. While the main circulation routes provide spatial coherence, interstitial spaces—such as paved courtyards and green areas—add diversity to the campus experience.

The design of the XAUAT campus reflects a thoughtful balance between traditional Chinese spatial principles and contemporary planning approaches. While some axes and formal arrangements suggest symmetry, the overall layout adapts to existing terrain and vegetation. Materials such as stone, wood, and concrete define much of the built environment, complemented by planted areas and flowering trees that enhance the campus's sensory identity. Open spaces serve multiple functions: large paved zones support gatherings and circulation, while courtyards and landscaped edges provide settings for study, rest, and informal interaction.

Across the XAUAT campus, shaded seating areas and open courtyards offer spaces for study, rest, and informal gatherings. Landscaped green areas contribute to both social interaction and everyday academic life. Environmental sustainability is reflected in the implementation of rain



gardens and other green infrastructure, which support ecological function while complementing the university's educational mission. Outdoor spaces—including courtyards and garden areas—can serve as platforms for observation, material testing, and plant-related studies, linking environmental awareness with spatial learning.

In residential zones, public spaces equipped with recreational courts, fitness facilities, and seating areas support social interaction and daily activities. Sculptures and artistic installations, enhance the cultural dimension of the campus. A historic section inspired by Jiangnan garden aesthetics, with lotus ponds, winding paths, and covered walkways, offers a contemplative environment and a symbolic link to traditional Chinese garden design.

Overall, the public open spaces at XAUAT are integral to both academic and community life. The campus layout exemplifies the fusion of landscape and architecture, creating a setting that supports learning, research, social engagement, and cultural continuity.

Figure 2 -
XAUAT Cam-
pus, Faculty
of Architec-
ture, common
spaces
(Font: Mariche-
la Sepe'ar-
chive)



Figure 3 -
XAUAT Cam-
pus, Faculty of
Architecture,
public space
detail
(Font: Mariche-
la Sepe'ar-
chive)

Observations

The comparative analysis of the public open spaces at Wuhan University and Xi'an University of Architecture and Technology (XAUAT) highlights the existence of two distinct approaches to campus spatial design, each closely linked to its environmental, historical, and disciplinary context. Although the spatial configurations of the two campuses differ significantly—reflecting differences in geographic setting, institutional focus, and educational mission—both demonstrate the integration of public spaces as essential components of university life, supporting academic activities, social interaction, and environmental engagement.

At Wuhan University, the spatial organization is strongly influenced by the surrounding natural environment of Luojia Hill and East Lake. The campus design integrates circulation paths, buildings, and vegetation into the existing topography, creating a setting that emphasizes continuity with the landscape. Key open spaces such as Cherry Blossom Avenue and the lake-side promenades serve both recreational and symbolic functions, structured around the rhythms of seasonal change and collective memory.

At XAUAT, the layout of boulevards, courtyards, and open-air exhibition areas reflects an intention to incorporate outdoor spaces into the educational experience. The design emphasizes clarity, modularity, and the integration of sustainable infrastructure, with features such as, rain gardens, and permeable pavements serving both functional and didactic purposes. Open spaces near the Faculty of Architecture support academic activities, informal learning, and community events.

Despite their different spatial models, both campuses incorporate elements that reinforce institutional identity and memory. At Wuhan University, these are expressed through traditional architectural forms, symbolic natural elements, and a strong connection to the natural landscape. At XAUAT, memory and identity are constructed through the active use of space for exhibitions, experiments, and environmental education initiatives.

Both campuses also provide spaces that facilitate informal socialization and recreational activities. At Wuhan, the naturalistic settings—wooded paths, lawns, and lakeside areas—support restorative and contemplative uses. At XAUAT, spaces such as shaded seating areas, and public art installations foster social interaction and creative engagement.

Finally, the two universities demonstrate different approaches to sustainability. XAUAT incorporates ecological infrastructures within its campus design, linking environmental practices to its educational mission. Wuhan University, on the other hand, maintains a strong focus on preserving its natural assets and integrating the built environment into the existing landscape with minimal disruption.

Overall, the public open spaces at Wuhan University and XAUAT show how campus landscapes can be designed not only to serve practical and recreational needs but also to reflect broader institutional values and educational objectives.

Conclusion

The comparative analysis of Wuhan University and Xi'an University of Architecture and Technology (XAUAT) highlights two distinct but complementary approaches to the role of public open spaces in contemporary Chinese university campuses. Both cases show that the spatial configuration of campuses goes beyond functional needs, positioning open spaces as integral elements of the educational, social, and environmental systems.

Wuhan University emphasizes a landscape-based model, where the natural setting of Luojia Hill and East Lake shapes the structure and experience of the campus. The integration between built environment and topography fosters a continuity between academic spaces and the surrounding landscape, encouraging contemplative use, seasonal rituals, and strong symbolic connections to place. Public spaces are not isolated entities but are woven into the environmental fabric, reinforcing a long-term relationship between users, memory, and nature.

XAUAT, through the design of axial paths, courtyards, and ecological infrastructures, promotes the use of space as an active component of architectural education. Open spaces are conceived as a sort of didactic environments where experimentation and critical engagement are embedded in everyday practices. The spatial structure facilitates interaction, production, and the appropriation of space by the academic community.

Although the two campuses diverge in form and intent, they both demonstrate how public open spaces can serve as active frameworks for academic identity and collective life. Their strategies of landscape integration and pedagogical activation offer two different, yet equally significant, interpretations of how space can support educational objectives, social cohesion, and environmental responsibility.

Furthermore, the study shows how each institution articulates sustainability according to its spatial and institutional priorities: Wuhan University through ecological preservation and environmental immersion, and XAUAT through integration of green infrastructure and art into its educational framework.

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Public Spaces in Microcosms: Dynamic Design and Practice of Open Public Spaces in Middle East Technical University Campus

*Furkan Türk**

*Duygu Cihanger Ribeiro***

Theoretical Framework

This study is grounded in a multi-dimensional understanding of public space as a dynamic construct that is continually produced and reproduced through social practices. Drawing on Lefebvre's (1991) seminal concept of the production of space, public space is viewed not merely as a physical container but as an arena of social interaction and transformation. Complementing this view, Whyte's (1980) observations on the social life of small urban spaces emphasize that the vitality of public areas is rooted in the quality of everyday interactions that occur within them. Lefebvre's approach emphasizes that space is not merely a physical entity but is continuously produced and reproduced through social practices, while Whyte's work illustrates how public interactions enrich urban functionality (Whyte, 1980). In addition, the perspectives of influential planning and design scholars such as Jan Gehl and Kevin Lynch, who have extensively explored spatial perception and user behavior, are integrated

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into our analytical approach to include human-scale design, spatial legibility, spontaneous encounters and meaningful social exchanges (Gehl, 2010; Lynch, 1960) . Complementing these views, Gumprecht's study on campuses as public spaces in American college towns (Gumprecht, 2007) and Sennett's reflections in *The Open City* and *Designing Disorder* further highlight the open, diverse urban environments and organic urban evolution (Sennet, 1990; Sennet & Sendra, 2020)

When applied to the context of university campuses, these theories reveal campuses as microcosms of the city, where diverse public spaces are independent from their within the city, either on the periphery or in the countryside. In line with this, Gumprecht's (2007) study on the campus as a public space in American college towns demonstrates how campuses, through their spatial configurations and functional dynamics, provide fertile ground for civic engagement and collective identity formation. Recent empirical studies—such as the spatial analysis of publicness on De Uithof campus in Utrecht (Yaylali-Yildiz et al., 2020) and the discussions presented in *Places Journal's* Volume 17, Issue 1 which is about *Considering the Place of Campus* (Fisher, 2005; Bender & Parman, 2005; Marthinsen 2005; Halsband, 2005; Friedman, 2005)—further illustrate how the interplay between spatial configuration and user practices directly influences the degree of publicness, shaping how individuals interact, discover new opportunities, and express their identities within campus environments.

By integrating these diverse perspectives, this theoretical framework establishes a comprehensive lens through which the public spaces of university campuses can be examined. It not only bridges classical urban theory with contemporary empirical research but also provides the necessary conceptual tools to analyze how public spaces are physically configured and socially appropriated through the case of METU Ankara Campus.

Research Approach: Campus Open Public Spaces in Microcosm

This study employs a multi-method approach, integrating morphological analysis, observational methods, and archival research to examine the open public spaces of the METU Campus as both physical environments and socially constructed spaces. To question “How do the spatial patterns of METU's Campus contribute to or reflect the social dynamics and political movements within the university community? to discuss the ways to re-conceive the campus open spaces “according to its psychological

impact on its users.” (Saligaros, 2020, 368). In this context, the study focuses on three lines of discussion as: archive, morphology, ordinary use. For this, first the university archives, planning documents, and past design proposals will be reviewed to trace the historical and political evolution of METU’s open public spaces. Additionally, media reports, student publications, and records of protests or public events will offer valuable insights into the symbolic and contested meanings these spaces have carried over time. Together with this, the spatial configuration of METU’s campus will be analyzed through typological mapping and urban morphology studies to understand how its open public spaces have evolved over time. Lastly, systematic field observations will document how users interact with open public spaces, emphasizing movement patterns, gathering points, and everyday social behaviors to grasp the ordinary spaces allowing and fostering social interaction. Drawing from Whyte’s behavioral mapping techniques, the study will use visual recordings, and on-site sketches to capture how different groups engage with and experience campus spaces.

METU Campus as Microcosm

The Middle East Technical University campus, established in 1956, is celebrated as one of Turkey’s most influential examples of modernist campus planning (Ilgaz, 2014). Its design emerged in a period of rapid modernization in Turkey, intended to reflect the values of the new Republic by synthesizing functionality, aesthetics, and social inclusivity and considered the most important and dynamic university campus in Turkey in the socio-political sense since 1956 (Tuncer & Özdem, 2008). The campus merged American campus planning practices with European Modernist principles, resulting in a distinctive campus community that reflected the dynamic and transformative political landscape of 1960s Turkey (Sargin, et al., 2013). Especially with the Student Movements that took place around the world in the 1960s and 1970s, many actions and events took place on the METU campus that left their mark on history and took their place on the political agenda throughout Turkey (Çelen, 2021). Undoubtedly, these are not independent from the university campus and its characteristics.

From this perspective METU was envisioned not only as an academic institution but also as a dynamic public realm, an urban microcosm where modernist architecture meets expansive green landscapes and carefully planned public spaces. Over the decades, METU’s design has been the

subject of extensive scholarly attention. Researchers have highlighted its master plan as a pioneering model that harmonizes formal spatial organization with informal social practices. This synthesis is evident in the arrangement of its open areas, pedestrian pathways, and building ensembles, which collectively foster spontaneous encounters and deliberate public engagements.

Adding to its architectural prestige, METU has raised its international recognition through awards such as the Aga Khan Award for Architecture which is particularly significant because it highlights the campus as a unique example of modernist architecture. The award, which is known for recognizing projects that improve quality of life and promote sustainability validates METU's innovative approach to campus planning. The university's architectural vision, combined with its modernist principles, demonstrates how large-scale institutional design can be both functional and responsive to its surroundings. The award also acknowledges the campus's ability to foster social interaction and architectural harmony, making it more than just a conventional education institution but a living, evolving, urban entity.

Typologies

The study employs a morphological analysis approach to systematically examine the physical configuration and spatial characteristics of open public spaces on the METU campus. This method involves deconstructing the campus environment into its fundamental spatial units—such as gates, open green spaces, stadiums, libraries, preparatory schools, dormitories, and the rectorate—and mapping out their physical attributes, connectivity, and hierarchical relationships. Furthermore, the field study aims to gather ordinary spaces of the campus that are not intentionally planned for a social function yet transformed into public areas through everyday use and adaptation. Data for the analysis will be gathered through detailed site visits, architectural drawings, photographic documentation, and the campus's master plans.

By integrating quantitative spatial mapping with qualitative observations of user practices, this methodological framework provides a comprehensive understanding of how the design and configuration of METU's open public spaces contribute to their multifunctionality and dynamic nature intersecting plan and spontaneity (Cihanger, 2018). The initial analysis presents a conceptual grouping derived from the spatial location and meaning of the following open public spaces in a way to reach a pattern language (Alexander et al., 1977):

Border: Gates, Welcome Sculpture

Within: Physics' "Çimleri" Lawn, Revolution "Devrim" Stadium, Rectorate, Dormitories, Parking Lots (used as gathering spaces), ordinary spaces (eg. library entrance, rectorate entrance)

adjacent: Neighbourhood, A1 Gate Metro Station, A4 Gate

The space that gains meaning with the user also brings with it the user's changing and transforming it. For instance, although Revolution "Devrim" Stadium, or "Devrim" for short by students, was designed and assigned the function of a classical university stadium, it has become a place of protest due to the experience and practice of the users and the political context within the ongoing historical flow. This site hosts functions such as graduation ceremonies, spring festivals, sports competitions due to its form and spatial characteristics, it has also hosted many on-campus protests during the Gezi Protests in 2013, and has recreated its open public space feature in this sense. This transformation reflects user-space interaction, and social inclusivity, as its central location bridges campus and city communities.

The Physics Lawn, despite being a green area surrounding a significant monument has been redefined through daily practices: students cross it as a shortcut between classes (perceived space), while its centrality and visibility (Whyte, 1980) make it a strategic site for protests. 2019-2022 and 2024 Spring Fest Protests (Keskin, 2024), Istanbul Convention Action Protests (Ekmek ve Gül, 2021) and many other protests and commemorations shaped and started in this green public space. This transformation into a lived space (Lefebvre, 1991) reflects user-space interaction and social inclusivity, as its open layout accommodates diverse groups. Its lack of fixed seating (contrary to Whyte's recommendations) ironically enables flexible use, aligning with Carmona's (2010) argument that under-designed spaces often foster creativity.

The Rectorate's plaza, conceived as a formal entryway (conceived space), has become a contested lived space. Its wide stairs and elevated platform—intended to symbolize institutional authority—now amplify protesters' voices (e.g., 2024 Spring Fest "Rectorate Front" Protests). Whyte's (1980) principle of "triangulation" (stimulating interactions through design) applies inversely here: the space's symbolic power (perceived space) attracts dissent, creating tension between design intent and user appropriation. This duality mirrors Koolhaas' (1995) critique of urban spaces as "fields of conflict between program and spontaneity."

Concluding Remarks

The evolution of a campus over time is shaped by a complex system that integrates physical structures (static subsystem) with human actors (governing subsystems or the system's intelligence) (Salingaros, 2020). The METU campus demonstrates that public spaces are not merely "places" but dynamic "processes." As The Oregon Experiment (Alexander et al., 1975) shows, the campus design should go beyond the initial master plan and employ an "intelligent systems based approach" that is open to feedback (De Roo, 2020) while embracing the human factor.

Rather than resisting the transformation occurring in METU's open public spaces, a dynamic design learning from user feedbacks should be configured to nurture it. Only in this way can campuses serve as both academic centers and vibrant laboratories of social solidarity.

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PART 2

CAMPUS AND UNIVERSITY COMMUNITIES: TYPOLOGIES AND EMERGING NEEDS

Public Spaces and Community Dynamics in the Middle East Technical University Campus

*Özge Altaş, F. Candaş Bilisel**

Introduction

This paper examines the Middle East Technical University (METU) campus in Ankara, its design principles, and the relation between the formation of a university community and campus spaces; it explores the way they transform each other. In this paper, it is argued that the initial design of the university campus has had an important share in the formation of the university community. A variety of social facilities and public open spaces provided as part of the campus design, have enabled and encouraged social interactions. The METU community has played a prominent role in turning these spaces into meaningful places, in which a vibrant campus life have flourished over the years.

The impact of an urban design on its user community is shaped by multiple factors, beginning with the quality of the design itself. Yet, the dynamics of the user community play also a crucial role in transforming the built environment. The interaction between the physical space and the

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user community create a continuous process in which spatial configurations influence social structures, while social dynamics, in turn, reshape the space through appropriation, adaptation, and sometimes through resistance. Jan Gehl (2011) emphasizes that while architecture does not directly determine the quality of social contacts, it significantly affects the potential for meeting, seeing, and hearing each other. A well-designed environment offers numerous opportunities for spontaneous interactions and the “presence of other people, activities, events, inspiration, and stimulation,” making it a core quality of public spaces (Gehl, 2011).

Gehl (2011) and other scholars of urban design argue that “well-designed” environments could positively affect people’s activities and social encounters in public spaces. It is evident that the perceptual quality of a place is not the only factor that could encourage social interaction. How a conceived (designed) space is perceived by people who use it, and how it becomes a lived space through people’s actions should be considered (Lefebvre, 1991). Public spaces are places where individuals can express, define, and realize themselves. They are places where they encounter each other, build social relationships, contribute to the community life, and transform not only themselves but also the society. Communities using the spaces change them constantly through their activities. According to Henri Lefebvre (1991), social space is defined as a space where social relations converge, and find expression. It is not merely a physical space, but a stage where social practices and relations materialize. Social space is characterized by “encounter, assembly, and simultaneity,” where everything produced by nature or society—living beings, objects, works, and symbols—gathers and accumulates at some point. Urban space serves as a center where crowds, people’s actions, and symbols converge, intensify, and accumulate (Lefebvre, 1991). Furthermore, Lefebvre emphasizes that encounters reveal the dynamics of social relations between individuals and groups. These interactions are not limited to physical proximity but are also shaped by symbolic meanings and power relations. Encounters play a critical role in the production and reproduction of social space as they lead to remaking of social bonds (Lefebvre, 1991)

The transformation of public spaces in modern cities, influenced by modern architecture and urbanism, has been also critically examined by the sociologists, Henri Lefebvre and Richard Sennett. While Lefebvre sees public spaces as spaces for collective expression, Sennett (1977) criticizes the loss of public roles in modern societies, where public life has been reduced to a series of duties, and public spaces are viewed merely as transit zones where individuality prevails, rather than being spaces for social en-

counter and interaction. This shift brings questions about how relations between places and communities change.

The creation of the first campus university in Turkey: METU Campus

METU Campus reflected an American approach to campus design, influenced also by the European modernism of the mid-20th century, and has shaped the social environment through the design of the built environment. METU introduced “not only a new model of higher education and research, but also a model environment of a university campus in post-war Turkey” as Savaş and Sargın (2013) emphasized in their article. The decision to establish a technical university in Ankara, that would raise professionals in Turkey and the Middle East dates back to early 1950s (Erdim, 2020). Middle East Technical University was founded in 1956, with English as the language of instruction, focusing on scientific, technical, and professional fields of study, with the consultancy of international experts. The idea of creating a campus university, where academic, social, and residential uses were harmoniously planned, was adopted. The aim was to combine the new higher education model with a modern architectural design for the university campus (Savaş and Sargın, 2013). A campus master plan competition was held in 1961. Altuğ and Behruz Çinici’s proposal was awarded with the first prize. The winning proposal became a pioneering example of modern campus planning in Turkey (Uçar, 2001).

As cited by Akman (2016), Behruz Çinici states that *Universities are not merely colleges; they are a way of life*. Çinici’s METU project aimed at creating a spatial layout that promoted public, social, and academic interaction, which was one of the primary objectives in the design of the METU Campus. The project was separated into various functional zones: The Academic zone, the Center, and the Non-academic zone. The academic area was composed of the faculty buildings, the central zone contained the shopping center and sports areas, and the Non-academic zone comprised a separate quarter for student dormitories, and a residential quarter for the university staff (Çinici, cited also by Akman, 2016).

The spatial layout of the “Academic Zone” was structured around a main pedestrian axis named as the “alley” which connected the educational buildings, and the principal facilities. The Faculty of Administrative Sciences, the Faculty of Architecture, the Main Library, the Central Auditorium, the Faculty of Arts and Sciences, the Presidency Office, the



Figure 1 -
*METU Campus:
Devrim Stadium,
the central
sports hall in
the Centre,
and the dormi-
tories and staff
housing in the
Non-Academic
Zone (METU
Archive)*

Cafeteria, Student Clubs, and the Engineering Faculty central building are aligned on this alley from north to south. Vehicular circulation is provided by a ring road that serves the academic zone. The shopping area, and the Cultural and Conventional Center built later, form a cultural-commercial zone extending from the academic area towards southwest. The university stadium, the sports hall, and open sports fields were intentionally located, to serve as a vital link between the academic area and dormitories, welcoming pedestrians arriving from the alley (Akman, 2016). Despite the functional zoning, the dormitories were placed at a maximum 20 minutes walking distance from the most remote faculty building. This decision has made the campus life easier, walkable, and accessible.

Altuğ and Behruz Çinici put particular emphasis on the alley, which they qualified both as the “spine” of the campus, and as a “forum” where social, cultural and intellectual interaction would take place:

“The defining layout of the campus is formed along the pedestrian axis that is the spine of the campus, named as “Alley” by the users. The focus of the social activity concentrates here and this cultural and the intellectual interaction place, the spine, can be named as “Forum” or the main major class of the university in where people are gathering and interacting continuously”.

Altuğ-Behruz Çinici (Çinici, as cited in Akman, 2016, p. 63)

The spatial design of the alley and the open spaces designed with courtyards, sidewalks, and terraces still encourages social encounters between members of the university community. It has become a forum, where public meetings, and political protests take place. The area in front of the Central Auditorium building is an open space, where students come to lie down on the grass, to meet friends, and come together for public demonstrations.

METU Community and transformation of the campus into a vivid public realm

The modern design of the campus has helped the METU community build its semi-public social life. The settlement was built as a 'university city' as Savaş and Sargin (2013) pointed out, with educational, commercial, and residential functions, as well as outdoor, sports, and cultural activities. It was inevitable that the university community would form an identity and memory that would be built on the campus with these features. METU campus was conceived not just as a physical setting, but as a vibrant hub for learning and intellectual exchange.

Several buildings and open spaces in the METU campus are used as multifunctional spaces. For instance, the Faculty of Architecture hosts exhibitions, jury presentations, events, and workshops in the inner spaces of the faculty building on different days. The auditorium of the Faculty of Architecture serves as a performance space for the Theater Club, one of the most active student clubs of the university. The polyvalent design of various campus buildings and open spaces give users freedom, and a chance to create their setting. While evening hours host more intense social encounters, daytime interactions tend to be more limited in Devrim Stadium. While most department buildings become deserted after the end of classes, life continues, however, in buildings such as the Faculty of Architecture or the Main Library buildings that are open to students' use. The dynamics of social interactions at night vary from daytime in the campus, and more informal forms of communication can be observed. With the increase in the number of the university's students, various facilities that were opened in time, have provided space for a vivid public life simultaneously experienced in different places of the campus. These gathering places bring together all living beings in the campus (Akman, 2016).

In public open spaces, day and night activities vary. The stadium has been called as "Devrim Stadium" by METU community with reference to the slogan "Devrim" (Revolution) inscribed on its stands by the students in 1968. It is actually used for sports activities during the day, but towards the evening, it turns into a favorable place for students for gatherings with friends, and for spontaneous activities. The stadium is a prominent place that hosts different events and is used for different functions: Individual or collective sports, especially preferred in the summer months to meet and chat with friends, opens up space for community meetings, and graduation ceremonies. It also hosts cultural and artistic events: the Spring Festivals, theater and dance performances etc.

Figure 2 -
Manifestation of "Women's Solidarity" in front of the Mathematics building in METU Campus



In recent years, the walls of the Mathematics building became a platform of expression for women's solidarity movement at METU. With the intervention of the students, the walls of the Mathematics Department turned into a communication medium. This space is one of the places where social encounters and interactions between students are intense. Not only the fact that the Mathematics building is located right across the Main Library building, at the center of the alley, but also the presence of the "Woman with a book" statue across the library building may have affect-

ed this community's choice of this place to express themselves. As seen in this example, the spatial layout of the alley, and the open space between buildings successfully achieve the goal of fostering public, social, and academic interaction intended.

Similarly, the area in front of the Rectorate building occasionally serves as a venue for various demonstrations by the university community, including the university staff and students. At times, they set up a stage to express themselves through singing and dancing. Other times, the space transforms into a cinema or theater. It even becomes a campsite where students hold vigils for days. Such forms of public protests serve as a way for the university community to communicate with the administration. Such interactions not only transform and reproduce the space but also enable its reappropriation by people for diverse socio-political actions. Lefebvre's theory suggests that space, in addition to being an object of power, can also be reshaped through the struggles of social actors. It is observed that places of campus shape the community, and in turn, the community shapes the place. Therefore, a creative process of placemaking can be read in the example of the METU. According to the principles of PPS (Project for Public Spaces, n.d.), the transformation of the campus is driven not only by top-down decisions and authorities but also by people.

Concluding Remarks

Since its establishment in 1956, METU has continuously evolved with its community culture and identity shaped by the ongoing socio-political transformations in the country and the world. Following the shifting political context of the 1960s, METU has become a unique university community in Turkey, known for its political activism, and emphasis on social responsibility. The *genius loci* of the place is defined not only by its physical form but also by the social interactions within it. In the case of METU, the campus serves as the *locus* of the collective memory and the political history of this community, which has been influenced by intellectual and social dynamics over time. The university's spaces are more than just functional; they embody the cultural and political identity that has developed throughout its history.

The effect of the campus design on the formation of the METU community is obvious; however as Lefebvre (1991) argues, power relations also have had effects on both the public space and the society. Altuğ and Behruz Çinici's campus design provided the METU community with spac-

es where they can express themselves in different forms, and create a lively public life. However, although the design of the campus is flexible and transformable, the fact that the university is a public university and therefore it is affected to a certain extent by the socio-political orientation of the governments, and the constant circulation of the community's members -i.e. of the students in particular- do not fully allow the community to shape the campus freely.

METU community has always been responsive to the politics, economy, and culture of the time in the country and the world. Power relations have affected the METU's communal space. Today, public access to the university is restrained for security purposes, and even the access to certain public spaces of the campus is restricted from time to time for various reasons. For various political or administrative reasons, however, the access to the stadium has been restrained by the university administration at certain times, in the recent years. The name of the stadium -dedicated to "*Devrim*" (Revolution)- given by the university community, has been intended to be erased from the stands, and is called officially METU Stadium which undermines the collective memory of the university's community. The METU community still holds onto its collective memory, the campus, and certain specific places in it. The social life of METU, cultural and artistic activities, as well as the graduation ceremonies, are followed by the people of Ankara with great interest.

Power relations have an impact on public spaces, however, it is important to stress that the lived space is not shaped solely by top-down decisions. The society that experiences the space also transforms it over time. The everyday practices and collective actions of a society transform the space by giving new meanings and uses. The METU community formed of students, university staff and graduates has been constantly transforming the campus they live in, by appropriating its spaces in various ways.

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From Artificial Dependence Towards White Islands: Rethinking University Spaces for Digital Detox

*Giovanna Badaloni**

AD 2025: Artificial Dependence

"I imagine one could say: 'Why don't you leave me alone?! I want no part of your Internet, of your technological civilization, of your network society! I just want to live my life!'. Well, if this is your position, I have bad news for you. If you do not care about the networks, the networks will care about you, anyway. For as long as you want to live in society, at this time and in this place, you will have to deal with the network society. Because we live in the Internet Galaxy".

Manuel Castells (2001, p. 282)

The Spanish sociologist and urban planner had already predicted the rise of the 'Network Society', a paradigm of the social structure of our time (Castells, 1996; 2001). Today, we are all immersed in a hyperconnected world from which it is impossible to escape. Even on Mount Everest, high-speed WiFi is available (Meikle, 2010). However, the most widespread fear among people is not about finding a space immune to notifications from digital devices but instead being without a smartphone and thus offline.

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To indicate this psychological state of discomfort and fear, the term “Nomophobia” (from “NO MOBILE PHOne phoBIA”) was coined in 2008, introduced in the study commissioned by the UK Post Office to YouGov, which investigated the link between anxiety disorders and mobile phone use among 2163 participants. It concluded that ‘the fear of being out of mobile phone contact’ affected 53% of British users, 13 mn people (MailOnline, 2008; Bhattacharya et al., 2019). In 2011, the acronym FoMO (from “Fear of Missing Out”) was also introduced. Conceived in 2004 by a Harvard student, it describes the anxiety of missing something important and being socially excluded (McGinnis, 2023; Vaughn & Mack, 2012). In 2012, the Macquarie Dictionary designed the word “Phubbing” (PHU), a fusion of “phone” and “snubbing”, for the widespread behaviour of ignoring one’s interlocutors due to the (ab)use of mobile devices, resulting in damage to interpersonal relationships (Dibajnia et al., 2025).

Network Society or Hyperconnected Society?

According to the *Digital 2024: Global Overview Report*, unique mobile users rose to 5.61 bn at the beginning of 2024 (+2.5% compared to 2023); active social media profiles increased to 5.04 bn, 62% of the world population. The daily time spent online is also impressive, estimated by GWI at 6 hours and 40 minutes per average user, increased by 4 minutes per day (+1%), of which 2 hours and 23 minutes are spent on social media (We Are Social & Meltwater, 2024). In Italy, 75% of children aged 6 to 9 and 96% of adolescents aged 10 to 13 use smartphones; in the 14-75 age group, two out of five Italians (38%) have nomophobia (SWG, 2023).

The situation among students is worrying. In the “Smartphone addiction: vissuto dei giovani e strumenti di contrasto” project, conducted by EURES, the Lazio Region, and the Ministry of Labour and Social Policies, 1800 students were interviewed. They use it mainly out of boredom (46.9%) and a need for belonging (22.5%), on average 6 hours a day; one in four, over 8 hours (25.4%). Smartphone addiction affects 82% of them: 60% are at medium risk, while 22% are in the critical ‘alert addiction’ range (EURES, 2021).

The scientific literature refers to this condition as a ‘new addiction’ and a ‘substance-free addiction’ relating to dysfunctional behaviours such as pathological gambling, compulsive shopping, and addictions to work, exercise, sex, and relationships (Colantuono & Cocciolletti, 2020; Griffiths, 2005; Caretti & La Barbera, 2009). The original expression “artificial dependence”, which gives this study its title, offers a current definition of the phenomenon, which – more or less directly – now involves everyone, add-

ing a reference to AI, which could strengthen young people's addiction, being used by 80% of students aged 16 to 18 (Ronchetti, 2024) and 86% of university students (Digital Education Council, 2024). It is artificial because, in seeking its object, it is a "data addiction"; moreover, it is induced, so it is not possible to choose or escape it. While it is possible to decide to avoid certain behaviours or things, such as starting to gamble or drinking alcohol, so as not to become their slaves, this does not apply to digital devices, whose use has become a mandatory choice for many. Otherwise, without the possibility of connection, they would not have had the attractiveness and functionality they have, which increase their impact in shaping individual behaviours, so the problem would not have arisen.

2025 is set to be the most technological year ever, with an estimated over 23 bn connected objects – an average of three per person – and an Internet of Things (IoT) business worth 1.05 tn dollars (Mele, 2024). The idea of studying, working, or living without the Internet is unrealistic: it would mean complicating life to an unimaginable extent, indeed, *not existing*. In many contexts, including universities, its use is the norm. For some professional roles, such as top executives, the mere continuous (even obsessive) checking of emails is the daily essence. Without the Internet, the planet would be paralysed today. Digital addiction seems to have become inevitable, a corollary of contemporary socio-economic circumstances beyond individual control. Over time, it has become a global concern, particularly among young people, the most vulnerable to excessive technology use. Moreover, the COVID-19 pandemic has amplified the phenomenon, with a sharp increase in digital device use and repercussions on individual well-being.

In Italy, the National Recovery and Resilience Plan (PNRR) has identified the "Missione Salute" ("Health Mission") among the areas of intervention, with investments of 15.63 bn euros (8.16% of the total) to be realised by 2026 (Ministero della Salute, 2024a). The Ministry of Health's *Performance Plan 2022-2024* (2022) outlined specific objectives to improve the efficiency and accessibility of the health system, also focusing on the mental health of the population. The "Psychologist Bonus" was introduced in 2022, and confirmed until 2025, to respond to the growing psychological distress exacerbated by the pandemic, offering financial support for psychotherapy courses, including treatments for social and digital addictions (Ministero della Salute, 2024b). The latest ministerial guideline promotes the psycho-physical well-being of adolescents (Ministero della Salute, 2025). However, it does not explicitly refer to digital addiction, although it is becoming an increasingly relevant health issue, as numerous scientific studies confirm.

From Digital Addiction to Digital Detox

A recent analysis examined the connections between social media use and the mental health of university students during the pandemic, revealing a significant correlation between excessive use of digital platforms and symptoms of stress, depression, anxiety, and loneliness (Ghanayem et al., 2024). Similar conclusions were reached by research on smartphone addiction among adolescents, demonstrating that it is closely linked to depression, distress, and sleep deprivation, requiring preventive actions to mitigate its adverse effects (Kabadayi, 2024). An investigation into significant interventions against digital addiction in children and adolescents highlighted the effectiveness of cognitive-behavioural therapy (CBT) and the importance of early and multidisciplinary intervention (Ding & Li, 2023). A study on the links between digital literacy, Internet use and addiction among Chinese university students revealed that higher digital competence is associated with a lower risk. Targeted educational programs can be an effective strategy for reducing it (Jiang et al., 2023).

Extensive research confirms that excessive Internet use, mainly social media, can generate anxiety and depression, a sense of isolation, and even “social media loneliness”. To regain control of one’s life, a “digital detox” – the choice to reduce or eliminate the use of digital devices for a certain period – can be helpful.

A team from the University of Pennsylvania conducted an experiment on 143 students divided into two groups: the first one limited the use of Facebook, Instagram, and Snapchat to ten minutes per day per platform, and the other had no restrictions. After three weeks, the experimental group showed a significant reduction in loneliness and depression compared to the control group. The analysis suggested that limiting social media use to about 30 minutes a day can significantly improve well-being (Hunt et al., 2018). A study by the University of Wuppertal evaluated the impact of digital detox in promoting well-being, social relationships, self-control, and performance. From the review of 21 studies (3625 participants), inconsistent results emerged: some observed positive consequences from the interventions; others did not find any or identified adverse effects on well-being. Digital detox appeared promising in reducing smartphone use and symptoms of depression, but further research is needed to better clarify the variables influencing its effectiveness (Radtko et al., 2021).

Finally, the new research by Dibajnia et al. (2025), involving a sample of 320 university students, has identified a significant correlation also be-

tween phubbing behaviour and symptoms of depression, anxiety, and stress. Furthermore, phubbing negatively impacts concentration and academic performance, interfering with students' personal development. These findings highlight the pressing need for educational interventions and support strategies aimed at fostering a more mindful and balanced use of technology.

Beating Technology with Creativity

Digital addiction is a complex problem that requires a multidisciplinary approach to address it. Key factors in developing effective prevention and intervention strategies include targeted measures, promoting mindful use of devices, and enhancing digital literacy among young people. In this context, architecture can play a crucial role by proposing solutions to foster digital detox. Innovative interventions can transform public and learning spaces into engaging environments that fully support student well-being. The project will need to counter boredom and the fear of social exclusion, which drive young people to live online. Here, human creativity could be the winning card. A natural quality that artificial intelligence can only simulate.

Designing Well-being for University Spaces in the Digital Age

Today, architecture plays a crucial role in educational contexts to promote well-being. Design and renovation of university campuses have become a primary focus to create environments that meet academic needs while improving community quality of life. Various research has explored these dimensions, providing guidelines and insights for creating innovative, sustainable, and healthy spaces for both body and mind.

Solutions

A recent study on university campus design strategies emphasises the importance of integrating open areas, buildings, circulation, and utilities to create a stimulating and welcoming environment. Additionally, the construction and upgrading of campuses should aim to create an integrated system between schools and cities, exploring new models for their joint growth. This approach seeks to enhance the sustainability and inclusivity of spaces, addressing the modern needs of students and staff (Dong et al., 2023).

Green spaces can also significantly improve students' physical and mental well-being, emphasising the importance of including them in campus design (Si et al., 2024). The positive effect of natural environments on students' mental health and well-being has been confirmed by Ribeiro et al. (2024), who found that their presence on university campuses can reduce stress and anxiety levels. Furthermore, the variety of on-campus landscapes can positively influence mental health, offering opportunities for recovery and regeneration (Nie et al., 2024). A study on the impact of green spaces in schools on academic performance showed a beneficial correlation, considering indicators such as tree canopy cover, views of vegetation from windows, college prep exam scores, and semester grades (Browning & Rigolon, 2019).

The design of university buildings is crucial in jointly promoting students' well-being, accessibility, and inclusion by creating more welcoming and functional spaces where everyone can feel comfortable and supported. The use of landmarks and clear, visual, and relevant signage helps reduce daily frustrations for neurodiverse students. Recognising the need for a diverse range of environments to study, work, socialise, and retreat allows students with Autism Spectrum Disorder (ASD) to find spaces of refuge and tranquillity. Incorporating natural environments helps alleviate stress and anxiety, develop social skills, and motivate learning, particularly for students with special educational needs. Well-being can thus be fostered by also working on inclusivity, which should be considered from the early stages of design to ensure environments that genuinely promote social interaction and engagement for all (Roylance, 2023). Flexible learning spaces in secondary schools have been shown to facilitate student interaction, cooperation, and behavioural engagement compared to traditional settings, confirming the importance of innovative design solutions that stimulate socialisation and active participation among young people (Kariippanon et al., 2019).

Challenges

The design of university campuses is evolving towards more sustainable, inclusive, and well-being-oriented models. The strategies proposed by recent literature offer an integrated and multidisciplinary vision that considers not only architectural aspects but also environmental and psychological ones. This transformation, which sees the growing importance of health among the factors to be considered in the project, is essential for creating environments suitable to support students' personal and profes-

sional growth. However, specific attention to digital detox is still lacking in the design strategies of campuses and university spaces. Due to the absence of implemented projects and thus significant case studies, architectural literature does not explicitly address this aspect. This gap could be partially filled by addressing it from a theoretical perspective, given the substantial body of studies in the humanities, which could stimulate discussion and new ideas and potentially lead to practical solutions, starting with reflection on such a current and relevant theme.

Designing and integrating spaces that promote disconnection from digital devices represents a new challenge to enhance the well-being of students and the university community further. First and foremost, it reveals an urgent necessity given the exponential growth of a phenomenon that now seems out of control and risks nullifying all the progress made over time, leaving a trail of unresolved questions and contradictions.

After all, in this performance-driven society, what use are innovative and performance-enhancing learning environments if all students are distracted by the first available device capable of connecting to the Internet? What good is discussing environment, sustainability, and health in architecture if concerns about electromagnetic pollution and radiofrequency electromagnetic fields have been put on stand-by? What is the point of an inclusive and avant-garde campus if those who should benefit from it primarily live in the virtual world, ending up isolated and thus self-excluding?

In response to such questions, even a notification sound would be comforting. However, among architects, there is still too much silence.

AD 2025: Architectural Disconnection

The latest *Digital Wellbeing* report has confirmed that hyperconnectivity can have adverse effects on mental, physical, and emotional health. Drafted by All Digital, a European network of stakeholders in the development of digital skills, along with three member entities from different countries, this paper highlighted various initiatives to encourage healthy technology use (Arroyo Moliner et al., 2023). Universities worldwide are increasingly recognising the importance of digital well-being, moving in the right direction to address the issue in an interdisciplinary manner, mainly by proposing informative programmes, workshops, and awareness-raising activities, sometimes even specific tech-free lessons. However, there have been no known cases of spaces specifically designed for digital detox, as they overlook the potential contributions of architecture.

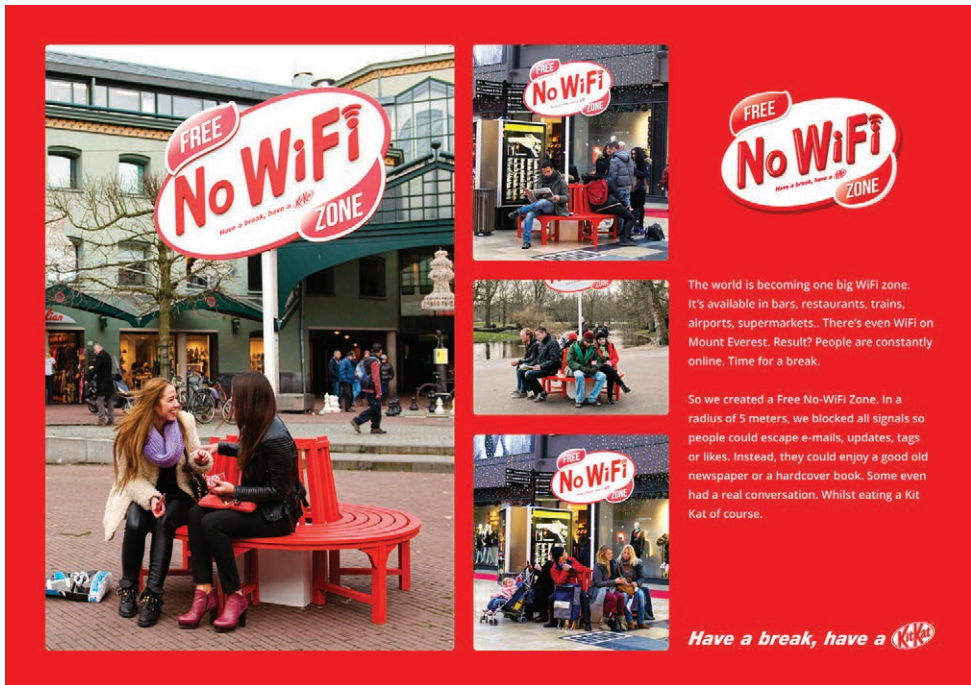
Towards Implementing University Spaces for Digital Detox

Internationally, the USA stands out, ranking 18th globally for smartphone addiction according to a McGill University study, preceded by Italy (11th), with China, Saudi Arabia, and Malaysia leading the chart (Olson et al., 2022). For example, the University of Arizona has created an excellent informational page on combating digital addiction, almost a site within a site dedicated to digital detox, but it has not yet established permanent structures for this purpose (The Arizona Board of Regents, 2025). The same applies to Stanford University, which has been promoting digital wellness initiatives for years. Among the most recent, in September 2024, the “Youth Safety and Digital Wellbeing” workshop investigated approaches to protect young users from the risks of social media (Stanford Center for Digital Health, 2025; mediaX at Stanford University, n.d.).

The Massachusetts Institute of Technology further distinguishes itself through the design of its spaces, which encourage casual encounters and cooperation among students and researchers. Buildings such as the Stata Center, Sloan, and Media Lab offer spacious atriums, flexible laboratories, and common spaces to enhance collaboration. Additionally, internal passages like the 251-meter-long “Infinite Corridor” and sky bridges between research buildings on campus help mix thousands of people daily, fostering face-to-face social interactions without the need to connect online (Dizikes, 2022).

In Canada, the University of British Columbia has done much to promote community health, creating UBC Wellbeing, a collaborative initiative with its own Strategic Framework and guided by the Okanagan Charter, a call to action shared among various partners to transform campuses into health-promoting institutions (UBC Wellbeing, n.d.). Green areas and relaxation spaces have also been created, though not explicitly focused on digital detox, but helpful in promoting broader well-being. An internal study did not find a direct correlation between time spent in outdoor green spaces and reduced student stress, but students were more inclined to visit these areas if better informed about their location and availability (Pham et al., 2022).

In Europe, universities attentive to digital well-being are on the rise, but none seem to go beyond specific programmes and activities, not even the renowned University of Oxford (2023). Among the most noteworthy initiatives is the EUniWell – European University for Well-Being, an alliance established in 2020 with the support of the European Com-



mission, bringing together over 60 partners and 11 universities, with the University of Florence being the only Italian. Its mission is to understand, improve, measure, and balance multi-level well-being (individual, community, and social) by addressing various fronts, such as health, equality, environmental change, culture, and education (EUniWell, n.d.). The largest European one, Sapienza University of Rome, is fully committed to health, yet there are no facilities designed for digital detox. Furthermore, its rich website still lacks a dedicated page for digital well-being. This is a noticeable gap, given the comprehensive section on well-being and inclusion. It is an unequal battle, as the “Sapienza Wireless” boasts an exhaustive page where even the *enemy* sign, “WiFi Zone”, has earned its own document. Digital & free-to-download. In the perfect spirit of the times (Sapienza University of Rome, a; b).

Less Wireless is More

Meanwhile, outside the academic world, some projects have successfully implemented digital detox solutions, which could be helpful in rethinking university spaces. A business? A trend? This study does not delve into potential economic or cultural issues, but it mentions them only because

Figure 1 -
Kit Kat “Free
No-WiFiZone”
campaign,
2012 (JWT
Amsterdam,
2012, courtesy
of VML)



Figure 2 -
*Technology-free zone at
Paypal offices
in Milan (Photo
© Davide Galli,
courtesy of
Tétris Design x
Build)*

they can offer valuable insights into tackling a problem that can no longer be ignored. It demonstrates that architecture, especially in places deeply experienced by young people (such as schools and universities) – those most at risk – must catch up.

As early as 2012, the Kit Kat brand of the multinational company Nestlé sought to bring people back to reality with the ingenious ambient marketing campaign “Free No-WiFi Zone”, inviting them to “have a break” from digital devices, playing with its famous slogan (Fig. 1). To do this, it provided unique benches with signage in some central areas of Amsterdam, making the connection unavailable within a 5-meter radius. In these areas, simply sitting down allowed people to escape smartphone stress, enjoying a normal conversation or reading the books and newspapers provided. This idea could be easily adapted to university campuses by creating small WiFi-free islands, for example, in study rooms and libraries, to limit student distractions.

In the digital age, cutting-edge cafes and restaurants have already introduced No-WiFi zones, certainly to stand out, but mainly to encourage customer conversation, reducing the use of mobile devices during meals, given that phubbing is now on the menu everywhere. This ap-

proach aims to create a more social and humanly interactive atmosphere. On campuses, shared meeting spaces, both indoors and outdoors, could be redesigned with creative solutions to transform them into tech-free areas that foster dialogue and relaxation.

In recent years, digital detox has become one of the flagship offerings in the hospitality and tourism sector. More and more hotels and resorts, in Italy and around the world, offer themed packages that include rooms without WiFi (in some cases, even without TV, air conditioning, or any type of technological device) to meet the growing demand from customers who want to unplug and are willing to pay more, and have less, to free themselves from the Internet. These “Less Wireless is More” solutions, with the endorsement of Mies 5.0, are appreciated because they aid in relaxation and mental well-being. In dormitories, some rooms could be redesigned to exclude connection and, consequently, electromagnetic waves, improving the quality of sleep.

Even in offices, companies far from being analogue have started to introduce areas to reduce distractions and create a calmer environment that allows employees to achieve full mental recovery during breaks, thereby enhancing their concentration and productivity at work. In Milan, Tétris Design x Build (2021) has revamped the corporate image and equipped the PayPal headquarters with a tech-free zone. Workers now have a modern, bright, and serene workspace that also allows for digital disconnection (Fig. 2). Universities could draw inspiration to renew a multitude of environments, such as study areas, libraries, and common spaces. Here, the students would concentrate more, improving productivity, academic performance, and well-being.

Take the Train!

At this point, the more astute architects might argue that digital detox does not deserve so much attention, since the challenge could be won immediately and without cost simply by disconnecting all devices. It is worth remembering that there is a widespread issue, often an addiction, which will become global if the numbers continue to grow at this rate. Instead of missing this train, they could board the “Frecciarossa” by Trenitalia. Its Business Class carriage, and since late 2019 also the standard carriage on two hundred trains a day, provide the “Area Silenzio” (“Silence Area”) where the use of smartphones, the activation of ringtones, listening to music through speakers, and loud conversations are prohibited. They would find a quiet space to reconsider, taking advantage of the fact

that even the transport sector has also adapted with spaces for digital detox.

Now, only they are missing. And the university campuses, of course.

Results

Extensive research has consistently shown that hyperconnectivity is driving increases in stress, anxiety, and digital addiction among young people and university students. Recent data confirm their growing use of the Internet, especially social media platforms, and Artificial Intelligence in study and research activities. However, the issue has a global reach, involving a vast population of users of different age groups, increasingly affected by anxiety and social exclusion, linked to phenomena such as Nomophobia, FoMO, and Phubbing.

Digital detox emerges as one of the most promising solutions, fostering well-being and concentration, with a positive impact on the quality of life and academic performance. Targeted design solutions, such as the integration of natural elements in campuses (starting with the enhancement of green spaces and landscapes), the provision of welcoming and flexible spaces, and the creation of an integrated system between educational institutions and cities, also prove helpful.

Universities react to digital addiction primarily by encouraging awareness activities, but they do not yet offer spaces specifically designed to promote technological disconnection. In general, in the vast architectural domain, the problem is addressed in a limited and partial manner. That is both a cause and reflection of the scientific literature in the field. To date, it has not adequately shed light on the issue, the prospects, and the potential contribution of architecture, thus failing to utilise resources fully and significantly enrich the international debate, which can instead rely on a substantial body of humanities studies, mainly from fields such as psychology, sociology, and tourism economics.

Successful experiences in non-academic contexts offer valuable insights for rethinking university spaces. To combat the exponentially growing Internet addiction, immediate action on multiple fronts is required, involving interdisciplinary cooperation and the identification of creative and sustainable architectural solutions capable of redefining the university experience and fully promoting student well-being in the digital age.

Conclusions

Architecture, with the help of technology itself, particularly AI, boasts enormous potential to transform university campuses into healthier and more sustainable places, into cultural and creative oases for digital detox, where well-being and learning are closely connected.

White Islands for Mindful Disconnection

This transformation could begin by designing and integrating, both indoors and outdoors, zones without technology, relaxation areas, and other spaces to encourage exchange and face-to-face interactions. In any case, these spaces should be specifically created to incentivise *mindful disconnection*, regardless of the presence or absence of WiFi signals. This does not mean declaring war on the Internet and, with it, all the possibilities it offers students for entertainment, study, and discovery, but rather, it seeks to make it superfluous: less interesting and attractive compared to what the new spaces would genuinely offer them, without mediation.

In this regard, the examples presented in the study, although still in their embryonic stages, prove to be more than mere suggestive ideas, as they could be easily adapted to the specific needs and contexts of different campuses. All this is not anachronistic: it does not mean turning to the past or renouncing the enormous efforts and investments made to connect the planet. The proposed vision is not to forgo the Internet starting with universities, to bring them closer to the so-called “White Areas”, still devoid of broadband network coverage because no operator is interested in investing there, nor to the “White Zones” forgotten by urban planning.

Instead, the architectural frontier of campuses could be the “White Islands”, which have nothing to do with the former. They are specific and circumscribed spaces, with particular attention to environmental and naturalistic aspects – hence “islands” – and are specifically designed for a purpose towards which there is a clear interest: promoting digital well-being more than general well-being.

These islands, combining creativity, sustainability, and attention to health, can become a distinctive feature of future campuses and offer shelter from the technological overload of contemporary times. For universities, the challenge is to restart by embracing the underlying pioneering vision that encourages a balance between body, mind, nature, and the external world, favouring healthy effects over special effects.

Moreover, what colour, better than white, expresses ideas of harmony, mental peace, simplicity, freedom, and a new beginning?

No Signal?

This scenario demands a joint call to action.

Architects, technicians, students, university staff and administrations, and other key stakeholders, such as health professionals, policymakers, local communities, and non-profit organisations, have the challenge to cooperate towards a common goal: to create engaging and inclusive spaces for the digital detox of the entire community. These should allow individuals to recharge between classes or during work breaks or to engage in something more interesting and constructive than compulsively scrolling through screens and incessant notifications from digital munitions. They should make one forget even having them.

Artificial Intelligence has the task of offering help in an unusual way: by facilitating the design of spaces, deep down, dedicated to freeing us even from it.

Researchers have the responsibility to contribute in an innovative way, starting by exploring others' research. The real others: those from other fields. If disciplines still exist, they are all interconnected today, just like us.

Each university has the choice to self-deceive into thinking it is distinguishing itself from others and promoting multilayered culture and well-being by providing Internet access everywhere while simultaneously launching awareness initiatives on digital addiction. Alternatively, they can join forces and gather ideas and courage to take a concrete step forward, one that opens a new path rather than just an informative web page.

Time is running out, but in the Internet Galaxy, it is easier to offer the WiFi signal than a signal of change. It is such an old story that the Castells' Networks would not care about it, and social media would even reject it.

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Activating the University's Public Agency: Towards a Campus Food Hub in Trieste

*Sara Basso, Camilla Venturini**

Food in the university-city equation. An introduction

In recent years, many food practices, projects, and politics have spread among universities in various contexts. Often redesigning innovative foodspaces (such as ecological canteens, social farms, community gardens, alternative food markets, and food labs), sometimes they address the university food system sustainability through more articulated research projects.

Firstly, while intertwining research, educational, and third-mission activities, universities often develop tools, strategies and politics for improving

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This contribution presents the initial findings of the post-doctoral research project “Un Food hub per Units. Verso la costruzione di un campus foodscape sostenibile/ A food hub for Units. Towards the construction of a sustainable campus foodscape”, which had not yet commenced at the time of writing. Project funded by the Friuli Venezia Giulia Region under Regional Law 34/2015, Article 5, paragraphs 29–33. Fiscal year 2024. Scientific responsible: prof. Sara Basso; postdoctoral fellow dr. Camilla Venturini.

their food system on various levels. By developing food system analysis and adopting guidelines and regulations for checking and advancing its sustainability, many universities not only make how they get fed visible but also try to encounter their community food-related needs (namely, subjective and personal facets concerning food, such as allergies, religion, culture, and dietary preferences).

Secondly, this approach claims for the university public agency, putting the university about the urban dimension while pushing its potential role in modifying its community food habits. Indeed, by fostering good food practices (e.g., healthy and sustainable diets, reducing food waste, and buying from local farmers), “campus food initiatives contribute to more critical perspectives on conventional food and raise the possibility of incorporating long term social and environmental concerns into public policy” (Barlett, 2011, p. 111). Thus, food emerges as a potential tool for activating the university’s urban role within its spaces and community, but also as a plausible producer of multiplying effects beyond its borders towards the broader urban population. Additionally, food habits within universities also involve some central and urgent questions, such as the right to education in its multifaceted meanings, potentially being adopted by the university as a lens for guaranteeing a more complex sphere of rights (health, accessibility, sociality, inclusion, environmental health, etc.) including the “right to food” (FAO, 2024).

Finally, examining the food system-university relationship also questions the spatial dimension of food cycles, pushing the design disciplines at various scales (from architecture to urban design and planning) for a more active role in food studies. Foodspaces – understood as those places where food production, distribution, buying, consumption and post-consumption take place – while spatialising food processes (e.g., through vegetable gardens, collective kitchens, sustainable canteens, social markets, etc.) can be thus conceived as those spaces where food acts as a mediator of food-related spheres of urban collective life (health, rights, environment, etc.).

In Italy, the number of universities improving their food system is increasing, also thanks to the group “food” within the RUS (*Rete delle Università Sostenibili* – Sustainable Universities Network) network¹, formed in 2018. While collecting data about food systems in Italian universities, RUS also fosters shared knowledge, experiences, and good practices around the

¹ <https://reterus.it/cibo/>.

country. Moreover, on the urban side, in recent years, the number of Italian cities working on their food system increased too. In the attempt to collect and give power to existing numerous local food practices, some administrations gave birth to urban food policies, strategies, and atlases. Moreover, some Italian universities emerge as both active drivers of food change within the university itself (by implementing downscaling strategies, reducing the distance between food production and university consumption) and leaders within the urban context, networking local food actors and therefore amplifying their impact by upscaling their agency².

These experiences show how food initiatives promoted by universities can help redesign spatial relationships between spaces, subjects and habits both within the university community and in their urban and territorial context, generating an economic and political impact with a multiplying effect and an extension that go beyond the campus borders. Intertwining food studies with the university's relationship with the urban context seems interesting because this can question (and push for) the university's ethical role between space and the urban community.

This paper aims to investigate these matters as a starting point for a beginning post-doctoral research (and design) project³ exploring the role of a potential food hub in the University of Trieste, redesigning its relationship with the urban dimension and reconfiguring (at least part of) the urban local food system.

Approaching the case of Trieste: exploring the university-city nexus

The university can be engaged in the urban food system with various gradients of agency. Some can be hypothesized, with a growing level of intensity for the university's role in shaping the food-city nexus (Rodani, Venturini, 2024). As an activator/facilitator (the lower-intensity level), the university amplifies its agency from consumption⁴ to other phases of

² Some universities in the RUS network are actively and explicitly engaged in transforming the urban food system (e.g. the cases of Milan, Turin, and Rome).

³ Following a previous post-doctoral research project with results collected in: Rodani, V. (2024) *University and food system. University collective practices for sustainable food systems*. Research report (scientific responsible: Prof. Sara Basso; company responsible: Dr. Barbara Codan), University of Trieste.

⁴ Generally, consuming is the prominent space within a university with a low-intensity urban role.

food cycles. By experimenting with practices across different steps of the food system within its spatial boundaries and with some urban subjects, the university can strengthen existing food flows or create new nodes within short supply chains.

As a catalyser, the university plays a medium-intensity role and expands its network with urban food actors by experimenting with innovative food projects and propagating the effects of existing practices. By increasing its interaction with local subjects, the university starts engaging the spatial dimension while transforming some single spaces (both inside and outside its boundaries) into creative cores of the broader urban food chain.

Finally, the university can also perform a high-intensity role in shaping the urban food system. While intersecting the whole food system, the university pushes for more articulated and structured actions by advancing urban food policies and plans. By playing this high-intensity role, the university can transform the whole food system while implementing and networking university and urban foodspaces.

Even though the number of universities transforming their food system while also acting as food urban leaders is increasing, in many contexts, universities still lack both their food governance and their potential impact in driving the development of the urban food system. So, when a university plays a low-intensity food urban role, what tools could be used to implement its agency? What impacts in its foodspaces could this process in the food-city nexus generate?

From this point of view, the case of Trieste is interesting for various reasons. First of all, despite the university having committed itself to reaching the SDGs since 2016, the potentialities of the lens of food in achieving them still seem to be underestimated in didactic programs, research, and third mission activities. On the other hand, the dimensions of the university related to the city (approximately 20.000 people, around 10% of the urban population) suggest the former is a potential impactful subject towards the sustainability of the urban food system.

Secondly, many virtuous food practices held by urban inhabitants (e.g., community gardening, alternative food networks, and food waste redistribution) are trying to reshape the urban-rural nexus within the city. However, these practices risk running out because of the absence of an urban food strategy or practice. Then this aspect also questions the university's role, which could potentially make urban food initiatives more

visible by generating collective knowledge and addressing the food policy discourse and practice.

Finally, the context of Trieste also implements the spatial dimension of food in specific ways. On the one hand, even though spatially close to each other, public foodspaces within both the university and the city often manifest a complex relationship between their interior and exterior, with issues related to their visibility and recognizability, flexibility and accessibility. At an urban scale, a polarised distribution of urban foodspaces emerges, being denser in the city centre and dispersed towards the urban margins. The university could play a key role in reshaping its boundaries with the urban context by designing city-university foodspaces and making the edible city more visible. This way, the food spatiality of the university can interact with the background of a frontier city such as Trieste, where the rural-urban relationship has been the object of political and cultural polarisations (Verginella, 2008) with spatial facets that are still visible today (Rodani, Venturini, 2024).

Considering these premises, this contribution will question the possible role a campus food hub could play among the university community and, on the other hand, in relation to urban society.

The food hub: a space for reconceiving an urban role for the university?

Being a multifaceted space for fostering knowledge, innovation, and creative practices, the campus food hub also addresses urgent contemporary urban issues, such as sustainability, health, and justice. Performing between enhancing the university food system and pushing for innovation within the urban one, a campus food hub can represent a food node on various levels, interpreting the university roles as an urban activator or facilitator of food practices, a catalyser of processes and single foodspaces, and a leader towards urban strategies and policies with a complex and articulated spatial effect on the city.

Firstly, a food hub offers a physical space within the university that contributes to implementing its food system by making it more sustainable. By including the whole university community intersecting research projects, educational programs, and third-mission activities within a broader collective learning process, it also pushes for the change of its community's food habits, potentially reverberating beyond the university's bor-

ders (e.g., influencing the university community's acquaintances, families and friends).

Secondly, a campus food hub can act as “a living laboratory for students, staff, and faculty to generate food systems knowledge while simultaneously developing practical interventions to advance justice, equity, diversity, and inclusion (JEDI) in the campus foodscape” (Fanshel, Iles, 2022, p. 2). Intersecting educational initiatives, action research activities, design projects, and co-design experiences and fostering the creation of a collective food culture, the campus food hub can help the university experiment with its pivotal role in assessing sustainability issues through the lens of food.

Moreover, the campus food hub can also perform as an interface between the university and the city while revealing the university's potential as an urban food leader. By not only supporting the collection of data and collective knowledge but also fostering the creation of new alliances between the university and local territorial and urban food actors (e.g., local producers, short supply chains, and people redistributing food surplus to disadvantaged people), the campus food hub can be the heart of the relationships between external food actors and the university.

Existing campus food hubs are increasing around the globe, expanding from North America from the early 00s⁵ and recently reaching Italy too. From a first look at existing projects, there seems to be no shared understanding of how to design a campus food hub or how this latter should work. Moreover, the explored cases face various food issues and test different approaches to involve either the university community or the urban population, generally assuming ecological sustainability as an implicit and necessary background effect of the campus food hub itself. Even though some thematic groups of cases can be hypothesised from the investigated practices, the most compelling aspect is their cross-sectoral and multi-foci approach.

Many universities acting as food hubs have social issues as their main focus, and approach it mainly as a means to reduce food poverty within

⁵ See, for instance, the University of British Columbia (UBC) programme (Rojas, Richer, Wagner, 2007).

the university⁶ and sometimes outside of it⁷, usually through the redistribution of food surplus. Despite research about the impact of food hubs working on their students' insecurity still lacking, some studies suggest existing initiatives targeting this question are effective (Murphy et al, 2022).

Others focus more on pedagogical and educational objectives, such as the Floating University Berlin implementing convivial foodspaces through experiential learning and co-design experiences (University of Berlin, 2019), and the Foodscape Mapping Project at the University of Berkley with mapping performing as "a learning platform that interweaves community-based participatory research, pedagogy, and advocacy" (Fanshel, Iles, 2022, p. 3).

Finally, some campus food hubs mainly aim to produce knowledge and innovation within the university and are conceived as laboratories "inter-twining practical experimentation and applied research, crossing various disciplines" (Ceraolo, Passaro, 2020, p. 501) to facilitate students' experiential learning activities.

Tools for a campus food hub: outlining some hypotheses at the outbreak of a research project

Designing a future campus food hub supports the university community with material and immaterial relevance for broader and specific research objectives. Firstly, a campus food hub can be the core for the university community (students and professors from different disciplines and the university staff) for sharing and disseminating good practices and guaranteeing sustainable and healthy food habits among the campus population. Secondly, this can also steer the university towards collaborating with territorial subjects, promoting local products from short supply chains, reducing food waste, and adopting equitable diets. Moreover, a campus food hub also helps organising educational and practical initiatives for both the university community and the urban population (namely, third-mission activities) to implement awareness about just and

⁶ See the University of Berkley's Food Mapping Project (Fanshel, Iles, 2022), the UBC's food infrastructure (Clement et al, 2024) and the University of Calgary's single food hub (Taylor, 2024), these latter both supporting their student's food security.

⁷ For example, the Campus Kitchen Project involves a network of Campus Kitchens where students prepare recovered food within the university and then redistribute it to the urban community in need (Bylander, 2005).

sustainable food habits. Finally, a campus food hub can also be a place where to launch a shared university food mapping process through sociospatial investigations about the campus foodspaces to make its food system's actors, spaces and processes visible.

While crossing the university's boundaries, in the campus food hub good practices and ideas are shared between university and the city, with various subjects, disciplines and knowledge encountering, building new networks, contracting innovative pedagogical and didactic ways of transmitting knowledge, and promoting food research cross-sectoral and multi-foci activities. Some tools for the campus food hub have been identified while hypothesising some starting points to build a new food hub at the University of Trieste (the objective of this research).

Firstly, a mapping phase is fundamental to making the university's food system visible through its spaces, subjects, and processes. While building new maps and other ways of representation, mapping gathers food geographies and stories. Moreover, when mapping is performed as a collective process, it is both a tool for illustrating existing spaces, actors and the relations between them and an instrument for unveiling new potential relations, reshaping the university food system. Indeed, mapping is understood as "an instrument, a context, and a process" (Dansero et al, 2018, p. 17), a design tool generally oriented towards the transformability of the university's foodspaces but potentially extendible to the whole urban context. The resulting map of the campus foodspaces could also be shared among the university community, potentially performing an enabling role by making the campus foodspaces and small utilities (e.g., microwaves and water fountains) visible and, consequently, usable. Moreover, the map could also be thought of as a shared learning platform "for students, faculty, and staff to come together to achieve both deep and wide learning about their campus" (Fanshel, Iles, 2022, p. 3) and as a starting point for co-designing food actors and spaces towards sustainability.

Secondly, workshops and co-design initiatives could be relevant tools for collectively preconfiguring the campus foodscape. This step could include various activities (e.g., cultural, artistic, leisure, and technological events) to involve the university community in collecting ideas for the campus food hub. Students and professors from various disciplines and with different competencies and the faculty staff could have diverse needs, give manifold suggestions, and use distinct tools to communicate and represent them, potentially setting the basis for an articulated experience on the model of the University of Berkley's Foodscape Mapping

Project (Fanshel, Iles, 2022). Moreover, the co-design phase should also involve a workshop with (architecture) students engaged in designing and realising new innovative foodspaces for the whole university community, thought of as an “experiment and a hands-on laboratory” (University of Berlin, 2019, p. 7) which could be expanded towards the urban context on the model of OffCampus in Milan (Fassi, Vergani, 2022).

While crossing collective mapping processes and co-design workshop initiatives, a campus food hub also acts as the core of didactic and experiential learning about the food system's sustainability, moving between pedagogical and practical experiences. By intertwining courses inside and outside traditional didactic programmes, but also research projects and thesis experiences (Chiomio, 2021; Braun, 2022; Searight, 2023), practices promoted within the food hub also foster multi-disciplinary collective knowledge and transformative tools within both the campus and the urban community, progressively blurring the city-university borders. Among the cases explored at the very beginning of the research project, community-based action research initiatives emerge as a core element of many experiences in reshaping university and urban food systems while intertwining them together and towards sustainability and justice. Within the food hub, co-design workshops, didactic and experiential pedagogical activities, and mapping processes working on innovative projects thus make food emerge “as too fundamental, ephemeral or subjective to be controlled by a single professional discourse alone” (Bohn, Tomkins, 2024).

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A different kind of beauty.
A research on informal spaces,
for accessible and welcoming
research centres

*Agata Brusetti**

Framing issues. Statistics on gender equality in research

Historical gender inequalities in research and innovation still persist today. They are exacerbated after graduation, when women enter the labour market, and along their career paths.

This is what *She Figures 2021*, the European Commission report analysing gender inequalities in research and innovation, describes. The document has a binary approach and it traces inequalities following the journey of researchers, from doctoral level up to achieving leadership positions.

The pool of graduate talent

48.1% of doctoral graduates are women: while women are generally more likely to graduate from Bachelor studies than men (58,7%), they are less likely to continue on to Doctoral level.

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Despite this situation of overall balance¹, there is a significant horizontal segregation and important gender gaps persist in certain fields: women are over-represented in the field of Education and under-represented in Information and Communication Technology or Engineering. This can contribute to women's under-representation in high-paid sectors and over-representation in lower-paid sectors, a contributing factor to the gender pay gap².

Participation in science and technology occupations

53.7% of professionals or technicians tertiary educated in the field of science and technology are women, however women are less represented among the population of employed scientists and engineers (41.3%). The under-representation of women in science and technology is particularly concerning for the European Commission, as technology-induced structural changes in the labour market can contribute to growing social and geographical inequalities.

Labour market participation as researchers

32.8% of the total population of European researchers are women, representing a lower proportion of the economically active population than men³. Factors identified for this under-representation include discriminatory mechanisms and a lack of attention to the constraints faced by women in their professional lives by research organisations.

Exploring women's and men's participation among researchers by age groups, the data indicate that more women are represented in the under 35 and 35-44 age group and the pattern is reversed in favour of men at more senior age group (55+). Considering age as a proxy for seniority in research career, women are likely to be less represented in senior research position. This is related to the fact that a higher percentage of

¹ Gender balance is defined as when women and men are present between 40% and 60%. If the presence is below 40%, it is called under-representation; when above 60%, over-representation.

² The gender pay gap measures a broader concept than pay discrimination and comprehends a large number of inequalities women face in access to work, progression and rewards, such as: sectoral segregation, unequal share of paid and unpaid work, the glass ceiling effect, pay discrimination.

³ The labour force 'active population' is defined as the sum of employed and unemployed persons aged 15 to 74.

women are outside the labour force and that compared to men, women take more career breaks and have shorter careers overall. The length of women's careers might be impacted by gender stereotypes in the unequal division of care responsibilities, but also by gender discrimination in typically male-dominated contexts of the labour market⁴.

Working conditions of researchers

11.1% of women researchers work part-time, compared to 7.2% of men. Women researchers are also more likely to have precarious contracts (9%) than their male colleagues (7.7%)⁵.

Measures to reduce the precariousness of researchers requires a gender-sensitive approach to address the gendered patterns of the issues. Indeed, a higher proportion of women researchers in a couple with children works under a precarious contract.

While the European Council's Work-Life Balance Directive promotes a fair sharing of care responsibilities between parents, more institutional support is needed from research institutes to structurally change work environments that prevent work-life balance, as women carry a disproportionate burden of unpaid care work due to stereotypes related to women's caring responsibilities.

Career advancement and participation in decision-making

40% of academic staff are women, but they represent 47.1% of grade D staff, 46.6% of grade C staff, more than 40% of grade B staff and only 26.2% of grade A staff position.

When it comes to board members, just over three out of ten are women (31,1%) and less than one in four are board leaders (24,5%).

⁴ In Europe, 37.3% of women between 25 and 49 years of age do not participate in the labour market in order to care for children or incapacitated adults. Men in the same group are 3.9%.

⁵ 'Precarious' means no contracts, fixed-term contracts of up to one year or other contracts often associated with student status.

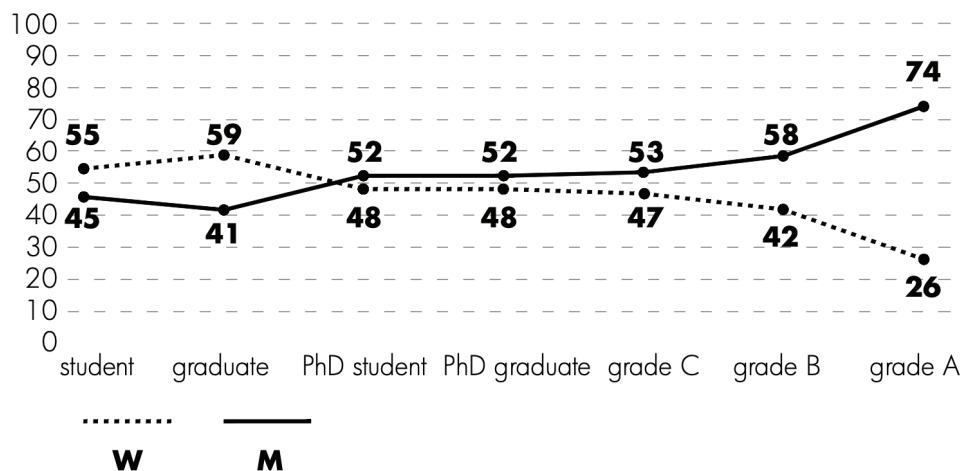


Figure 1 -
The leaky
pipeline phe-
nomenon. Pro-
portion of men
and women in
a typical aca-
demic career
in Europe

This gradual exit of women at different career stages is usually described through the leaky pipeline and glass ceiling effect phenomenon: the former refers to the effect of women leaving the career, the latter refers to the structural barriers that hinder women's access to positions of power.

The barriers are multiple, complex and intertwined and can include institutional culture which can exclude women and societal perceptions of appropriate gender roles and unconscious gender biases. The result is the scissor graph that the leaky pipeline produces: an increase of female graduates does not automatically lead to an increase of female researchers, on the contrary women represent on average more than half of all university graduates, more than 40% of academic staff, but make up only a quarter of full professors.

Research and innovation output

Regarding the number of publications⁶, frequency, citation impact, patents and funding success rate, a vicious circle arises for women: having fewer publications to their name, women have fewer competitive funding applications, which in turn contribute to lower patent applications and publication submission rates.

An important figure, when compared to the fact that data on the citation impact show that women's and men's publications tend to have equal impact regardless of seniority level.

⁶ Publications refer to peer-reviewed publications, that is articles, reviews and conference papers.

The report confirms the importance of the collection and dissemination of gender-disaggregated data and emphasises the need to promote change starting with research organisations, through policies that prevent gender stereotypes from hindering the enhancement of women's talents so severely.

Defining the positioning. Questioning spaces from a feminist perspective

Starting from the problems emerging from the European statistical data on gender issues, the question that the research raises is what role the built environment plays and what relations it may have with the dynamics described.

Talking about research institutes means using a single definition that includes very different organisations, ranging from universities to public research bodies and private companies.

From a spatial point of view the variety increases and the typologies differ according to the type of research that is conducted, the historical period in which the buildings were constructed, the place where they are located, the ownership, the funding systems, the specific functions and many other factors.

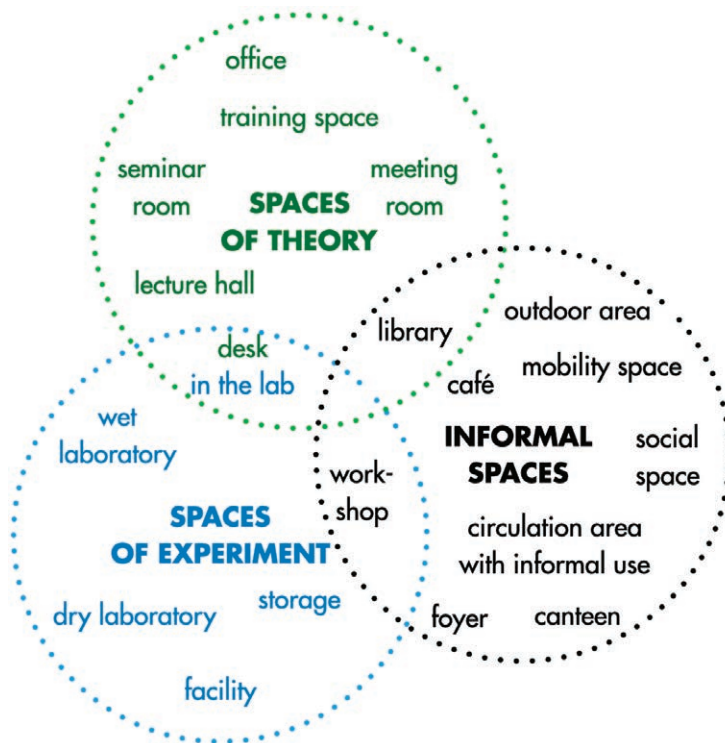
In this almost unlimited possibility of variations, one word can be used to describe the spaces of research on an urban scale: *campus*.

A word that, in the Italian version *campo*, refers to an identifiable place in the city, recognisable within the urban structure (like the *Campus Martius* of the ancient Rome), but also to a point of encounter and a space for a specific community (like the market squares in Tuscany, *Piazza del Campo* in Siena, *Campo dei Fiori* in Florence, or the *campi* and *campielli* in Venice that open up in the dense urban tissue).

A word that, in the anglo-saxon version *campus*, refers to university settlements and is currently also used to describe the major headquarters of private companies. A term that once again refers to a typological exception in the city, a recognisable space that has an inside and an outside and a community that inhabits it.

'The term campus ... indicates the existence of a research – but perhaps it would be better to say a life, intellectual as well as physical – of which the buildings are sometimes not only the seat but also the interpreters, the most evident proof'.

Figure 2 -
Spatial typologies that compose research centres. From Enrike Rabe's *Categories of space according to function*, here partially modified.



Therefore, what are the spaces that interpret this life? What are the typological constants that constitute research buildings, through a vast range of architectural layouts?

Enrike Rabe, researcher at Humboldt University in Berlin, proposes a simple but effective list of spatial typologies that compose research centres, typologies that are then grouped under three main categories: spaces of theory, spaces of experiment, informal spaces. This list is used here as a reference and only partially modified.

These three categories are proposed as having equal weight in structuring a research organism, although it is evident that the heart lies in the spaces of theory and experiment. The reason for Rabe's choice lies therefore in the recognition of the importance that informal spaces have acquired over time, working in synergy with formal spaces.

In *Informal spaces in laboratories*, Rabe first analyses the growth of informal spaces as a function, and then proceeds to a spatial analysis. Considering thirty-one buildings constructed between 1960 and 2013 and dividing the

internal surface areas between the three categories of space identified, Rabe observes that up until the 1980s informal spaces occupied on average 8% of the surface area, a percentage that has risen constantly to the current 21%. The spatial analysis focuses on the informal spaces of three case studies⁷, observing which the author identifies six parameters (positions, dimensions, degree of openness, fittings and furnishings, ambiance and diversity) that describe their aptitude for variety and flexibility, and their usefulness in accommodating different functions and uses.

Today, informal spaces have become part of the basic requirements of any research project to foster interdisciplinary and spontaneous communication, but already in the early 1960s, the director of the Mesa Laboratory in Colorado, wrote: 'Though a good laboratory in a good setting cannot guarantee good research, it can, by providing the proper atmosphere and well-conceived working conditions, stimulate scientific inquiry ... Dr. Philip D. Thompson ... has written the following definition of a fitting laboratory concept ...: *The most impressive feature of any top-notch research center is an intangible air of ferment and intellectual coherence that does not depend on any formal mechanism of cohesion ... The ideal is not a monument or a temple, but a place where a variety of people can meet, privately or semi-privately, can be alone, or can be distracted by a different kind of beauty*.'

Formidable weavers of interdisciplinarity, mediators between public areas and specialised cores, informal spaces host encounters, confrontations and conflicts. They allow the mixing of different users and contribute to build a community. In the multiplicity of typologies that can host research, informal spaces are chosen as the object of observation for this study.

Having established the structural aspects of informal spaces, their role, their variations and characteristics, the following reflexions starts from the assumption that these spaces are gendered. And that this gendering reflects and has impacts on the ways in which gender is conceived in the society, in combination with other power relations, such as sex, race, class.

In 1984, in the book *Making space*, edited by a group of feminist designers known as Matrix, the issue is posed in these terms: 'Just as language

⁷ Case study 1: Hopkins Architects, Payette Associates, Frick Chemistry Laboratory, Princeton University. Case study 2: Rudy Uytenhaak Architectenbureau, ERIBA European Research Institute for the Biology of Ageing, University of Groningen and University Medical Center Groningen. Case study 3: Rafael Moneo, Davis Brody Bond and Moneo Brock Studio, North West Corner Building, Columbia University.

contains and perpetuates certain ideas about women, so do buildings, but in a less direct way'. Making space is the prerequisite for having a voice. And by analysing how the spaces in which we live are made, subtle and complex power relationships emerge, which would remain hidden if we considered these places neutral.

Experimenting outcomes. Tracing meanings and shaping new imagineries

To decode informal spaces and imagine new roles for them, I went to Umeå, a city of around 134 000 inhabitants in northern Sweden.

On the edge of the city centre is the University City, where the Umeå University is located, as well as the University Hospital and the Biotech Incubators for technology transfer. This campus is interesting to me because Umeå Municipality has worked for a long time on gender equality issues with a feminist perspective, by introducing a gender approach to the design of city services and public spaces, recognising that cities are structures of power, places of inequalities.

However, Umeå is not to be considered an ideal city, a northern role model to follow, but rather an observation point for hidden but substantial dynamics, an opportunity to find 'the space to politicise issues, the space to highlight contradictions'.

Through interdisciplinary work the projects address very different fields, which can nevertheless be related to these areas of primary interest: Public Space, Toponymy and Representation, Social Services and Mobility.

One of the bus stops on the university campus has been designed to be a gender-aware public space. The numerous women who work in the University Hospital and travel in the dark find shelter in the wooden pods of the *Station of Being* bus stop, together with the citizens who frequent the university city.

Toponymy and representation projects work on the symbolic representation of public spaces, exploring the meaning associated to the names of places. *Nobody puts Baby in a corner* is a conceptual text work in white neon placed on a facade in the hub of the city's local bus traffic. The artist duo Sisters of Jam have taken the famous line from the film *Dirty Dancing* and transposed it into a whole new context, encouraging citizens not to restrict their freedom of movement in public space.

Among Social Services, designed to meet the diverse needs of individuals and communities, those related to early childhood have a particular impact on the quality of life of caregivers. The first public preschool centre in Umeå opened in 1966, years ahead of Sweden's Pre-School Act in 1975 that paved the way for state-subsidised childcare for children from the age of one.

Projects related to Mobility involve transport systems, infrastructure and policies aimed at increasing the accessibility, efficiency and sustainability of travel. By collecting gender-disaggregated data, the municipality saw that those who carry out care activities, the majority of whom are women, are the first to use the roads in the morning, often by bicycle or public transport. The snow clearance programme was therefore revised to promote the safety and well-being of this category of people and active and sustainable mobility, instead of car mobility.

Looking at these projects means questioning methods, queries and requirements of the design process, the contradictions of urban dynamics and the multiplicity of intersectional identities. Looking at these projects with a critical thinking approach, means finding the keys to expose the gender power structures concerning urban planning in the city.

Therefore, what are the issues to consider while working on the spaces of a research centre, knowing that spaces, policies and practices are closely intertwined and do not have binary and deterministic relationships?

The following aims to highlight dynamics that are not always visible but crucial, providing critical insights and identifying possibilities.

A first group of issues to consider are of a theoretical and methodological nature.

Reformulating the problem

The formulation of problems leads to different solutions and defines who is responsible for them. Reformulating the questions helps to challenge the dominant narratives and to shift from identifying individual responsibilities to recognise structural dynamics of the environment.

Stating a situated perspective

Making explicit one's own situated perspective to think outside the duality of objectivity and relativism.

Recognising power structures

Be aware that gender power order interacts with other power structures such as ethnicity, class, age, disability, sexual orientation, transgender identity and other social categories. It is fundamental to recognise intersectionality to read complexity, co-presences and power asymmetries.

Making visible the multiplicity of subjectivities

Deconstruct binarism and gender roles to reveal the social and cultural constructions of them, to make visible the multiplicity of subjectivities and recognise the right to difference, and to give a voice to a wide range of people, especially those who don't usually have the power to influence the discourse.

Revealing discriminatory dynamics

Revealing discriminatory dynamics through gender-disaggregated statistics, analysing and understanding them through a deeper gender analysis, to recognise their spatialisation.

Facing resistance

Be aware that working on the privileges of power means encountering resistance, which needs to be managed and supported. The work for gender equality must be sponsored and carried out in parallel in different domains (spaces, policies, practices) to rebalance powers.

A second group of issues to consider are of a thematic nature.

Mobility

How to ensure a fair and accessible mobility that guarantees the right to independent travel?

A quantitative aspect must be considered, namely that women use public transport to a greater extent than men. Furthermore, unlike men who tend to have linear journeys and peak hours, the journeys of women (and caregivers in general) are more fragmented and spread throughout the day, a phenomenon known as trip-chaining. These differences have an impact on the length of journeys, the cost and their efficiency. With regards to these patterns and the spaces that are traversed, it is necessary to consider travel policies and conditions that can transform typically uncomfortable and stressful spaces into places of calm.

How to support active and sustainable mobility?

Women walk more than men, but they cycle less if there is no proper cycling infrastructure.

Women and marginalised groups in general pay a lot of attention to the choice of route and the time in which to travel, especially if they are travelling by foot. Unheard voices in mobility planning should be listened to in order to raise awareness about fear-based travel and how it influences the uses and perceptions of urban space.

Care

How to make relationships and fragilities visible to contribute to the recognition of the social value of care work?

Women as a whole dedicate much more time to housework and care, with the consequence that they have a much lower amount of free time than men.

In order to recognise the value of care work and make it more visible, it is necessary to identify the mechanisms that lead to its redistribution, including questioning job-centred schedules.

How to build community and foster exchanges between interdependent lives?

Listening to communities must become common practice, to identify some of the conditions that make people feel part of a community and the reasons for exclusion and the sense of not belonging.

Ecologies

How to recognise and nurture the connections of the living beings in order to rethink the extractivist approach?

Thinking about which ecofeminist approaches can change a predatory relationship with nature means introducing a less hierarchical vision of the world and profound changes in everyday life.

Globally, women, especially if poor, are more affected by climate change and its negative consequences, but despite this, their participation in decision-making structures related to climate is negligible. Gender experts should sit at the table when designing sustainable development projects

for grasping synergies and identifying effective strategies for sustainable transitions.

How to ensure the right to the city through the access to nature as a common place?

Public open-air spaces are meeting places for people with different identities who would never cross paths elsewhere. They are places of exposure, conflict and coexistence. As a consequence of stereotypes, power relationships and gender-based violence, some subjectivities tend to disappear from these spaces.

Green areas, that play a fundamental role in claiming the right to the city, must be questioned and modified through community involvement, to democratise the way in which people use them as spaces for expression.

Accessibility

How to multiply the points of view and rethink spaces taking care of the multiplicity of bodies and subjectivities?

Considering accessibility as a fundamental right and a collective responsibility, attention must be done to the (in)accessibility of spaces for so-called queer or non-standard bodies with a view to supporting their re-appropriation.

How to ensure a multiplicity of uses and a permeability of the margins?

Multiplicity and permeability are functional and spatial components at the same time. A focus should be placed on processes of exclusion and spaces should be designed to allow flexible, interchangeable and overlapping uses.

Through the recognition of these dynamics, the research constructs a system of connections and continuous cross-references between variables. It does not go so far as to provide design solutions, which must arise from collaboration and context, but it provides an applicative reflection, a revealing device, a practice in questioning and, ultimately, a design guidance tool for the campuses of the future.

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Middle East Technical University Campus Generating its Alternative Learning Spaces: The Case of METU Garden

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*Dr. Esin Kömez Dağlıoğlu***

Introduction

Today, in higher education, students need not only to gain technical knowledge about their area of study but also acquire soft skills—such as decision-making, communication, teamwork, and leadership—for their professional and personal growth. The increasing focus on these skills has led to a shift in educational approaches and necessitates the integration of interdisciplinary studies, collective activities, and peer learning in higher learning (OECD, 2023, 2024). However, conventional classroom layouts alone might not be sufficient for fostering such collaborative environments. Universities, therefore, must offer diverse learning environments and opportunities that extend beyond formal education.

A growing body of literature, in this respect, suggests that learning is not confined to structured study-related activities but also occurs informally through various interactions and experiences in various campus (indoor and outdoor) spaces. Cox (2011) examines the experiences of un-

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dergraduate students in teaching spaces and reveals how much these spaces contribute to effective engagement in learning activities. Crook and Mitchell (2012), on the other hand, argue that achieving a more “socialized” university learning environment through design is beneficial for “peer-based encounters” that enhances learning. Bennett (2011) explores the possibility of making “the entire campus a learning space” and creating supportive learning environments beyond conventional classrooms. Similarly, Peker and Ataöv (2020) emphasize the importance of campus open spaces in informal and alternative learning, expanding the scope of formal university education beyond classrooms. These studies show that outdoor/informal settings—where students can use their out-of-classroom time and study individually or collaboratively—are as important as indoor/formal spaces.

Furthermore, universities contribute to students’ physical, social, cultural, and intellectual development, yet students are not passive recipients of these environments. They actively shape the social life and transform campus spaces according to their needs. Through collaboration, sharing, and collective actions, students continuously redefine their surroundings while continuing their education. They modify existing layouts, propose new uses for open spaces, and establish social networks that influence campus life. This continuous transformation reflects the evolving nature of university communities, where each new generation of students contributes to the ever-changing social and physical landscape. In this sense, campuses should not be seen as static entities but as dynamic environments shaped by ongoing student engagement.

Building on this perspective, this study explores the role of university campuses as spaces that support both formal and informal learning while allowing students to actively shape their learning environments. The Middle East Technical University (METU/ODTÜ) Campus with its carefully designed (educational) landscape and open spaces serves as a significant example of adaptable campus environments. Since its establishment as a campus university, METU has been an important higher education institution and “a significant source of intellectual, ideological and architectural capital for its region” (Savaş, 2019, p. 286). The foundation and design of its campus are accepted as a novel “project” of its time which gave priority to developing a “society” of its own.

This study accepts the importance of the METU Campus and further argues that the campus is not a fixed and unalterable environment but an “ongoing project” allowing students to reinterpret its spaces over time.

Students are active agents who continually reshape campus spaces through their everyday interactions, informal activities, and collective initiatives, thus enhancing their continuous learning. In this regard, METU Garden (ODTÜ Bostan), located on the campus, was selected as a case study to discuss the continuously evolving character of the METU Campus.

The garden has been the focus of various academic studies, each approaching the subject from different perspectives and levels of analysis. Çerşil and Kömez Dağlıoğlu (2024) conducted an in-depth examination of METU Garden as a case of food commons, emphasizing the interplay between its social structures and spatial characteristics. Ateş (2015) explored the earlier phases of METU Garden within the framework of guerilla gardening, alongside other similar examples. Kaplan (2021) situated METU Garden within the broader network of alternative food initiatives, identifying it as a community garden. More recently, a study by Kaplan Sarısaltık and Sarısaltık (2024) analyzed METU Bostan as an alternative learning environment that complements and enriches formal university education, specifically examining its role in fostering student-centered learning experiences. Considering the previous studies, this research acknowledges METU Garden as an informal and alternative learning space. However, it adopts a broader perspective by examining the role of Middle East Technical University's physical and built environment, as well as its social milieu, in fostering such practices. Furthermore, it explores how the foundational principle of creating a university society can be traced through the selected case study.

METU Campus and its Social/Ecological Landscape

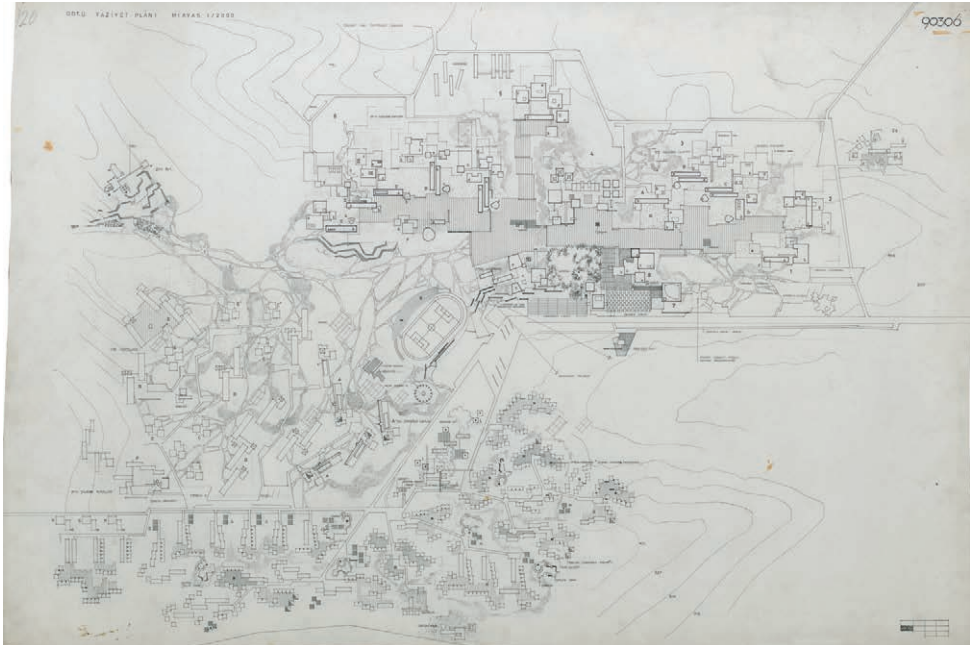
Located in Ankara, METU and its campus have been a vital component of the city's urban landscape and its social and cultural life since its foundation. The main idea behind founding a technical and international university was to educate a skilled workforce in the fields of architecture and engineering. Consequently, the first academic program of METU, the Department of Architecture, started its first semester in the barracks behind the Grand National Assembly of Turkey (TBMM) in 1956. Education continued in those buildings until METU moved to its current campus in 1963. The establishment of the METU Campus, Turkey's first university campus, represents a significant achievement in transforming the barren land of Anatolia—a vast agricultural area on the Western axis of Ankara—into one of the most prestigious educational institutions in the region.

Designed not merely as a physical space but as a visionary project, the foundation and development of METU Campus offer valuable insights for contemporary campus design and research.

Sargın and Savaş (2016) highlight the importance of the METU Campus by tracing its environmental history. In the METU Project, the founders aimed to create a “university society” rather than just constructing a distinguished research institution. They also aimed to establish an exemplary university environment with its architecture and landscape to support their vision. To this end, the founding committee decided to organize a national architectural competition for the campus design. Although two competitions were organized in the 1950s, only one resulted in a final implementation. However, these attempts provided guidelines for developing “the initial design ideas and the core of the architectural program of the campus plan” (Sargın & Savaş, 2016, p. 615).

Figure 1 -
Competition
Project, Site
Plan 1/2000,
Altuğ and
Behruz Çinici,
1960 (Salt Re-
search, Çinici
Archives)

In 1959, the report to the Board of Trustees on METU’s Campus Plan was presented. The report outlined general design principles that were categorized under seven headings to guide the future development of the campus. Sargın and Savaş (2016) point out that this detailed report prioritized the construction of central core walks and arcades over academic buildings or dormitories. In this way, it was envisioned that the imme-



diated development of pedestrian pathways and terraces would connect different departments and symbolize the unity of the new university community from the beginning. The report also emphasized the importance of site decisions “for the creation of the desired community” over stylistic and formal choices (Sargın & Savaş, 2016, p. 616).

In this respect, architecture and the design of the landscape were regarded as important instruments to transform the selected site into “a secular environment for academic and applied research” (Sargın & Savaş, 2016, p. 608). Within these premises, a second competition was held in 1961. The jury brief of the competition further highlighted that design proposals were expected to include ideas for creating a holistic landscape with pathways, arcades, pools, fountains, terraces, sculptures, and street furniture. The jury selected the project designed by Altuğ and Behruz Çinici among 21 entries (Sargın & Savaş, 2016; Savaş, 2019). The project was primarily chosen for its effective use of the site and architectural competence, which enabled the successful integration and elaboration of the three key programmatic elements: (1) the academic center (academic zone), (2) the dormitories and faculty guesthouses, and (3) social amenities (non-academic zone) (Sargın & Savaş, 2016).

As another essential component of the campus, METU Forest holds an environmental value for the city of Ankara, while also providing recreational opportunities for its citizens (as in the Lake Eymir region). It is a human-made forest that covers 4500 hectares of previously barren land which has become a natural habitat for various species of plants and animals in time (Askarov, 1995). The former president of METU Kemal Kurdaş, the architect Behruz Çinici, and the landscape coordinator Alaattin Egemen decided to cultivate 75 percent of the university land with general landscaping to reduce eroding soil and mitigate the effects of a harsh climate (Kurdaş, 1998). They created a unique afforestation program to plant mostly non-irrigational trees on empty lands, where tree species were selected according to soil and climatic conditions. The detailed landscaping and afforestation project aimed to cover 3100 hectares of non-irrigational plantings and 800 hectares of built-up landscaping with irrigational plants (Askarov, 1995).

The application of campus-wide afforestation began in 1961 with a Planting Festival. In his memoir, Kemal Kurdaş highlights the significance of collaboration among all actors, including students, faculty and administrative personnel, government agencies, as well as citizens, for the successful implementation of the afforestation program. He also notes

that many participants lacked the knowledge and experience for effective tree planting and establishing a large-scale forest in the barren land. However, they gradually developed strategies and gained knowledge through experimentation (Kurdaş, 1998; Özgenel, 2011). The project participants' strong collaboration and dedication to creating a man-made forest demonstrate how actors with varying interests can work together for the common good.

All these efforts not only led to the creation of a unique ecosystem in Ankara but also fostered a sense of community between the university members and the urban society. Thousands of people have helped to achieve this "sophisticated landscaping" since the 1960s (Askarov, 1995). As a result, the METU Forest has extended beyond the university's physical boundaries, becoming an integral part of Ankara's ecological and social landscape. The annual Planting Festival, a collective effort of METU student clubs, faculty members, and administrative staff, has been established as a strong tradition to cultivate and preserve the natural environment of the university.

The organization of buildings, open spaces, landscape, and forest of the METU Campus play a crucial role in generating a social milieu in different members interact with each other. The campus landscape is an active setting that includes sites of socialization and collective engagement. Its open spaces contribute to a constantly evolving social environment with the active participation of students. Moreover, these spaces enhance effective student learning as students are more likely to engage in academic and social activities when they have a sense of comfort in their surroundings.

All these aspects of METU and the campus environment encourage community members to adopt alternative strategies for enhancing the ecological and social qualities of the campus environment as well. Student-led initiatives are vital in achieving these objectives. Several initiatives have been undertaken by students seeking to cultivate land within the METU Campus. One notable endeavor, known informally as Yalincak Garden (Yalincak Bostanı), emerged as a form of guerrilla gardening in 2014. A group of students, who called themselves guerrilla gardeners, selected a suitable site in Yalincak Village and started cultivation. For a while, students cultivated the land they had chosen within the METU forest. However, they encountered various managerial challenges, including limited access to the site, low participation rates, and the lack of an irrigation system, which made the process more difficult. Eventually, these

challenges led students to abandon the cultivated lands and search for alternative gardening opportunities (Ateş, 2015).

METU Garden as an Alternative Learning Space

METU Garden stands out among other campus gardening initiatives due to its structured approach and well-organized system as it enables its members to engage in agricultural production within METU's boundaries. It was first established in 2015 in collaboration with METU Rec-torship, Step by Step Organization (Adım Adım Oluşumu), and Buğday Association for Supporting Ecological Living (Buğday Ekolojik Yaşamı Destekleme Derneği), within the scope of the Seeds to Campus (Tohum-lar Kampüse) project. Located on the periphery of the METU Forest—be-tween the indoor and outdoor swimming pools, football fields, Baraka Sports Hall, and student dormitories—the garden covers a 250 square meters area and includes areas for storage, seating, and composting (Çerşil & Kömez, 2024).

Step by Step Organization and the Buğday Association provided garden establishment, irrigational systems, composting, and ecological training to students (Beşirli & Karagöz, 2019). Although it was initially established through a top-down approach, METU Garden project was designed to pro-vide access to good quality, healthy, and fresh produce, create awareness about eco-friendly living, and introduce nature-friendly alternative pro-duction and consumption methods. Similar to other nature-friendly urban gardens in other university campuses, it serves as a platform for ecological awareness and sustainable food production (Çerşil & Kömez, 2024). Over time, it has evolved into a self-managed, community-driven space.

Figure 2 -
*Winter pre-
paration in
the garden*
(Source:
Authors)



METU Garden differentiates from the general campus landscape as it offers alternative uses and experiences to its users. It functions as an interactive and learner-centered environment where students engage in hands-on ecological farming practices. It fosters informal learning through experiential activities such as composting, irrigation management, and organic food production (Kaplan Sarisaltık & Sarisaltık, 2024). Apart from its agricultural purpose, the garden facilitates social interaction and encourage collaboration between students and faculty members through collective activities.

The social structure of the METU Garden community is non-hierarchical, although a core group of students maintains the gardening activities and organizes events. This core group comprises individuals who have been actively engaged in cultivation at METU Garden for an extended period and have gained experience through their participation in past events. New members can also become part of this group based on their level of participation. Participation in each meeting is voluntary, enabling every member to engage in gardening activities. While the majority of participants are students, academic staff from various faculties also contribute to the maintenance of the garden. By regularly taking part in activities, new members gain knowledge about gardening processes, establish trust, and develop friendships with senior members.

Over time, the members have accumulated collective knowledge about appropriate planting techniques and suitable seasonal crops that can be grown in the garden. This agricultural knowledge has been acquired through trial-and-error processes and transferred from experienced to new group members. In addition to crop cultivation, the garden community organizes various activities that extend beyond agricultural production. These activities include seasonal pickling workshops, vinegar-making from available fruits, campus-wide seed collection, and seedling planting. These various activities encourage students to actively engage in campus' open spaces. For instance, apple seed collection events involve guided campus walks, where knowledgeable volunteers introduce participants to tree locations within campus and harvesting techniques. Moreover, in each semester, group members arrange walks to the Yalincak region which hosts an old village and an archaeological site within campus boundaries.

METU Garden is also open to different users due to its location and proximity to recreational, sportive, and accommodation areas. It is frequently used as a meeting place by gardening members and students from dif-

ferent university clubs. The seating area next to the garden serve as an informal gathering space where students who live in METU dormitories can meet and have meals together. These often spontaneous meetings help students to socialize with each other and reinforce their sense of belonging to the garden where they grow food. These interactions highlight the garden's role not only as a space for food production but also as a social platform for collective activities. In this regard, the METU Garden exemplifies the intersection of spatial and social dynamics in fostering alternative, community-driven practices within university settings.

Discussion and Conclusion

Studies highlight the role of food spaces within university campuses as powerful attractors for social learning. These spaces can support the sharing of experiences and knowledge, as well as strengthen community bonds (Brown & Long, 2006; Dugdale, 2009). In this sense, campus gardens, much like food-related spaces, function as gathering areas that enable students to engage in both social and educational activities. They are alternative spaces where knowledge exchange occurs, collaborations emerge, and alternative learning practices take place. Therefore, they not only contribute to sustainable agriculture but foster interaction between students, university members, and the broader community.

Moreover, urban gardens on university campuses can also be termed as "third places" that are between the recreational and informal spaces of everyday life and the formally structured spaces of work and study. In university settings, third places allow students to navigate between formal academic education and more spontaneous, socially driven learning experiences (Crook & Mitchell, 2012). Referring to university gardens as "third places" also recalls urban food commoning theories and frameworks. Urban gardening practices allow citizens to reinterpret vacant lands into common spaces within urban settings mostly dominated by public and private spaces. Individuals' collective actions to use and manage public spaces for food provisioning blur the boundaries between inside and outside, public and private thus creating "third places" (Franck, 2005) or, in Stavrides' terms, "threshold spaces" (Stavrides, 2015, 2019).

Additionally, community involvement in establishing self-sufficient systems has become crucial in creating and sustaining commons. The social capacity of community engagement has led to a shift from "the commons as a noun" to "commoning as a verb" thus enabling the emergence

of novel forms of commons, including urban, cultural, digital, and food commons (Morrow, 2019a, 2019b; Morrow et al., 2022). The concept of urban food commons manifests itself in urban gardening at two scales. First, at the scale of the community, members try to establish a shared environment where “everyone having equal access to the equipment and resources provided by the garden” (Hennchen & Pregernig, 2020, p. 12). Second, on a broader scale, urban gardening initiatives aim for long-term and wider societal changes by encouraging alternative ideas and behavioral models (Hennchen & Pregernig, 2020).

Students’ efforts to reinterpret campus open spaces as common spaces for food enable them to actively shape their learning environments. These food commoning practices engage dynamic and alternative social processes, empowering university students to gain more control over their formal higher education. By exploring these practices, new research trajectories can emerge that encompass both informal and alternative learning spaces within university campuses, as well as the common spaces of urban food commoning. Within this context, METU Garden is exemplary as it illustrates how students appropriate and transform campus spaces into interactive, learner-centered environments through collective action and food commoning.

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A simulation-based urban design methodology towards safety-conscious public spaces

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Introduction

In recent years, the growing incidence of both natural and anthropogenic disasters—exacerbated by climate change and the intensification of urban dynamics—has prompted renewed attention to the role of urban planning as a means of risk reduction and resilience building. In this context, pre-disaster planning emerges as a key practice for anticipating the consequences of critical events and developing multi-scalar strategies aimed at enhancing safety and preparedness in urban settings (FEMA, 2017; IPCC, 2023; Otsuyama & Maki, 2018). This paper proposes a methodology grounded in agent-based simulation to support the design of safer public spaces, specifically focusing on open areas within university campuses. The proposed approach integrates simulation and design to evaluate existing spatial layouts' performance under stress and explore alternative configurations that optimize evacuation dynamics and mini-

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mize risk (Eugeni et al., 2023; Di Ludovico et al., 2025). Traditional urban design processes often rely on pre-defined planning norms or heuristic criteria, with limited mechanisms for empirical verification. As a result, spatial decisions are frequently made in the absence of robust evidence on their real-world effectiveness, particularly in crisis scenarios. The methodology discussed here contributes to an emerging research niche that challenges this paradigm, promoting a data-informed approach that couples dynamic simulations with urban design (León & March, 2016; Fallah et al., 2014). Rather than supporting normative assumptions, simulation allows for the generation of synthetic yet plausible scenarios that reflect complex human behaviours under stress. These scenarios provide planners with operational metrics—such as evacuation times, congestion patterns, and spatial accessibility—that can inform more resilient spatial configurations. This logic has already been tested in previous case studies involving historical city centres and suburban university districts, confirming its adaptability and diagnostic potential (Eugeni et al., 2024a; Sacco et al., 2023). At the core of this methodology is a simulation environment developed using the GAMA platform (Taillandier et al., 2010, 2018), which supports agent-based modelling of crowd behaviour during emergencies. The platform allows for detailed representations of the built environment, crowd dynamics, and individual decision-making, making it particularly suitable for simulating evacuation scenarios triggered by earthquakes, fires, or other hazards (Iskandar et al., 2023; Wang et al., 2015). This simulation tool is integrated within a broader urban analysis framework inspired by the concept of the Digital Twin—a dynamic, data-driven model of urban space that not only reproduces the morphology of the built environment but also serves as a decision support system for testing spatial interventions (Sacco et al., 2023; Eugeni et al., 2024c). By incorporating GIS data, behavioural algorithms, and spatial performance indicators, the simulation environment enables stakeholders to visualize, evaluate, and compare design alternatives in terms of risk mitigation and emergency responsiveness (Benaben et al., 2021; Pluchino et al., 2014). The article is structured into five main sections. Following this introduction, section 2 presents the methodological framework in detail, outlining the architecture of the simulation model, the data sources, the calibration process, and the behavioural parameters. Section 3 introduces the three selected case studies: the Coppito (STEM departments), Roio (engineering departments), and city centre (human sciences department) campuses of the University of L'Aquila. These campuses were chosen for their strategic relevance and spatial heterogeneity within the post-earthquake urban context. Section 4 reports the results

of simulation experiments, comparing the performance of current layouts with optimized design scenarios. The analysis focuses on evacuation time, crowd distribution, and critical bottlenecks, offering insights into how spatial interventions can enhance safety. Finally, Section 5 offers a critical reflection on the strengths and limitations of the approach, discussing future research directions, including integration with real-time data and expansion to multi-hazard scenarios.

Methodology

The methodological approach adopted in this study is grounded in the integration of agent-based simulation and safety-oriented urban design, with the primary goal of assessing and enhancing the emergency performance of public open spaces. The focus is particularly directed at university campuses, which often present complex morphologies and high population densities, making them highly sensitive to risks induced by natural or anthropogenic events. The method unfolds through two interdependent phases, which form an iterative loop rather than a linear progression. In the first phase, a simulation of the current spatial configuration is conducted. This phase involves the development of an agent-based model capable of reproducing crowd dynamics during an emergency evacuation, considering the actual layout of open spaces, the location of buildings and their relative exits, and the spatial distribution of safe zones. The simulation outcomes provide a diagnostic assessment of the site's criticalities, highlighting problematic areas in terms of crowd congestion, insufficient capacity of emergency gathering points, or delays in reaching safe areas by individuals. The behavioural logic implemented in the model draws upon established principles in evacuation science, with particular attention to the influence of spatial constraints on pedestrian movement, as explored in works such as Shiwakoti and Sarvi (2013) and Wang et al. (2022). Based on diagnostic results, the second phase involves the formulation of spatial interventions aimed at improving the system's evacuation performance. These interventions, designed within a GIS and simulation-integrated environment, may concern the repositioning or expansion of assembly areas, the modification of pedestrian circulation paths, or the removal of spatial barriers that hinder egress. Once implemented, the new scenario undergoes a second simulation, which allows for a comparative evaluation against the baseline condition. This cyclical process, based on successive iterations of simulation and redesign, enables the progressive refinement of spatial solutions and the validation of design choices through measurable

indicators. As emphasized in Radianti et al. (2013) and Liu and Lyu (2019), such a feedback loop is essential for transitioning from static, rule-based planning approaches to adaptive, performance-oriented spatial design. The spatial model is constructed using a combination of open-access and institutional datasets. These include orthophotos and topographic maps for the reconstruction of the site's morphology, vector data on buildings and pathways, and population estimates derived from the University's institutional records and statistical sources. The modelling environment is developed within the open-source GAMA platform, which supports spatially explicit agent-based simulations with customizable behavioural parameters (Taillandier et al., 2010; 2018). Each agent within the model represents an individual actor with specific attributes, such as movement speed and decision-making patterns, and can react dynamically to environmental stimuli and the behaviour of surrounding agents. Simulation scenarios are evaluated using a set of performance indicators commonly adopted in evacuation studies. These include total evacuation time, average and peak crowd density in critical zones, and the proportion of agents reaching safety within a defined time threshold. Such indicators allow for the quantitative comparison of the baseline and optimized scenarios and provide empirical evidence to guide spatial planning decisions, as also demonstrated in the work of Bretschneider and Kimms (2012). To ensure the robustness of the model, validation procedures include internal consistency checks, sensitivity analysis, and consultations with domain experts.

Case studies

The methodology described in the previous section has been applied to three case studies, all located within the university system of the University of L'Aquila. These campuses differ significantly in terms of their geographic location within the urban and peri-urban fabric, as well as in their morphological and functional characteristics. The following section provides a concise overview of the three sites, with particular attention to the spatial configuration, maximum occupancy capacity of the buildings, and the location of the designated emergency assembly areas. All data were retrieved from the official institutional portal dedicated to safety and emergency planning¹.

¹ Web page with information about each campus of the University of L'Aquila <https://www.univaq.it/section.php?id=2211>

The first campus is situated in the hillside locality of Roio, specifically on the summit of Monte Luco, approximately 1000 meters above sea level and about 10 kilometres from the historic centre of L'Aquila. This site hosts engineering programs, administrative offices, and research laboratories. The campus comprises seven buildings, five of which are arranged in a circular formation around a central open space featuring green areas, tree-lined walkways, and parking facilities. Under full occupancy conditions, the campus can accommodate up to 3.186 individuals, including students, academic and administrative staff, third-party personnel, and individuals with disabilities. There are four designated emergency assembly areas located in proximity to the open spaces adjacent to the buildings with the highest occupancy loads.

The second campus is located near the Coppito district and lies adjacent to the "San Salvatore" hospital complex. It hosts the departments and degree programs of information science and mathematics, applied clinical sciences, biotechnology, physics, and chemistry. Approximately five kilometres from the city centre, the campus consists of four main buildings arranged in parallel and separated by shared open spaces and parking areas. The maximum occupancy is 4.245 individuals. Eight emergency assembly areas are available, predominantly located in areas currently used for parking.

The third campus is located in the historic centre of L'Aquila and hosts the Department of Human Sciences and its associated academic programs. It consists of a single building with a total capacity of 1.766 individuals. A single emergency assembly area is located in the square in front of the building.

To estimate the potential capacity of the emergency assembly areas, a value of 2.5 square meters per person was adopted. This standard reflects the need to ensure adequate comfort and safety during prolonged waiting times, which are likely to occur in the event of a natural disaster.

The main features of the three campuses are summarized in Table 1. As will be discussed in the following section, their diversity in terms of spatial configuration and urban context offered an ideal opportunity to test the methodology across a range of functionally similar but spatially distinct environments.

Table 1 -
University of L'Aquila campuses' summarized description and indicators (elaboration by authors)

Campus	Edificio	Maximum capacity	Emergency assembly areas	Maximum capacity
Roio - Engineerings	A	1386	1	435
	B	584	2	4921
	C	1020	3	64
	E	95	4	98
	F	24		
	G	57		
	H	20		
Coppito - STEM disciplines	A	1093	1	441
	B	300	2	369
	C	1458	3	473
	D	1344	4	392
	E	50	5	560
			6	824
			7	493
			8	491
Historic centre - Human sciences	A	1766	1	1142

Results

The simulation framework relies on a set of general parameters which are consistent across all case studies. These include: the total number of individuals evacuating from each building and navigating toward designated emergency assembly areas via the shortest available path; the time taken to reach these areas; and the progressive occupancy rate of each emergency zone over time. The simulation outcomes are organized into two scenarios: the first (Scenario 0) corresponds to the current spatial configuration of each campus, while the second (Scenario 1) reflects an optimized layout developed through the application of safety-oriented urban design strategies. The simulation code was custom-developed by the authors and calibrated to ensure effective integration between the modeling environment and geospatial data preprocessed within a GIS framework. These spatial data constitute the foundation of the modeling process. At the end of each simulation run, a georeferenced raster output is generated, representing the level of crowding (or “crowdness”) along the pedestrian paths used during evacuation. This output can be directly overlaid onto the original spatial data to enable comparative and visual analysis.

Figure 1 -
Scenario 0 (current spatial configuration) for the three university campuses (elaboration by authors)



Scenario 0 – Existing conditions

The results obtained from Scenario 0 vary significantly across the three campuses, reflecting their differing morphological and functional contexts (Figure 1). In the case of the Roio campus, all agents successfully reach the designated emergency areas within 4.3 minutes of the simulation's start. Two of the four available safe zones reach full capacity, while the remaining two stabilize at approximately 60% occupancy. By contrast, the outcome for the Coppito campus reveals more critical issues: all eight emergency areas fill to 100% capacity, the last one doing so after 8.4 minutes, yet approximately 200 agents (out of a simulated total of 4,245.

of 4,245) remain unaccommodated. This indicates that, under current conditions, the available emergency space is insufficient to meet the demand. A similar situation emerges at the Humanities campus. The single available assembly area reaches its full capacity in just 1.83 minutes, leaving nearly 800 agents without a designated safe zone. In summary, the simulation results for Scenario 0 suggest that only the Roio campus currently possesses the spatial infrastructure necessary to accommodate a complete evacuation, based on the parameters and boundary conditions defined for the study. It is important to note that, especially in the case of the Humanities campus, several agents are forced to traverse segments of public roadway, external to the campus and not specifically designated for pedestrian use, to reach the emergency area.

Scenario 1 – Optimized spatial configuration

Following the assessment of existing conditions, a second round of simulations was conducted incorporating a series of safety-based urban design (UDS-b) interventions (Eugeni et al., 2024a). These interventions aimed to expand the size of emergency assembly areas, reduce evacuation times, and eliminate spatial obstacles hindering pedestrian flow. The obstacles identified included both direct factors—such as staircases, steep slopes, damaged or uneven surfaces, parked vehicles, and bulky urban furniture—and indirect factors, such as dead-end alleys or constrained pathways, as highlighted in previous literature (Bramerini & Castanetto, 2016; Alkassabany et al., 2018; Murao, 2008; Bernardini et al., 2021; Hosseini et al., 2009; Wang et al., 2022).

The urban design interventions primarily consisted of removing fences and enclosures, relocating parking areas, and increasing the share of

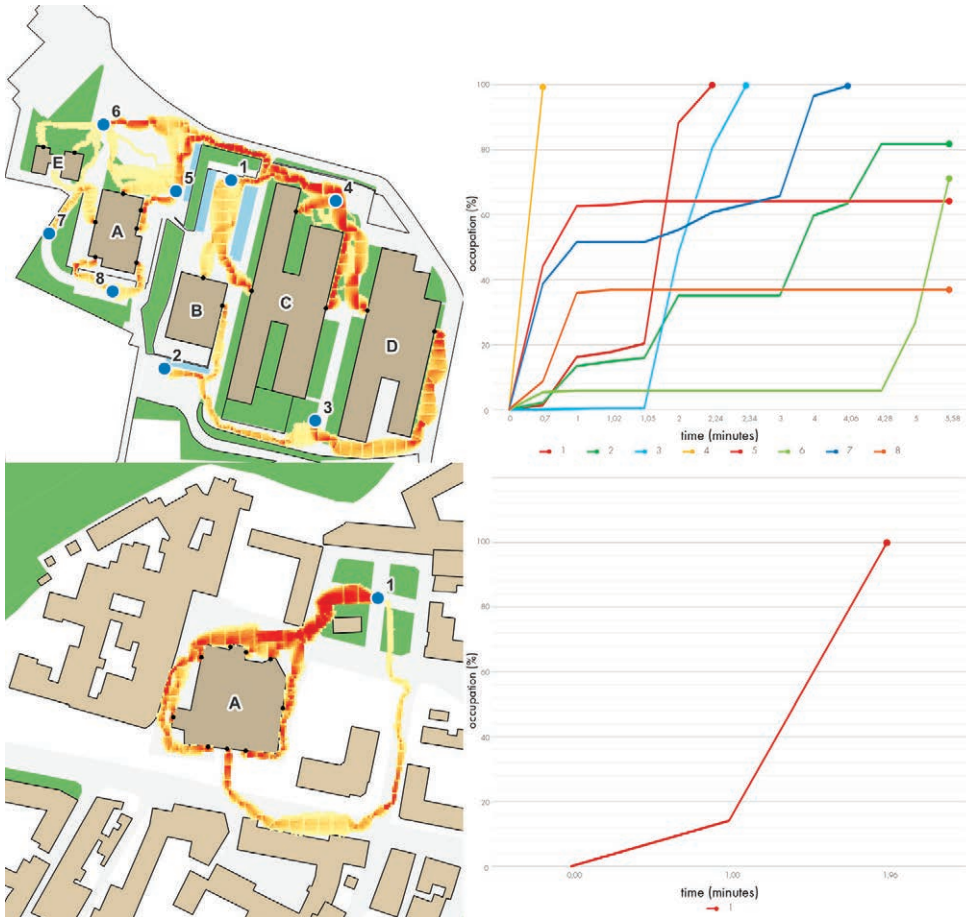


Figure 1 -
Scenario 1
(safety-optimized spatial configuration)
for the three university campuses
(elaboration by authors)

permeable green space (Figure 2). In the case of the Coppito campus, these strategies proved effective: 100% of the agents were able to reach emergency assembly areas, and the total evacuation time was reduced by approximately three minutes. Additionally, the overall extent of accessible open space for users increased. The same design strategies were applied to the Humanities campus, though with less significant impact. Despite a partial conversion of parking space into emergency assembly area, the total surface area remained insufficient to accommodate the simulated number of evacuees, resulting in minimal improvement over the baseline scenario. The boundary conditions adopted for Scenario 1—including the expanded area of the emergency zones as a result of UDS-b applications—are summarized in Table 2.

Table 2 -
Scenario
I contour
conditions
after UDS-b
application
(elaboration
by authors)

Campus	Edificio	Maximum capacity	Emergency assembly areas	Maximum capacity
Coppito - STEM disciplines	A	1093	1	791
	B	300	2	427
	C	1458	3	473
	D	1344	4	437
	E	50	5	1060
			6	824
			7	493
			8	567
Historic centre - Human sciences	A	1766	1	1300

Conclusions

The research presented in this paper illustrates the potential of simulation-based approaches in supporting safety-conscious urban design, particularly within complex environments such as university campuses. Through the application of an agent-based methodology across three morphologically and contextually diverse case studies, the study has demonstrated how different spatial configurations influence the effectiveness of emergency evacuation strategies. The results obtained highlight three distinct conditions. The Roio campus, located in a purpose-built area with a balanced distribution of buildings and open spaces, represents a favorable condition in which the existing spatial layout is already capable of ensuring a complete and timely evacuation. This confirms the hypothesis that environments conceived with open space and circulation logic embedded into their design are more resilient under stress conditions (Fallah et al., 2014; Haghani & Sarvi, 2018). Conversely, the Coppito campus presents a partially critical scenario, in which the current configuration shows a gap between demand and available emergency space. However, the application of safety-oriented urban design techniques—such as the removal of barriers, reorganization of parking areas, and expansion of permeable open space—proved sufficient to close this gap and enhance both the evacuation time and spatial efficiency of the site. This reinforces the role of targeted design interventions in adapting existing configurations to perform more effectively in risk-prone contexts (Alkassabany et al., 2018; Hosseini et al., 2009; Wang et al., 2022). The most critical situation emerged at the Humanities campus in the historical center of L'Aquila. Here, the limited availability of open space and the rigid morphological constraints imposed by a stratified urban fabric significantly reduce the potential for

design-based improvements. Despite the implementation of urban design interventions, the simulation results indicate that a large proportion of users remain without access to safe zones. This finding suggests that, in compact and historically layered urban contexts, emergency preparedness may require a shift from project-level interventions to broader strategic planning. Specifically, the identification and integration of additional emergency areas in the surrounding urban environment could offer a viable solution. This aligns with previous literature emphasizing that dense, heritage-based city cores often demand multiscale and inter-institutional planning efforts to address risk comprehensively (León & March, 2016; Santibáñez, 2016).

Nevertheless, some limitations must be acknowledged. The absence of real-time behavioral data, such as that obtainable through mobile tracking or sensor-based systems, limits the context-specific accuracy of the model. Additionally, behavioral responses in panic conditions remain difficult to calibrate due to the scarcity of empirical observations, as noted in studies such as Simonov et al. (2018) and Wachtel et al. (2021). Despite these constraints, the methodology outlined here offers a structured and replicable framework for embedding simulation into the design process of safety-conscious public spaces. Its iterative and adaptive nature supports evidence-based decision-making and contributes to the development of urban forms capable of enhancing collective resilience in the face of emergencies. Overall, the study confirms the utility of agent-based simulation as a tool to inform urban design decisions under uncertainty. By enabling iterative testing of alternative configurations and measuring their impact through empirical indicators, the proposed methodology provides planners and decision-makers with a replicable framework for developing context-specific, performance-based strategies aimed at increasing the resilience of public spaces. Future research could extend the model to account for real-time data integration and multi-hazard scenarios, further reinforcing its applicability in dynamic and risk-sensitive urban contexts (Wachtel et al., 2021; Radianti et al., 2013).

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Integrated Design Features in University Public Spaces: Community Benefits & Developer Appeal – Two European Best Practice Cases.

*Alessandra Marino**

Integrated Design Features in University Public Spaces: Community Benefits & Developer Appeal – Two European Best Practice Cases.

Appropriate design of public spaces contributes, within schools and university complexes, to increasing well-being, productivity and alleviating stress of the community (He et al., 2024). An in-depth review of literature and design cases shows how the prevailing design approaches for this purpose include the provision of green public areas, flexible open spaces accommodating activities of different purposes and the integration of green and public space within the buildings. Therefore, while the methodological design approach appears to be – at least theoretically – set for designers, on the other hand, on the side of the developers who draw up the project's functional programs, it seems to strongly persist the reticence in putting the community well-being in terms of livability, inclusion and accessibility standards at higher level than the minimum regulatory base, when this involves a partial sacrifice of the project volume (Zallio and Clarkson, 2023).

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In cases where yet an appropriate, but not performatively quantifiable, open public space design does not on its own convince the investor in renouncing to internal built square meters, the adoption of *Integrated Design Process*¹ (IDP) strategies, and often consequently, of international environmental certifications such as the German system *Deutsche Gesellschaft für Nachhaltiges Bauen* (DGNB), can intervene to partially stem this trend, putting emphasis on quantifiable results achieved through the implementation of integrated design choices where environmental, social and governance (ESG) efficiency supports the achievement of several points within the certification scheme, which in fact, being increasingly requested on the real estate market, does also increase the economic potential of sale and rental of certified sites and assets (Holtermans & Kok, 2017); this can motivates institutions and investors to commit in pursuing urban and architectural projects of high well-being and ESG standards that is either outdoor or indoor.

Therefore, regarding the purpose of this work, particular attention will be dedicated to the analysis and comparison of two *best practice* cases of integrated design measures applied to public spaces within university campuses, which enhance the livability of the space: the case of the *Campus RO* - a residential student campus built in 2023 in Rosenheim (Bavaria) by architecture firm *ACMS - Architektur-Contor Müller Schlüter*, together with landscape architects *FSWLA Landschaftsarchitektur*, and DGNB certified with the highest level of recognition, as well as the case of *Karen Blixens Plads* – a urban plaza at the core of the University of Copenhagen – built in 2019 by Danish landscape and architecture firm *COBE*, with no environmental certification pursued. The focus of both analyses will be put on the design features of their open and collective spaces, showing how, by adopting an integrated design approach, the implementation of public space interventions can combine high standards of urban livability in university campuses with market and investment needs, which make virtuous projects reality.

Integrated Design Process (IDP) and integrated design strategies linked to developers interests which enhance public space liveability

¹ The Integrated Design Process, often referred to as IDP, is a methodological approach to architectural design originally used in the early 1990s, by Canada's C-2000 program and IDEAS Challenge competition to describe a holistic approach to design (Sarhan and Rutherford, 2014). Over the decades many practitioners of IDP have developed their own perspective to be applied to sustainable design, not leading to a single specific definition, but they all have in common to be goal-driven, holistic, technically validated, collaborative and iterative (Sarhan and Rutherford, 2014).

The *Integrated Design Process* (IDP) is a methodological approach used in sustainable design practice since the early 1990s, originally by Canada's C-2000 program and IDEAS Challenge competition, to describe a holistic approach to design (Sarhan and Rutherford, 2014), and it is of particular interest that in Denmark, the very same country where several of nowadays most influential landscape and architectural firms that work on public space come from, such as *BIG – Bjarke Ingels Group*, *COBE*, *Henning Larsen* and more – this has become, since the early 2000s, the didactic framework used in academic teaching for architecture and urban design, especially at Aalborg University (Knudstrup, 2004). In fact, even though it is not possible to assert that the methodological framework that was developed in 2004 by Mary-Ann Knudstrup at the Department of Architecture and Design at Aalborg University, is consciously applied by the afore mentioned landscape and architecture design firms, it is for sure to consider that the cultural background that the IDP has got the chance to set in the professional development of Danish architecture and urban architecture students over the past two decades, can be definitely seen in today's architectural production of major Danish and North European architecture firms (Gramkow et al., 2022), including COBE and ACMS together with *FSWLA Landschaftsarchitektur*, who have signed the *best practice* cases that will be described in the following pages. Based on this assumption, to give a context overview of what it is hereby considered to be the methodological framework behind the genesis of the two referenced urban interventions, some key characteristics of Mary-Ann Knudstrup's *Integrated Design Process* will be described.

Knudstrup design method's principles can be indeed summarised by an atom diagram (Knudstrup, 2004) formed of four ellipses which revolve around "*the project*"; each of the ellipses stress the need for considering, while designing, four parameters categories that all equally concurs to the project "*final form and expression*" (Knudstrup, 2004) where architecture and aesthetic related forms are strictly linked to the functional and technical solutions as well as the quality statements requested for in the project program (Knudstrup, 2004). To reach for this aim, the IDP method puts high emphasis on the relevance of early involvement of different stakeholders during the design process, including not only architects, landscape architects and engineers, but also possibly the final users and developers. This holistic perspective on architectural and urban planning calls for the early involvement of key figures and various elements in the design process, considering them in their entire system rather than isolated components, and thus allowing them to reach results that not only

preserve the developers' economic interest, but first and foremost the urban quality and liveability.

The first practical application of Mary Ann Knudstrup's IDP was tested on a masterplan design of ca. 3000 square meters, entitled "*Citylife*" (Hansen et al. 2004), whose aim was to redevelop a dismissed industrial area in the Danish city of Aalborg, so that this could become a new site of prosperity and public gathering (Hansen et al. 2004). Several technical design parameters and requirements – such as acoustics, sun and winds consideration, ventilation strategies, choice of pervious materials and heat island effect considerations – were integrated in the design process at different stages as tools drivers instead of obstacles, becoming a natural part of the project (Hansen and Knudstrup, 2004). Most of the same design criteria can also be found in ESG requirements that are included in real estate environmental certifications for exterior spaces, such as DGNB Criteria Set – "*Biodiversity Promoting Exterior Spaces*", in credits categories "*Environmental Quality*" and "*Socio-cultural and Functional Quality*" and they all have in common to be performatively quantifiable, making it possible for users and developers to easily tackle their effectiveness in terms of perceived comfort and economical savings (DGNB, n.d.).

Therefore, in the following paragraphs, it will be presented how the selected *best practice* cases have engaged, through an early integrated design approach, the projects developers to reach a high standard of urban quality within university communities. Depth will be put in the ESG strategies applied – and similarly required by IDP and DGNB standard – against heat island effect and against the waste of drinking water for irrigation purposes, as well as through the implementation of pervious surfaces for rainwater management and through the appropriate design of external lighting.

Best practice: Karen Blixens Plads

Karen Blixens Plads is an urban plaza of approximately 20.000 square meters, built in 2019 at the hearth of the University of Copenhagen South Campus, which is gradually connected to the natural reserve of *Amager Fælled*, merging the built public space to the natural landscape through its human-made hills and valleys, and hosting 2.000 bicycles storages (COBE, n.d.). The program requirement set by the clients – the Danish Building and Property Agency as well as the investment found A.P. Møller Fonden – was primarily of infrastructural nature: to have covered and un-



covered bicycle parking lots for the university community. Starting from there, the landscape architecture firm did not limit itself to the execution of the infrastructure program but used the request as an integrated design opportunity to transform the spatial hierarchy of the square: the three main entrances of the university have been spatially connected by a three-dimensional design of the pavement, which alternatively acts as roofing to the parking spaces, as well as connection bridges to the building's entrances. In between this altitude alternation, the gathering yet flexible use is highlighted by the urban furniture. In this way, the necessary infrastructure is being turned into a student hang-out (COBE, n.d.). The integrated design approach used by COBE is therefore displayed in the final design merging technical and aesthetical requirements, not only solving the primary client's program intention, but also enhancing the liveability experience of the users, without being expressively requested on a first instance, also in terms of accessibility: the architectural intuition of the three-dimensional hills does in fact allow for gradient transition which are suitable for physically impaired community users.

Figure 1 -
*Aerial view
of Karen
Blixens Plads.
Photography
Courtesy of
COBE.dk.
Architect and
Landscape Ar-
chitect COBE,
Photographer
Rasmus
Hjortshøj.*

Similarly, other integrated design strategies that have been applied and which also enhance the community perception of the place, belongs to the microclimate approach: the light colours used in the concrete paving have very high SRI values, which are scientifically demonstrated for contributing to the management of the heat island effect in urban areas (Alchapar et al., 2014), avoiding local overheating in summer season and consequently encouraging the users in using the outdoor space for its intended gathering use, in spite of any extreme climate event that might happens due to climate change. Also, it should be noted that in *Karen Blixens Plads*, the microclimate approach is also beneficially used in the maximization of the site pervious surface: the pedestrian paths gradually leading to the natural reserve of *Amager Fælled* are in fact of natural cobblestones that allows the rainwater infiltration, avoiding episodes of flooding during extreme weather conditions and storms. Furthermore, the project makes use of native vegetation, which, at an identity level, places the intervention in its place of belonging, and at the same time makes it possible to minimize the consumption of drinking water, otherwise necessary for irrigation purposes of alien species. It is scientifically proven that the use of native species, in harmony with local meteorological conditions, increases water saving (Sorte et al., 2012).

Strategies of this kind, put into practice at the early stages of the design process, the core intention of the integrated design principles, streamlining the project technical and economic requirements – satisfying the developers interests – and at the same time increasing the perceived architectural value for the community.

On a different perspective, *Karen Blixens Plads* is again confirmed as a *best practice* case in student community projects, also regarding the design precautions taken in terms of public lighting: each individual bicycle storage station has widespread night lighting which both resolves a primary issue of perceived safety and does also contributes to an integrated architectural effect consistent to the design language of the plaza.

Due to the spatial and urban qualities described, *Karen Blixens Plads* won the Dezeen Award 2020 as *Landscape Project of the Year*, seeing recognition of the “innovative and multi-functional design that accommodates and promotes green transportation, climate change adaptation and biodiversity” (Dezeen, n.d.).

Best practice: Campus RO

Campus RO is a mixed residential district primarily aimed at student accommodation, with an integrated smaller area destined to elderlies residences, built in 2023 in close proximity to Rosenheim University. The design of this relevant urban intervention was since its first intentions of strengthens social interactions between the two user groups, and, in the designers' words, to be of inspiration for students, in such an important and formative phase of their life, promoting collaboration (Architekturwettbewerbe, 2022). In this contribution, it is hereby considered of particular interest to delve into the design features of *Campus RO* as in fact a district on its own, miming the functions of a city; the focus will be specifically put on its external public spaces features, which make it a *best practice* case in terms of students' community well-being.

Indeed, by shifting the focus from indoor design and technology requirements, the outdoor public design makes use of a new volumetric configu-



Figure 2 -
Aerial view of
Campus RO.
Photography
property of
acms-archi-
tekten.de. Post-
production by
the author.

ration of a stacked village, which promotes a three-dimensional development of interconnected outdoor meeting spaces, emphasizing the social function of the terraces and of the galleries, transforming them from mere connection walkways into opportunities for enabling a variety of encounters (Architekturwettbewerbe, 2022). From the ground floor to the rooftop, these hosts functions as cafes, fitness areas and urban gardens.

Making use of an integrated design approach, these spaces provide benefits to the well-being of the users as well as to the local microclimate and to the economic management of the structure: numerous cooling green areas with lawns, trees and shrubs, are designed at the core of the open plan courtyard, cooling down temperatures during extreme weather conditions while enhancing the user's connection to the natural environment, which is scientifically proven for having a positive impact on humans' well-being (Bratman et al., 2019). Similarly, the rainwater management is dealt with green roof areas and via the green courtyard areas, which are all accessible and where social activities can be held.

These and other strategies were successfully applied early in the design process, following the requirements set by the DGNB rating scheme for reaching Platinum level; the rating scheme, in its turn, does makes use of the methodological approach of the IDP (DGNB, n.d.), and is made up in such a way that, in order for developers to reach a Platinum level, they cannot only apply engineering-based ESG strategies, but it is also necessary to cover social benefits for community users. For this reason, the active involvement of the developer in the design process is highly encouraged. As in the designers' words, *"the fact that the economic issues are also the basis of sustainability assessment significantly increases the willingness of the client to support this standard"*, making it possible for the architects and landscape architects to apply green design criteria that enhance students' urban liveability, while helping the developers in achieving an environmental certification which increases the economical sale value of the asset. (Architekturwettbewerbe, 2022).

Conclusions

In consideration of the outdoor design strategies hereby outlined for both *Karen Blixens Plads* as well as *Campus RO*, and in consideration of their internationally recognized value in terms of urban planning and architecture, it is unbiased to stress how both projects share some integrated design actions in terms of mitigation of the local microclimate

and enhancement of the perceived outdoor space quality from the reference community. Therefore, on top of the design evidence that has been provided, it is assumed that the adoption of integrated design strategies, such as those aimed at the control of urban heat island effect, at the selection of native plant species and the appropriate rainwater management on site, can be considered beneficial not only in terms of technical and environmental requirements, but also in the architectural perception of the public space design in university campuses.

These design actions are also assumed to be particularly effective when accompanied by the early involvement of the developers in the design process: in fact, the economic and management value that these ESG actions benefit to the investors, can play a crucial role in positively engaging developers in pursuing actions that are finally aimed at the enhancement of urban livability and well-being.

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A Green Classroom for the university community at large: the experience of the Horizon project TRANS-Lighthouses at Sapienza campus

*Dorotea Ottaviani**

Introduction: universities as cities in microcosm

Universities, in their complexity and function, mirror the structure and dynamics of cities. Just as cities are designed to support a range of activities, from residential and cultural to commercial and recreational, university campuses are likewise designed to accommodate the academic, social, and logistical needs of their diverse communities (Boyer, 1990). Campuses are typically composed of various “sites” that serve specific purposes—lecture halls, libraries, dining areas, dormitories, and, notably, open public spaces. Open public spaces, especially within universities, fulfill an essential role that extends beyond physical aesthetics (Viviani, 1958). They serve as venues for interaction, contemplation, and informal learning, contributing significantly to the mental and social well-being of all campus users (Alexander, 2002). These spaces create environments conducive to spontaneous social interactions, collaboration, and the overall flourishing of academic and personal lives. The university campus, through the strategic design and management of its open spaces, has the potential to promote a sense of belonging, enhance engagement, and improve the overall quality of life for its inhabitants (Oldenburg, 1999).

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The importance of open public spaces for universities

Socialization and collaboration

Campus public spaces are essential to fostering a vibrant campus environment (Soares et al., 2020; Capuano 2020a). These spaces primarily serve as interactive hubs that facilitate learning (Peker & Ataöv, 2021), social engagement, leisure activities, and healthy interactions with outdoor spaces (Capuano, 2020b). Researchers highlight the importance of spatial design in enhancing interactions and strengthening connections within public spaces (Schwander et al., 2021). At the core of the university experience is the interaction between students, faculty, staff, and the surrounding community. Open public spaces provide an invaluable setting for these interactions, facilitating communication, collaboration, and the exchange of ideas. These spaces often act as informal meeting points where individuals from diverse backgrounds and disciplines can come together, share knowledge, and form connections that might not occur in formal settings such as classrooms or offices (Lofland, 1998).

Well-being and mental health

Research consistently shows that well-being is closely linked to the quality of physical environments, especially for students (Tureck et al. 2025). University students often face significant pressures related to academic performance, social adaptation, and career uncertainty (Evans, 2003). Well-designed open public spaces provide students with a retreat from these pressures, offering areas for relaxation, recreation, and mental rejuvenation (Kaplan & Kaplan, 1989). Such spaces also contribute to mental health by reducing stress levels and enhancing overall happiness (Ulrich, 1984).

Accessibility and inclusivity

A university's commitment to accessibility and inclusivity extends beyond the classroom and into the physical environment. Open public spaces must be accessible to all individuals, including those with physical disabilities, older community members, and people with varying needs (Imrie, 2004). The design of these spaces must prioritize universal accessibility, ensuring that all campus users can engage with these areas comfortably and meaningfully (Steinfeld & Maisel, 2012). Moreover, uni-

versities have the potential to significantly shape urban life within their communities, and vice versa (Capuano, 2020a). The way this integration unfolds has been interpreted differently throughout history. Over time, there has been a growing recognition that these institutions must look beyond traditional campus boundaries, aligning their programs with the broader urban environment (Bender & Parman, 2005).

Fostering student learning

Beyond their role as social and recreational spaces, open public areas on campus can foster learning. As educational environments, they provide opportunities for students to engage in informal learning experiences (Dewey, 1938). Interactive elements such as signage, environmental design, and educational installations can transform public spaces into living laboratories for students. By integrating learning into the fabric of the campus, universities can encourage curiosity and a deeper connection to their academic subjects (Healey et al., 2014).

Urban design and planning in university campuses

Nature-Based Solutions (NBS) in university campus design

Urban design principles applied to university campuses can enhance the function and aesthetics of public spaces. Proper urban planning ensures that these spaces are strategically placed and accessible, catering to various needs such as student relaxation, study, recreation, and social interaction (Lynch, 1960). Urban design considers aspects such as traffic flow, lighting, vegetation, seating, and shade to create an inviting and functional atmosphere. Specifically, in the project described in this paper, urban transformations are meant to be performed through the use of Nature-based Solutions which are “innovations inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. They bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions. Nature-based solutions must benefit biodiversity and support the delivery of a range of ecosystem services.” (European Commission, 2023). Driven by policy, environmental, and economic imperatives, NBS education is increasingly crossing disciplinary boundaries to provide integrated solutions for addressing climate change. Offering cost-effective alternatives to conventional infrastructure (Price, 2021),

NBS expand benefits for both people and nature (Kapos et al., 2019). From an educational perspective, they create a shared learning platform that highlights the role of NBS in tackling global challenges and integrating sustainability as a key competence (Bianchi, Pisiotis, & Cabrera Giraldez, 2022). The emphasis on sustainability in higher education has evolved from the Millennium Development Goals to the more recent UN Sustainable Development Goals, shaping research, education, and training programs within the 17 SDGs framework (Vasconcelos & Calheiros, 2022). This focus directs the reflections and the project presented in this paper, mirroring the idea of including NBS not just in the higher education curricula but also in the design and transformation of open public spaces on university campuses. Nature-based solutions should increasingly be integrated into urban and campus planning so that the landscape becomes not just the solutions of the spaces between the buildings but functions for the regeneration of a suffering city (Celestini, 2020). These solutions emphasize the incorporation of natural elements such as plants, water features, green roofs, and sustainable drainage systems into urban environments (European Commission, 2020). In universities, NBS can contribute to both ecological sustainability and the creation of healthy, restorative spaces for social interaction and learning. These solutions are especially relevant in addressing the challenges of climate change and urban heat island effects, offering campuses an opportunity to become more resilient and environmentally friendly (Kabisch et al., 2017).

Case Study: The TRANS-Lighthouses Horizon Europe Project and Co-Creation of Green Classrooms

Overview of the TRANS-Lighthouse project

TRANS-Lighthouses¹ is a European funded research project focusing on co-creating nature-based solutions (NBS) in urban spaces. One of its key objectives is to enhance public spaces through collaboration with local communities, particularly with children and students, to design spaces that meet educational and environmental needs (Umantseva et al., 2024). The project adopts a participatory design approach, involving var-

¹ The team of Sapienza University involved in the TRANS-Lighthouses project comprises of Prof. Alessandra Capuano (P.I.), Prof. Fabrizio Toppetti, Prof. Federica Morgia, Prof. Benedetta Di Donato and Dr. Dorotea Ottaviani.

ious stakeholders in the planning and execution of green public spaces. TRANS-Lighthouses started in May 2023 and will last until October 2026. The participation of Sapienza University to this project builds on a previous PRIN research project title LA CITTA' COME CURA E LA CURA DELLA CITTA'², won by the Department of Architecture and Design in 2015 for 36 months which focused on the directives of the UN 2030 Agenda for Sustainable Development and the EU's Horizon 2020 emphasizing health and well-being as key sustainability goals, linking them to urban development and lifestyle improvements to prevent chronic diseases. The multidisciplinary research project explored how urban design and mobility influence health, focusing on pedestrian-friendly spaces to combat issues like obesity, diabetes, and asthma—largely driven by pollution, sedentary lifestyles, and poor nutrition. The project aimed to develop a reference protocol based on case studies in Italy, evaluating current initiatives and identifying new strategies for sustainable, health-conscious urban planning. The research specifically examined the spaces and roles of Sapienza University in Rome as a catalyst for well-being and health within its broader community (Giovannelli, 2020).

The Rome pilot project at Sapienza University

The Rome pilot project of TRANS-Lighthouses focuses on the open public space of the Economic Faculty of Sapienza University and on the development of a “green classroom” on this “Pratone”, namely the large open green area within the campus in the Castro Laurenziano zone. The green area is approximately 1.3 hectares large, it features a large lawn, a few trees, and the short building “Bianchi Bandinelli” (a classroom for approximately 250 students) and it has the specificity of lying above the hypogeous construction of the catacombs of Saint Ippolito. The catacombs are a vast cemetery area developed over five levels. Currently, only part of the two upper levels and an area of the central level— which appears to be the oldest section—are accessible. Significant modifications were made to the catacomb network in connection with the strong cult that developed around the figure of the martyr Hippolytus. Initially, numerous burials clustered near the venerated tomb, but these were later removed to create a larger and more monumental space, with Hippolytus’ tomb at its center. By the

² The Sapienza team for in the project involved: Alessandra Capuano (P.I.), Gianni Celestini, Alessandra Criconia, Laura Valeria Ferretti, Anna Giovannelli, Fabrizio Toppetti, Alessandro Lanzetta, Andrea Valeriani, Ilaria Cellini, Stefano Damiano, Daniele Frediani, Magali Gilistro, Deborah Navarra, Mahnaz Sarlak, Eleonora Tomassini, Adrienne Veisz, and Michele Ciccalè

Figure 1 -
Children of local school IC Tiburtina Antica exploring the area of Pratone at the Economic Faculty of Sapienza. December 4th 2024

Figure 2 -
Results of the workshop with the children of local school IC Tiburtina Antica brainstorming on different interpretations of green classroom for the Pratone of the Economic Faculty of Sapienza. December 4th 2024

mid-6th century, the sanctuary was enlarged, transforming it into a true hypogeal basilica, divided into three sections with a wide access staircase. The sanctuary was visited at least until the late 8th century.

The TRANS-Lighthouses project aims to bring together children from local school (Istituto Comprensivo Tiburtina Antica in the adjacent neighborhood of San Lorenzo) and university students to collaboratively design a learning path in the green space that can highlight three relevant elements of that public space: vegetation biodiversity, entomology, and archaeology. The aim is to co-create, together with children and students, a multifunctional learning environment where participants can engage with nature while gaining a deeper understanding of local ecosystems and history.

Co-creation of Green Classrooms with children and students

Green classrooms integrate nature-based solutions with art and science to enhance environmental awareness and urban sustainability (Conte et al., 2024). They serve as multifunctional green spaces fostering ecological education, community engagement, and well-being while providing vital ecosystem services such as air purification, climate regulation, and cultural ecosystem services such as the possibilities to enable humans to prosper through education, learning and acquiring knowledge, developing skills for well-being, scientific information and technological design (Romanazzi et al., 2023). The green classroom at Sapienza University will serve as a unique educational tool. It will possibly allow for hands-on learning about biodiversity, sustainability, and the natural world. By incorporating elements such as plant species, insect habitats, and historical archaeological sites, students and visitors can learn about environmental conservation, the importance of biodiversity, and the history of the area. This kind of outdoor learning aligns with modern pedagogical approaches that value experiential, place-based education (Beckers et al., 2019).

One of the most innovative aspects of the Rome pilot is the co-creation process, where students and children work together to shape the space according to their collective vision. This participatory design process fosters a sense of ownership and responsibility, as the participants see their ideas come to life. It also promotes intergenerational learning, where children learn from university students, and university students gain valuable insights into how children interact with public spaces. The green classroom offers both a space for learning and a space where the community can engage with the environment in a meaningful way (Wu et al., 2022).



As we write (March 2025) a first workshop has been held with researchers of Sapienza leading forty fifth graders in the exploration of the area and in the co-design of four different interpretations of a green classroom for the area. In the next months a set of two parallel initiatives will be held to achieve the definition of different typologies of Green Classrooms. On the one hand, three more activities are planned for Spring 2025 which aim to expand the communication abilities of the children about NBS and green classrooms, exploring the biodiversity, both in terms of flora and fauna of the area, and a visit to the catacombs underneath the Pratone. The first activity will feature an external professor specializing in forestry management and conservation, who will lead an exploration of the Pratone area, highlighting the diversity and characteristics of both local and non-local plant species. The second activity will be led by a professor from Sapienza University, an expert in entomology, who will explore the area with a focus on insect biodiversity. The third activity will include an expert from the Vatican Superintendence Office, who will discuss the presence of the catacombs in the area and their significance in the urban development of the region over the centuries. These activities will take place in spring 2025. After summer, students will create graphic and written materials to be featured on informational panels, illustrating these three aspects of the Pratone area for the general public.

On the other hand an architectural design workshop will be held with PhD students of the department of Architecture and Design of Sapienza University. Those students will engage in the co-design of different typologies of green classrooms, immersing themselves in the communication with experts in the field (as artist/engineer Andrea Conte of AndreCo Studio) and discussing with local stakeholders (like students, local elective representatives of the II Municipality of Rome, where most of Sapienza University is located, administration of the university, citizens and others) about their necessities and wishes. Their results will be presented to the community at large during summer.

Conclusion

Open public spaces are a fundamental component of university campuses, playing a crucial role in fostering social interaction, enhancing student well-being, and enriching educational experiences. These spaces go beyond meeting the everyday needs of students and faculty; they actively contribute to broader institutional goals, including community engagement, sustainability, and inclusivity. A well-designed open space

can serve as a dynamic learning environment, encouraging interdisciplinary collaboration, experiential education, and informal knowledge exchange. Green public spaces, in particular, offer opportunities for environmental awareness, ecological stewardship, and hands-on learning about biodiversity and sustainability practices. By integrating educational programming, artistic interventions, and participatory design processes, universities can transform their open spaces into living laboratories that reinforce academic curricula while strengthening connections between the university and the wider community. The TRANS-Lighthouses project in Rome provides a compelling example of how public spaces can be co-created by diverse community members to address both educational and environmental challenges. The pilot project currently being developed on Via Scarpa—though still in an early stage—serves as a valuable case study for exploring collaborative, intergenerational, and multi-stakeholder approaches to reimagining green public spaces within university campuses. This initiative highlights the potential for co-design methodologies to be adapted and applied in other contexts with similar characteristics, ensuring that open spaces remain inclusive, sustainable, and responsive to evolving educational needs. As universities continue to evolve as centers of innovation and learning, the intentional design, management, and activation of open public spaces will be essential in ensuring that these institutions remain vibrant, accessible, and supportive environments for all. By integrating ecological, social, and pedagogical perspectives, universities can leverage their open spaces to foster a culture of engagement, well-being, and sustainability that extends beyond the campus and into the broader urban fabric.

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The definition of a “*Campus Digital Twin*” model for the reinterpretation of building and urban planning practices

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The “district” settlement model of university campuses as a basic assumption

From a spatial point of view, university sites can be configured according to a dispersed model of placement of academic buildings, student accommodations and additional facilities, or develop in the form of a campus if the university environment is compact and concentrated on a single site (Bolšakov, 2019). In particular, the research activities carried out by the authors, and partially presented in this paper, concern the second category of university sites, focusing on the aspect of physical planning of the campus and the quality of space as attributes to achieve objectives, as well as university teaching-learning, especially more efficient liveability (Agrawal and Yadav, 2021).

Wiewel and Knaap (2005) defined campuses as “microcosms of activities in the domain of planning” as unique environments

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where employment, housing, design, transportation and mobility, and environmental protection needs and objectives intertwine and interact with the larger urban and social fabric. According to Bolšakov (2019), a well-developed campus is characterized by the completeness of functions, organized arrangement of places, and effective coherence of parts. The campus has both external and internal connections. External connections integrate the campus with the reference context, mainly through urban transport systems. Internal connections, on the other hand, unite parts of the campus into a single whole and provide it with relative autonomy by virtue of the functions provided locally. The minimum set of functions confirming that university provides a first-generation campus is the main “study-science-residence” group (Bolšakov, 2019). To this group are added places providing additional functions: cultural, entertaining, shopping, sports, recreational.

By virtue of the complex of places and infrastructures that guarantee the provision of similar functions, therefore, the settlement model that characterizes university campuses, related to the size, configuration and services provided, makes them comparable to small and medium-sized urban districts. Therefore, they are suitable for the experimentation of innovative urban models for demonstration purposes, replicable at neighbourhood level with appropriate modulations. On the other hand, literature studies, including that of Hajrasouliha (2017), highlight how the idea of campus is unique from the point of view of planning and design and, as a result, it is not possible to adopt or transfer the same methods of description and analysis that planners use in common urban settings. In this regard, one of the most obvious distinctions between a campus and a neighbourhood or block is in its primary purpose of providing a supportive environment for learning. Recognising this distinction, the same author states that in order to make the above parallelism it is necessary to focus on the macro-scale on the contextual conditions of the campus environment rather than on the micro-scale on classrooms and teaching environments. From this perspective, therefore, with the will to assimilate the campus to an urban district, the focus of this research is directed to the macro-scale with particular reference to the activities of open public space planning, as well as the planning of appropriate services, which, like urban environments, contribute to raising standards of quality of life.

According to Lidsky (2002), campus planning is the process of identifying and guiding institutional decisions in higher education that have spatial implications. It is the responsibility of academic leaders, it is a process that guides campus development so that it supports functional, aesthetic, and economic goals within the context of an institution's history, mission, and vision for the future. In such a process, similar to urban contexts, as to methodology, the simplified procedures for projecting needs and satisfying demand have been supplanted by sophisticated computerized modelling (Dober 1996). In the urban context, these find wide application in the concept of smart city which, precisely, relies on a set of information technologies applied to the relevant infrastructure components and the services connected to them (Abu-Rayash and Dincer, 2021; Ahvenniemi et al., 2017; Albino et al., 2015; Anthopoulos, 2015; Fontana, 2014; Kamolov and Kandalintseva, 2019; Komninos et al., 2019; Kunzmann, 2014; Li et al., 2019).

Recently, in the dynamic landscape of smart cities, is witnessing a significant transformation due to the integration of emerging computational technologies and innovative models (Bibri et al., 2024). According to the same authors, these advancements are reshaping data-driven planning strategies, practices, and approaches through urban digital twin technologies, especially in synergy with artificial intelligence and artificial intelligence of things.

Recognising, in particular, the crucial role of digital twin in developing smarter cities (Mazzetto, 2024) due to their potential to revolutionise infrastructure the planning of infrastructures for enhanced environmental sustainability (Weil et al., 2023), the authors have launched a literature review study on digital twin applications in intelligent contexts, summarised in the following paragraph, to identify key research trends, also through a qualitative analysis of thematic categorisation of this research strand, using the VOSviewer software. The collection of information from this study has contributed to the definition of the “*Campus Digital Twin*” model and the launch of experimentation at the Arcavacata campus (Cosenza, Italy), which will be presented below.

“Digital Twin” for the planning and urban management of smart environments

Smart cities, emerging paradigm of urban planning, develop and apply technologies and solutions based on data by optimizing and improving their systems in line with the environmental objectives of sustainable development. Among these, the concept of “digital twin” refers to a virtual representation of a physical system as well as its reference environment and associated processes, which is automatically updated through the exchange of official and/or user-generated integrated information. The aim of such applications is to improve the quality of life, the efficiency of urban operations and services, and territorial competitiveness, while ensuring that the needs of present and future generations are met in economic, social and environmental terms. Consequently, the application of such digital technologies offers great practical potential, with reference to the possibility of supporting the planning and management of urban and territorial infrastructures and services in intelligent contexts.

The results of a Systematic Literature Review

As a relatively new topic, it is necessary for research to refine and clarify related definitions and concepts, as well as map the state of the art and identify major future challenges. Therefore, the results of a systematic literature review study on the concept of digital twin from an urban perspective are summarized. The aim is to clarify the definition of smart cities and to highlight their possible contribution in the evolution of the concept of smart cities, also in light of recent innovations in the field of artificial intelligence and remote sensing.

The Systematic Literature Review (SLR) process includes the following steps (Anwer and Aftab, 2017):

1. Defining the research question (What are the main lines of research related to the digital twin model in urban planning?);
2. Identify keywords to form the query string (“digital twin” AND “urban planning”);
3. Defining the search space to obtain data (Scopus database);
4. Setting criteria to include or exclude documents (time range 2013-2024; language English; source type Journal; final publication stage; all open access);

5. Extracting literature using the criteria defined in the previous step;
6. Assessing the quality of studies conducted;
7. Synthesizing the data required, including collection, organization and summary of results;
8. Documenting the results and outcomes.

In this particular case, the authors used open-source software such as Bibliometrix and VOSviewer to import the selected bibliographic data composed by 58 documents.

Focusing the analysis on the temporal aspect, in particular analyzing the sections annual scientific production and average citations per year, it is observed that the production reaches its maximum in 2023 with about 40% of the total of selected documents. With regard to the geographical distribution of publications, analyses highlight among the most productive countries North America, as well as some European countries, Asian (in particular China and Japan) and Australia.

Subsequently, through the analysis of clusters, carried out on VOSviewer software, four macro-themes were identified within the 575 keywords extracted from the literature. Applying a minimum threshold of 19 occurrences, a sample of 19 highly significant keywords was selected (Figure 1). The automated assignment of each keyword to a specific cluster made it possible to visualize the semantic relationships between terms and to define the main aspects characterizing reference. The four clusters are the following:

- Cluster 1, digital replication of the real environment in a three-dimensional virtual environment (keywords: 3d city model, built environment, digital twins, life cycle, three dimensional computer graphics, three dimensional modelling);
- Cluster 2, the possibility of implementing smart urban decision-making processes (keywords: decision making, smart cities, smart city, urban area, urban design);
- Cluster 3, the use of machine learning algorithms to develop urban conceptual frameworks (keywords: conceptual framework, deep learning, digital twin, urban planning);
- Cluster 4, l'analisi spaziale basata su GIS per gestire dati massicci e diversificati (keywords: big data, gis, machine learning, sustainability).

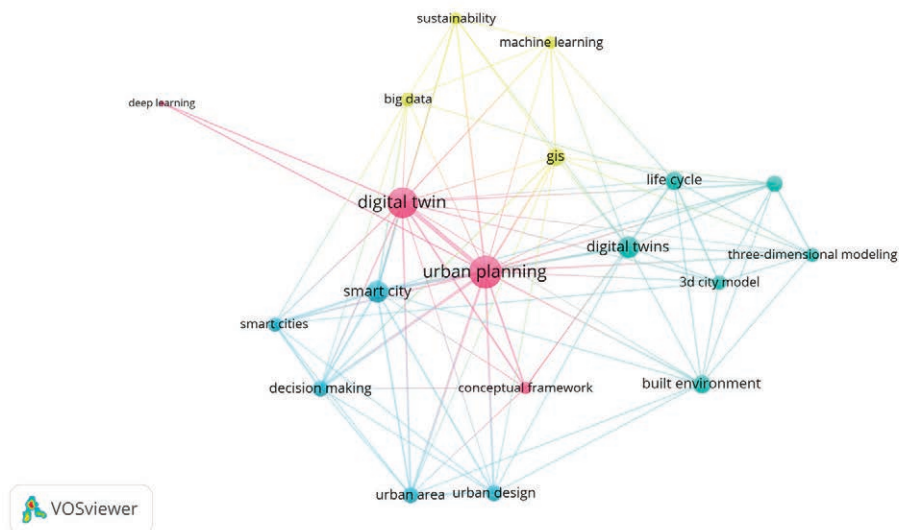


Figure 1 -
Network Visualization. Data processing on VOSviewer software.

Overall, the results confirm the potential of digital twins as an innovative tool for urban planning. They enable the creation of detailed digital models of reference urban contexts, simulating different scenarios and assessing the impact of policy decisions. However, there are also some challenges that limit a widespread implementation of digital twins in urban planning, including the need to develop common standards for the construction and sharing of digital twins, the ability to handle large volumes of data and ensure user privacy.

The “Campus Digital Twin” model and the launch of experimentation at the Arcavacata campus (Cosenza, Italy)

The analysis of the state of the art, conducted through a systematic literature review study, has led to the emergence of the Geographic Information System (GIS) as a reference technology useful for the implementation of digital twin models, as it is based on the geolocation of information of different nature, useful to map and visualize data through an accurate spatial representation of the context of interest at different scales of intervention.

In fact, GIS allow the acquisition, management, analysis and visualization of data from different sources (sensors, satellite images, databases, etc.) on an interactive map on which complex spatial analyses can be carried out to identify relationships, patterns and trends in data, supporting planning and informed decision-making.

Based on these assumptions, the research activities conducted by the authors intend to support the implementation of useful information to feed a model of digital twin in GIS environment applied, in this specific case, to the campus of Arcavacata (Cosenza, Italy), but generalizable for other contexts. The methodology is divided into the consequential steps described below, the first results of which are shown in Figure 2.

First, some basic operations related to the creation of the project have been carried out, which include setting up the reference system, loading a reference map from the Web and perimetry of the context of interest. The subsequent operations have concerned the implementation of data from the creation of shapefiles related to the infrastructures present in the context of interest to be declined in the specific case in "Structures", "Residences/Housing", "Outdoor areas, parking and roads". Subsequently, the information was then associated with these elements according to a specific "Protocol of digitisation" related to open and closed spaces and related services.

In particular, with regard to residences and housing, the relative shapefile has been populated making available, for each structure, the following information: photos of the neighbourhood and its description, recipients, mode of access to the service, types of accommodation, number of beds, services, common spaces, characteristics of the furniture provided, average time to reach the university and most used transport mode, closing period, name of the technical contact person of the district.

As regards the common centres, the respective shapefile has been populated taking into account the following information: photos of the common centre and their description, equipment, presence of study room within the common centre and its relative endowment, references of the chairman of the management committee.

Regarding services, the related shapefile has been populated to contain all useful references to services provided at specific indoor facilities (post office, canteen, cinema, theatre, other) and outdoor

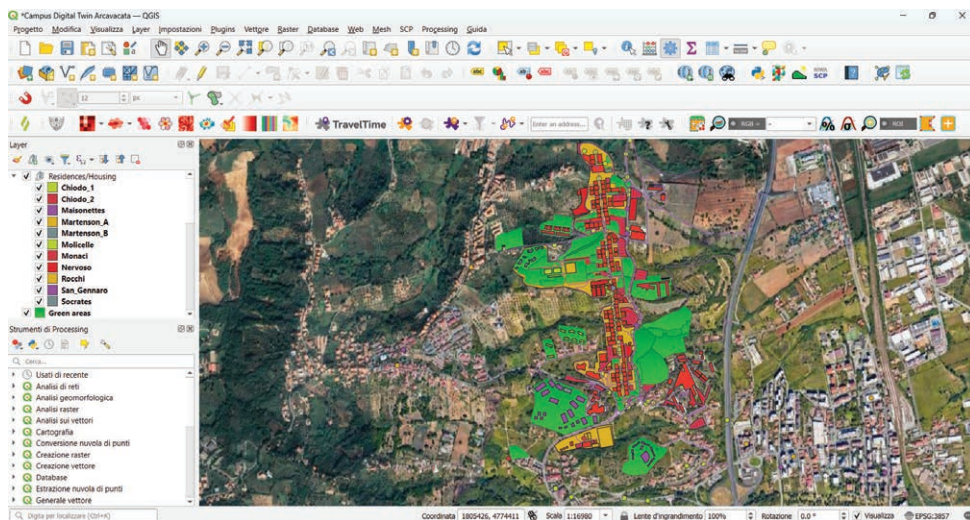


Figure 1 -
Experimentation of the "Campus Digital Twin" model at the Arcavacata campus (Cosenza, Italy). Data processing on QGIS software.

(squares, green areas, other) Matching relevant information such as opening hours and capacity.

Based on the interoperability characteristic of GIS, in this case the purpose of the tool is threefold.

With reference to the verification phase at the building-scale, it is possible to attach the plan of the interior to the geometry of the building, useful in order to verify the functional parameters regulated, in Italy, by the Ministerial Decree n. 1256 of 2021.

With reference to the planning phase at the urban scale, it is possible to plan the inclusion of new services useful for increasing the quality level of the campus. Taking into account, for example, the mapping of isochron lines of 5, 10, 15 minutes drawn from the residences, it is possible to check the supply of basic services (such as commercial activities, pharmacies) and conviviality related to open spaces (such as green areas, squares) and closed spaces (such as theater, canteen, study halls) and consequently choose which services to increase and where to locate them.

With reference to the management phase at the urban scale, it is possible to monitor the area of study, and in particular the provision of existing services, also thanks to the reports from users themselves, a data-driven decision support tool.

In this respect, the first objective is to emphasize the interoperability of GIS with CAD tools, useful for example in the management of floor plans of university residences.

In relation to the second purpose, starting the Travel Time plugin from the barycentre of individual residential buildings allows automatic tracking of isochrone lines to verify the presence of the aforementioned services.

Finally, in relation to the third objective, an interesting research perspective is the interoperability with digital platforms for participatory mapping, such as ONA.io and Google Forms, and the subsequent collection and display of user reports in a GIS environment.

Conclusion and research's future developments

Smart cities encourage the widespread use of novel information and communication technologies, but experimenting with these technologies in such a large geographical area presents organizational and knowledge development hurdles (Zaballos et al., 2020), for example related to cost, complexity, interoperability, and data integration (Ye et al., 2024). According to the same authors, recently, smart campuses are gaining momentum in the research community (Azfar et al., 2023; Lu et al., 2020; Pavón et al., 2025). In fact, these contexts facilitate operational efficiency and allow smaller scale experimentation of smart city models. They are universities where technological devices and applications create new experiences or services, even adopting the new holistic approach that characterizes the digital twin. This goes beyond traditional smart solutions by replicating, with high-fidelity cross-domain aspects, a physical object into the digital world (Roda-Sanchez et al., 2023).

By entering this debate, the research activities conducted and summarized in this study contribute to responding to the need recognized in literature (Qiuchen Lu et al., 2019), to propose a clear-defined and well-organised system architecture to supervise current digital twin implementations, identify the gaps and provide roadmaps for future development of practical applications.

In this regard, the testing of the “*Campus Digital Twin*” model at the Arcavacata campus (Cosenza, Italy) confirmed how the application of similar models can contribute to the reinterpretation of building and urban planning practices, participating in the current debate on the experi-

mentation of digital twins in smart environments. This adherence is clearly confirmed by the relevance of the experimental approach to the four clusters identified on the basis of the systematic literature review study and presented above.

In fact, with reference to Cluster 4, the model was implemented in a GIS environment in order to facilitate spatial analysis processes, from building scale to urban scale, easily managing massive and diversified data extracted from official databases, but also fed by appropriate participatory processes. In addition, the use of some plugins, for example for automatic tracking of isochrone lines, confirmed the possibility of building more robust conceptual frameworks, according to the contents of Cluster 3, and inform decision-making processes by contributing to the smartness of the reference context, according to the contents of Cluster 2. Finally, future research developments include the development of a digital replication of the real-life context of the Arcavacata campus in a three-dimensional virtual environment, according to Cluster 1.

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University as a Political Space. Participatory Practices and Projects in the Public Spaces of the University after the COVID Experience in Pescara.

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Introduction

Since their inception, universities have always been political spaces, in addition to being places of teaching and research. They have often been the birthplace of ideas and the starting point of cultural, social, and economic transformations, frequently expressed through grassroots political movements initiated by students. Students, and increasingly female students along with gender minorities, have historically used the physical space of universities as a cornerstone of their organization, an intrinsic characteristic of such spaces rarely contradicted by institutional practices. The fundamental characteristic of the university is its status as a free, unconstrained, and unconditioned space, where no repressive or controlling authority has ever been allowed to act freely. Students have consistently made use of university spaces, often reclaiming them or demanding access through exemplary and radical actions, such as the famous “student occupations” that have particularly marked the experiences of movements in Europe and the USA. These have recently seen significant

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events, for example, during the “Arab Springs” in authoritarian regimes or in the case of recent environmental movements addressing the climate crisis, as well as solidarity movements emerging in various American and European universities in response to the Palestinian crisis. Occupations recur as a common and institutionally accepted practice during political events and seasons that fortunately continue over time as an expression of the political vitality and responsiveness of new generations.

Thus, university spaces should, above all, be spaces of welcome, hospitality, inclusion, and relationships, for both new, potentially revolutionary ideas and the individuals who bring them forward: students. For this reason, universities should be understood as political spaces. In recent years, this recognition has been increasingly denied by institutional practices, some governments, and inadequately asserted by students in more peripheral institutions with less political tradition. As a result, even within Italian public universities, students experience growing subordination and a lack of awareness of their rights. Observing the presence of spaces dedicated to welcome, hospitality, inclusion, and student interactions within universities, as well as how students use and leverage these spaces, is a valuable method for evaluating the overall quality of university spaces, their organization, and their relationship with the urban and territorial context (Rovigatti, 2022). This observation could form the basis for a highly relevant comparative study across public universities in Italy and in comparison with international institutions. It should also inspire new ideas and operational methods in programs aimed at regenerating and enhancing university spaces and facilities, despite the decreasing intensity of such efforts due to reduced public funding. This is particularly crucial in the context of Italy’s National Recovery and Resilience Plan (PNRR), the latest and perhaps last major public intervention policy in Europe initiated in response to the COVID crisis, guided by the principles of “ecological” and “digital transition” and inclusion, at least rhetorically.

This paper, based on the aforementioned conceptual framework, examines the case study of the University of Pescara, analyzing the conditions of its public spaces and how students use them. It also presents the experience of the *Officina Beni Comuni Urbani*, a small service unit established immediately after the COVID emergency to actively care for and manage the university’s open spaces through tactical actions involving student participation. These actions recognize the university as a political space of relationships and belonging.

The Condition of Public Spaces Within and Around the University in Pescara

The internal and open spaces of the University of Pescara are neither numerous nor particularly well-equipped for student hospitality and accommodation. The Pescara university hub, as it should be more accurately named, originated from the repurposing of a pre-existing commercial building, which has undergone only minor functional adjustments over time. There are minimal spaces dedicated to individual study, let alone areas for relaxation or daily activities. The cafeteria is located far from the academic buildings, and student association spaces are inadequate, often relegated to the basement of the main building. A recent expansion, the so-called Polo Micara, completed in the early 2000s, partially addressed the shortage of classrooms but did not address other functional needs related to students' fundamental rights¹. Only recently have emergency measures been taken, such as furnishing the long, unwelcoming entrance gallery with tables, chairs, and improved lighting. A long-awaited façade and open space redesign project is also underway, but it does not substantially change the isolated and closed nature of the university spaces, which remain fenced off and separated from the surrounding public spaces. However, the project at least aims to address the severe degradation of the courtyards and outdoor areas, which are currently devoid of greenery, shade, and adequate furniture.

Within this general context, students' presence and experience are similar to those in other Italian universities. The system functions—at least partially—for academic activities, but it fails to accommodate other essential student needs, such as finding a place to eat outdoors, taking a break between classes, meeting peers, or organizing cultural, sports, or political initiatives. It is common to see students wandering around at lunchtime, searching for a small space to eat or sit while waiting for their next class. This condition resembles that of a traveler in the increasingly inhospitable Italian railway stations, which, like many public spaces, have been designed with deterrent and exclusionary architectures, as described by Elena Granata².

¹ **Charter of Student Rights**, approved by the **National Council of University Students**, **Article 1, Paragraph 6** states that: "*Students have the right to associate or organize collectively and to assemble within university spaces, expressing their opinions publicly.*" Additionally, **Paragraph 7** affirms that: "*Students have the right to have dedicated spaces within the university for social activities, study, and collective discussion.*" http://www.cnsu.miur.it/argomenti/documentazione/mozioni/2011/mo_2011_09_08_002.aspx

² E. Granata, (2019), *Oltre i divieti, la città dei desideri. Riflessione su libertà e condizionamenti negli spazi urbani*, <https://speciali.ilgiornaledellarchitettura>.

What Happened During and After COVID

The COVID experience reinforced, if further proof was needed, the importance of public space as a place of relationships and belonging for communities and individuals. This realization came at a time when outdoor gatherings were the only safe option to resume activities previously considered high-risk when conducted indoors. This necessity gave renewed momentum to pre-existing initiatives exploring the use of open spaces for education (outdoor education), cultural activities, and social interactions, following the long months of lockdown and spatial segregation, which particularly affected children and adolescents.

It is no coincidence that some of the new public space features in Italian universities, such as the “open-air study and conversation stations” at Sapienza University, were conceived between the first and second lockdowns. The Biennale dello Spazio Pubblico initiative, titled “A Meter Apart,” also emerged during this period, exploring innovative ways to use public spaces, and remains available for consultation online³.

INSIDE/OUTSIDE Competition

It was precisely during this period that the international design competition INSIDE/OUTSIDE! was launched, inspired by the experience of a small group of Italian and international students who were “trapped” during the lockdown in the University Residence of Pescara, managed by the Azienda per il Diritto allo Studio di Chieti and Pescara.

Titled “The Public University’s Hospitalities and Meeting Spaces, after COVID-19”, this international competition of ideas was aimed at students of architecture, engineering, and design, focusing on the regeneration and re-functionalization of open spaces serving the canteens and university residences of ADSU in Chieti and Pescara⁴.

com/2019/03/19/oltre-i-divieti-la-citta-dei-desideri/

³ <http://www.biennalespaziopubblico.it/2021/01/ad-1-metro-di-distanza-2/>

⁴ The Azienda per il Diritto agli Studi Universitari di Chieti e Pescara, an instrumental body of the Abruzzo Region, is directed by Avv. Teresa Mazzarulli and the project and scientific coordination is led by Prof. Piero Rovigatti, Department of Architecture, Università degli Studi G. d’Annunzio di Chieti e Pescara (DdA UdA Chieti-Pescara) in collaboration with the Department of Architecture, Università degli Studi G. d’Annunzio di Chieti e Pescara, Facultad de Ciencias del Hábitat, Universidad La Salle, Bogotá, Colombia, Department of Architecture and Urbanism, Polytechnic of Tirana, Albania, and Universidad de Quito, Ecuador.

The competition focused particularly on two spaces: the “G. Benedetto Croce” University Residence and Canteen in Pescara, located near the Pescara University Campus, and the University Canteen in Chieti.

The former has long played an important role as a facility serving non-resident students and, since 2017, has been actively promoting increasing hospitality for international students from public universities connected to the University of Chieti and Pescara through various international cooperation programs.

A preliminary and partial temporary arrangement of some of these spaces was experimented with between April and December 2020 by architecture students living in the residence. This included open-air cinema, shared temporary furniture, and educational installations, as part of the workshop “This House is a Common Good”, in collaboration with faculty members and international guest students within the framework of the university’s international partnerships.

INSIDE/OUTSIDE – Beyond the Courtyard, the title given to the competition, thus became both a slogan and a strategic indication for a design action that aimed to reconsider these spaces not only as internal service facilities for the student residence community but also as spaces for interaction with the broader neighborhood community.

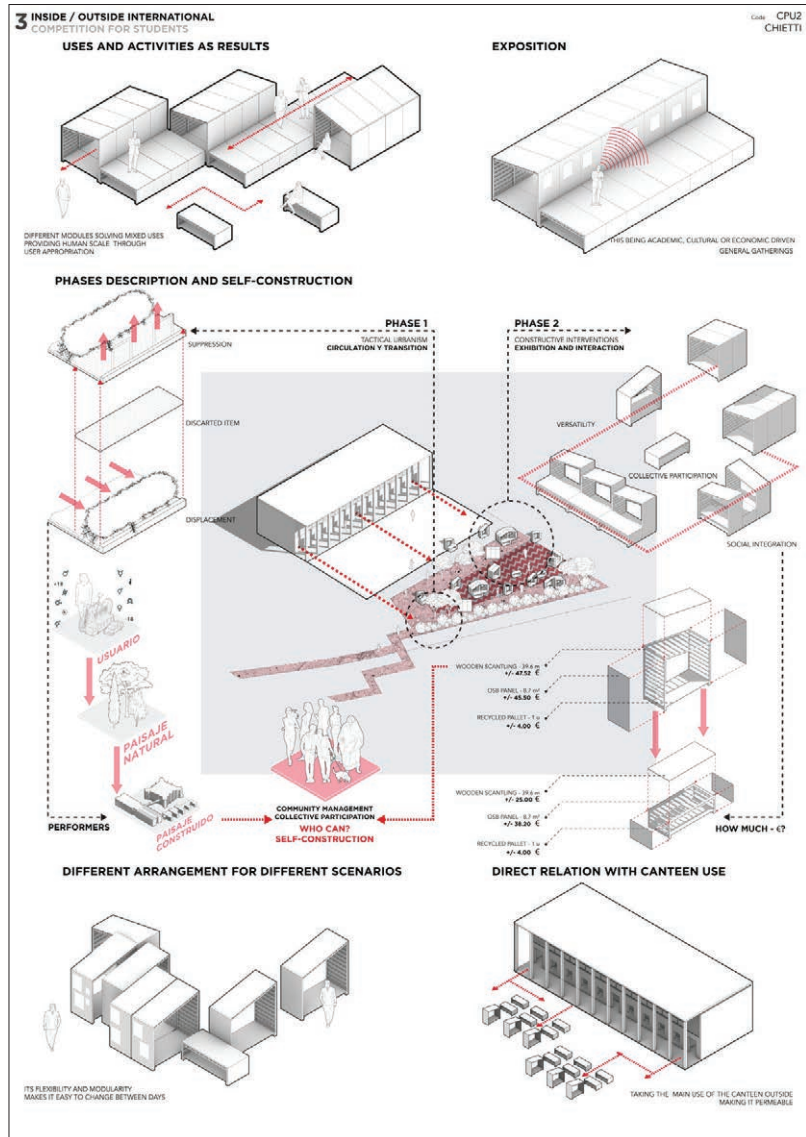
This provided an opportunity to rethink the open spaces surrounding and serving key service facilities, which the recent COVID emergency had made particularly relevant and necessary, highlighting their potential role as healthier spaces or lower-risk areas, and prompting a reconsideration of urban space organization and neighborhood-scale urban planning.

Outcomes and Initial Experiments

A considerable number of groups, from various geographical backgrounds, participated in the competition. Among them, seven projects underwent in-depth development, laying the foundation for the first step in a strategy to enhance and strengthen spaces dedicated to hospitality and reception. These projects were made available to various public stakeholders and interest groups that form the complex governance structure overseeing the relationships between cities, public spaces, universities, and spaces dedicated to education and culture.

Subsequent administrative choices, influenced by different cultural and political orientations, did not lead to the implementation of the proposed

Figure 1 -
Project board
of the winning
competition
entry, by J.
Połosi and J.
Tinoco.



solutions, leaving them largely unrealized. The possibility of using the open spaces as parking lots, initially considered by municipal and regional administrations to address the growing demand for parking—caused by ill-conceived traffic solutions in the neighborhood—was ultimately ruled out.

To overcome this impasse, a phase of experimentation and tactical actions was launched, which at the very least garnered interest and collaboration from the student residents of the Casa dello Studente in Pescara.

This phase also initiated the construction of the first prototypes of furniture devices, designed by one of the winning projects of the competition, created by two Ecuadorian students.

*The Officina Beni Comuni Urbani Project*⁵

Based on the experiences described here, the Officina Beni Comuni Urbani of OCA (Osservatorio Cittadinanza Attiva) at the Department of Architecture in Pescara was established as a small cultural and educational service structure within the academic community of the Pescara University Campus.

Founded on the initiative of Francesca Caiafa, an Architecture student, and Piero Rovigatti, an Associate Professor of Urban Planning—authors of this paper—the Officina aims to transform both indoor and outdoor university spaces into places of hospitality, inclusion, and social interaction, moving beyond the traditional rhetoric of urban decorum and security.

The Officina pursues its objectives through tactical interventions that involve the use of temporary, ephemeral, and adaptable furnishings for open spaces. These interventions serve as the material foundation for experimenting with new methods of using and managing academic and urban spaces, fostering the development of educational, recreational, social, and leisure activities within them.

In the long term, the Officina seeks to promote the creation of participatory plans and projects for the creative reuse of open spaces within universities and public schools, recognizing them as urban commons. These spaces should be integrated into the city and surrounding neighborhoods, becoming meeting places for interaction and community building.

The concept of urban commons, which underpins the Officina's practices, is based on the recognition of spaces and facilities—not necessarily public—that gain value through acts of collective care. These spaces become identity-forming, relational, welcoming, and open environments through the joint intervention of citizens and public administration.

The primary legal reference for this approach is Article 2 of the Regulations for the Governance of Urban Commons of the City of Turin, which establishes the possibility for citizens and the administration to collaborate in the management, care, and regeneration of urban spaces, ensuring collective access.

⁵ <https://www.instagram.com/officinabenicomuniurbani/>

Additionally, Article 115 of the Reform of Title V of the Italian Constitution directs public administrations to promote and support the subsidiary action of citizens and their associations in caring for common goods.

The Officina Beni Comuni Urbani of OCA represents a laboratory for experimentation and research, aimed at integrating new shared management practices for public space, with the goal of developing intervention and management models that can be replicated by other institutions and academic or school communities.

First Transformation Experiments

From a non-place to a community space, fostering relationships, hospitality, and inclusion—this is the transformation process initiated by Officina in Piazzetta di Valentina, a space that has always existed, located at the end of the open area separating the old university complex on Viale Pindaro from the new laboratories and classrooms of the so-called Polo Micara, designed by an architect and professor from the Department of Architecture (DdA).

The space is named after Valentina Carpitella, a young researcher who studied and grew within the School of Architecture in Pescara and sadly passed away almost ten years ago, on November 11, 2014.

Between March 2023 and the summer of the same year, the first transformation experiments were launched, with interventions focused on redevelopment and the exploration of new uses. Through the installation of temporary furniture and ephemeral structures, Piazzetta di Valentina has become an open-air laboratory, where students, faculty, and citizens have been able to experiment with collective sharing and reclaiming practices.

Officina has organized meetings, workshops, recreational activities, and discussion sessions to test new ways of interacting with urban space, stimulating reflection on the value of common spaces and their role within both the student and civic community.

These initial interventions have highlighted the potential of Piazzetta di Valentina as a place for social interaction and integration, laying the groundwork for future projects focused on the reuse and shared transformation of public space.

Students have begun to embrace and reclaim the space, developing a growing sense of familiarity and belonging. The project is part of a broader vision of participatory urban regeneration, where the active involve-

ment of both the academic and local community becomes a central element in shaping new models for the livability of open spaces.

Common Use Space

Starting from the early months of the post-COVID SARS2 emergency, Officina launched a small social experiment, promoting the reappropriation of a residual space, previously devoid of use and function, into a common-use space for the student community.

Through collaborative workshops, gatherings, outdoor seminars, film screenings, and collective reading events, often in collaboration with student associations and third-sector organizations, the space began to transform into a lived-in, recognized, and actively participated place.

Figure 2 -
*In Piazzetta
di Valentina,
DdA Pescara,
March 2023*



Today, Piazzetta di Valentina (even though only a few of us call it that yet) has become the most frequented open space at the Pescara University Campus. Students from various degree programs have started using it and claiming it as their own, gradually overcoming initial hesitation.

The structures that equip the space have always been the result of participatory processes, built through self-construction, thanks to the “poetic and creative workshops” promoted by OBCU. These initiatives have served as opportunities for collective learning and hands-on design experimentation.

Recent Experiences and Participation Projects Between Schools and Universities

In recent years, Officina has developed several collaborative projects between the university and local schools. Through shared workshops, design labs, and self-construction initiatives, university students and high school students have had the opportunity to work together to rethink and transform public spaces.

Officina has expanded its reach beyond university spaces, bringing its activities to other urban and school contexts. Through off-site interventions, Officina has engaged with new communities, transporting materials, self-construction guides, informational brochures, and educational tools to share its approach with students, teachers, and citizens.

Collaboration with Student Associations: PAS and 360Gradi

Officina has always recognized the importance of establishing active relationships with student organizations, maintaining an ongoing partnership with the associations PAS – Partecipazione Attiva Studentesca and 360Gradi. These collaborations have not been limited to organizing social or cultural events but have also developed on a political and advocacy level, with the shared goal of affirming the university as an urban common good.

A particularly significant moment was the collaboration with PAS for the sit-in on May 31, 2023, a collective action designed to raise awareness within the academic community about the right to a more open and inclusive university space. The sit-in was conceived as a day of reflection and discussion, where students could express their vision of a more accessible and welcoming university.



Active participation made it clear that rethinking spaces is not just a technical or architectural issue, but a deeply political and social one, tied to the management of urban commons.

One of the symbolic acts of the day was the invitation to faculty and technical staff to refrain from parking in the square in front of the Department of Architecture, temporarily transforming that area into a space for gathering and discussion, free of cars and returned to the community.

This experience strengthened the bond between Officina and student associations, demonstrating that participatory design of university spaces can be a powerful tool for political action and social transformation, capable of promoting a new vision of the university as a place of openness, hospitality, and shared experiences.

Figure 3 -
Illustrative material of the products of the Officina Beni Comuni Urbani, DdA, Pescara

Pride Week 2024: The Inclusion Map and the Self-Built Floats for the Parade

During Pride Week 2024, Officina Beni Comuni Urbani, in collaboration with the student associations 360Gradi and PAS, promoted a series of initiatives aimed at strengthening the connection between the university and the local community through concrete actions of inclusion and participation.

Among the key projects, the Inclusion Map was created—a participatory mapping of safe spaces and organizations working on rights and anti-discrimination efforts in Abruzzo. Through an interactive QR code, both the student and local community could mark places that actively promote hospitality and inclusion, making safe and welcoming spaces more visible and accessible to all.

In the days leading up to the parade, Officina provided materials, tools, and spaces to support the construction of the Pride floats, transforming this moment into a creative workshop where students, activists, citizens, and LGBTQ+ groups worked side by side.

Self-construction was not just a practical activity, but an act of political and collective advocacy: the shared creation of the floats became a tangible way to affirm the right to visibility, self-determination, and the freedom to be oneself.

During those days, people from diverse backgrounds—universities, LGBTQ+ organizations, student groups, activists, and citizens—came together for a common goal, proving that the fight for rights is never an individual battle, but always a collective one.

In today's context, where issues of inclusion and rights recognition continue to be challenged, this experience demonstrated that public space can and must be transformed into a place of political and social affirmation. The university, streets, squares, and even the Pride floats are not just physical spaces, but tools for a shared narrative that strongly reaffirms the need for a fairer and more inclusive society for all.

This experience reinforced the idea that Pride Week is not just a celebration, but a moment of resistance and political affirmation, an opportunity to show that the fight for rights is not only waged with words, but also through collective action—by creating spaces, structures, and symbols that speak of freedom, self-determination, and community.

Action Research Perspectives and Open Issues

The experiences summarized here, all lived firsthand, define a framework for ongoing action research, aiming to address key issues and explore open topics. Among these:

- The opportunity to provide space and attention to students' needs for facilities and equipment.
- Introducing new ways of fostering civic participation and activism within universities.
- Paying attention to the use of spaces and their rethinking from a gender perspective.
- Recognizing the instrumental value of self-construction practices as tactical actions that contribute to long-term strategies, while remaining anchored in participatory processes.
- Defining rules for the use and management of university spaces without top-down impositions or resorting to security-driven and repressive solutions.
- Leveraging the presence of students to experiment with innovative forms of shared management of open university spaces.
- Opening up universities and their open spaces as public spaces, acknowledging public universities as urban commons, while respecting their organizational and managerial needs.

The Public Space of Universities is a Political Space. Starting from Here

Ultimately, everything should be traced back to the reflection that opened this paper: recognizing universities as political spaces, with all the consequences that this entails.

It is essential to open a discussion and comparison on how, in different contexts, university spaces are being reimagined, designed, and cared for. There is room for a shared path, perhaps even a research initiative, that moves in a direction distinctly different from the trend imposed by various policies, which, in Italian public universities—and surprisingly, in other Western countries—seem to be shaping a different reality.

Support and demand for such an initiative should come from within, from the heart of the university, from its students, before other agendas—such as the corporate university model, shaped by market logic and embedded in the neoliberal ideology that is once again dominat-

ing the political landscape, reinforced by security-driven and increasingly repressive measures⁶—undermine what universities have always been: places of freedom, independent thought, change, and progress.

There are good reasons and strong hopes that all of this can happen once again.

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⁶ See the recent Security Decree, currently under approval in both branches of the Italian Parliament, and how this measure places universities under surveillance and puts democracy under pressure, see :<https://giovani federalisti.eu/2025/01/17/il-ddl-sicurezza-mette-luniversita-sotto-sorveglianza-e-la-democrazia-sotto-pressione/>.

Public Spaces and Weak Programs The Case of the Pedion Areon Campus of the University of Thessaly

*Vaso Trova**
*Fabiano Micocci***

Public Spaces and Weak Programs

The role of the university is multifaceted. Firstly, it provides the framework for the development of new knowledge through research, as well as for organizing the process of higher education and the production of scientists and specialists. At the same time, it creates a framework for the meeting of people from different social backgrounds, united by the desire and struggle for knowledge. It creates networks that continue to exist even after the completion of studies and which influence the professional development of their members. In both cases - the educational/research and the social mission of the university -, public spaces inside campuses may have a fundamental role to trigger those dynamics. In a period when education is under substantial transformations caused by the diffusion of distant learning, the transformation of the learning environment, and the constant rise of the number of students, rethinking public spaces in campuses may become an alternative strategy to face these challenges.

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This paper aims to address the question of the important role of public spaces in university campus as a fundamental place for non-formal education and meeting-exchange in the framework of university institutions, with the scope to investigate what kind of possible strategies can be implemented to reach this goal. In the first section, the model of the externalized university will be presented as an education model that gives important to designed outdoor spaces to acquire and exchange scientific knowledge. In the second section, it will be investigated how an externalized campus can be designed with the support of the knowledge provided by the discipline of urban design. Notwithstanding, life in campus is changing quickly due to the shifts that are taking place in education worldwide. The impact of these changes in the panorama of Greek universities will be presented in section three. Then, in the fourth and fifth sections, we will proceed with the description of the case of the Pedion Areos Campus of the University of Thessaly in Greece as a case-study of a recent built campus analysed with the point of view of an externalized campus. A research conducted in the Department of Architecture will show how its students consider the contradictory relation between the technological changes of online education and the role of public spaces inside the campus in their daily life. Students' opinions will offer the conclusions of the paper that suggest the importance of the collaboration between a traditional and vertical education system established on the relation between professor and students together with weaker and more horizontal practices that could take place outdoor as a strategy to reinvent the role of public spaces.

The outdoor space as a field of interdisciplinary knowledge

Public spaces in campus can be understood along the bipolar model of the internalized/externalized university presented by Caldenby (2009). The internalized model refers to the idea that scientific knowledge should evolve from itself, by inner driving forces. This means that universities should be introspective, separated from external disturbances. This idea is also expressed in the physical space. With this mindset, many universities were almost expelled from city centers in the 1960s (with the French universities after May 1968 being a prominent example) and were established in campuses on the outskirts of cities. In this model, different scientific fields are placed in their own buildings, and their students do not intermingle. Even symbolically, in the masterplan of such a model, we would see a peripheral parking zone, as a buffer zone between the

campus and the rest of the world, with buildings oriented inward around a central open space.

The second model considers that scientific knowledge starts from reality. The real world is what sets the conditions for the development of science. This idea is usually reflected in the physical space, which turns outward, either in terms of morphology or through the activities it hosts. The concept of openness is expressed with weaker boundaries between university buildings and outdoor spaces and the urban realm that may allow transmission and exchange of knowledge among different scientific fields.

This second model is widely supported by many scholars today. Kenney et al. (2005) argue that good design of interwoven closed and open spaces in university facilities can enhance interdisciplinary collaboration. For the last 25 years, the idea that the educational process only takes place in the classroom or that the research process occurs only in the laboratory has been considered outdated. Instead, greater emphasis has been placed on the importance of interaction among students or researchers. According to Kenney et al. "students can learn wherever they have a chance for interaction" (2005, p. 28); therefore, physical design must maximize the probability of chance or planned encounters. There seems to be an increasing emphasis on the need to create different types of spaces that can support this idea of meeting, whether designed or accidental, among different members of the university community, thus enhancing the process of generating new knowledge (Jamieson et al., 2000).

Greene and Penn (1997) also argue that interaction is a strong element in the production of new knowledge. They claim that "the generation of new knowledge links closely with the type of relation among researchers and with the creation of a generative atmosphere conducive to the creation of new knowledge" (1997, p. 135). This perception affects multiple fields of interaction, among students, between students and instructors, among researchers, as well as between members of the academic community and the outside world in its various forms.

Therefore, it looks that an externalized campus - the one that projects outward its activities - may better challenge the need for non-formal and unplanned relations that are the base for transmission and exchange of knowledge.

The Multifunctional Campus

Therefore, the question that can be raised is how is it possible to design - or to update - a campus in order to generate new educational dynamics based on the interaction among different group of people. Temple (2014) argues that one of the most important factors in expressing the values and goals of an institution is its physical space. But while many universities try to attract students through the iconic architecture of their buildings, the question is how to design attractive spaces of interaction.

Our knowledge of urban design tells us that a successful public space is the result of the combination of daily activities, urban functions, good design, and elements that give meaning to the space (landmarks related to history or significant new or old buildings). The combination of these elements facilitates the presence of people for extended periods, thus creating opportunities for interaction and coexistence. Different activities can meet the needs of different groups at different times of the day. In cities, the coexistence of housing and other activities is very important because it prevents a part of the city from becoming dormant during the day (suburbs) or at night (city centers).

If we look at the physical organization of a campus through this lens, we can argue that, analogous to a city, it should have multiple activities that cover different times of the day. Since space is the framework within which human interaction and social organization are structured, its design is of particular importance. As such, the university precinct hosts high-quality urban settings, compatible with the presence of people for long periods of time, a place where interaction is fostered.

The Challenges of Contemporary Campus

But students' life in a campus is also under quick transformation. This transformation depends on two contradictory aspects: the shift from in-presence to distant learning and the inadequacy of physical infrastructures to provide a satisfactory teaching environment. The Covid period has drastically changed the learning environment and the way students use the physical space of educational structures. It has accelerated the implementation of technology, distance learning, and the use of online platforms that contain all the materials necessary for the courses. In the post-Covid period, the use of these facilities continued as an integral part of the students' learning system and support: lectures in video or other formats, reading materials, guidelines, and more have to be up-



loaded while universities adopt these distance learning methods as ways to avoid infrastructure burdens. This has resulted in lower attendance in classes, particularly evident in peripheral universities. In Greece, where most of the enrolled students in peripheral universities are not locals, this problem is significant and has a clear impact on their engagement in university life.

Figure 1 -
*Pedion Areos
Campus,
Department
of Architec-
ture and the
central public
space.*

While virtual and distance learning tools are spreading significantly, physical infrastructures of universities face new challenges. As the number of people wanting to study in universities grows every year, universities find themselves under heavy pressure. Teaching rooms and labs are not sufficient to accommodate the increasing number of students and teaching staff is often not enough. This limit is particularly relevant in Greece, where the combination of free public higher education and the social significance of university education attract almost all secondary school graduates to compete for a place in the university. It is worth noting that in Greece, university studies were, post-war and until the end of the 20th century, the most certain path for economic and social advancement.

The question of how to design campus today should be reframed in the inter-laced relationship between the consequences of the use of new technological tool and the rethinking of physical spaces under these new circumstances.

The Case Study: The Pedion Areos Campus, University of Thessaly

The Campus of the Polytechnic School of Volos of the University of Thessaly is an interesting case-study to investigate these questions: a generic

but underused open green area and other urban spaces that can be rethought through the lens of the transformation of educational practices during a period of radical technological turn.

The University of Thessaly is a recently established institution and in constant growth, both in the number of students as well as in infrastructure. It was established in 1986 and began operating in 1988 in the city of Volos, a city with a stable population over the past 30 years (117,000 in 2001, 125,000 in 2011, 124,000 in 2021). The placement of the university's necessary spaces was done with the logic of dispersion throughout the city, rather than a unified, organized campus outside of it¹. A key element was the initial decision to purchase and repurpose old industrial buildings for educational and administrative purposes because they were the only available large-scale structure in a very dense urban environment. With this logic, an outward-facing collection of buildings was created, where the public space of the city also served as the public space of the campus. This logic continues today and connects the extensions that have occurred over the last 40 years with the continuous development of the university: the 5 departments that formed the original core of the university in Volos have now grown to 15; the housing needs are covered by renting private flats located in scattered buildings within the city fabric; the central library and students' cafeterias are also located in different parts of the city. Although this remarkable effort to turn the city from an industrial to a university city, very little attention has been addressed to shape new public spaces accordingly to the changing social structure with the arrival of thousands of students.

Even in cases where there are clusters of buildings, such as the so-called Campus of the Polytechnic School at Pedion Areos, at the western entrance of the city, the outdoor space between them did not receive significant attention (Figure 1). The old industrial buildings present in the area were fully renovated to meet the teaching and administrative needs of the departments, with a focus on repairing the buildings and not on how the buildings connect to one another or how the different buildings form a cohesive whole. Thus, the buildings function independently, just as they did in their previous state when they housed independent industrial businesses and functions. There was also no provision for other shared uses, such as a library or student cafeteria. This indifference is particularly

¹ A map with the location of the facilities inside the urban fabric of Volos is available here: https://www.google.com/maps/d/viewer?mid=1iyMGwqS9MV8OghRw09Piatsa4RR4_10&ll=39.36087545820006%2C22.943146957725492&z=16j

evident in the way outdoor spaces were designed: pines and plane trees were simply planted in the ground in 1988 without any further organization. From the beginning of its operation, emphasis was placed on buildings instead of on the space in-between.

A proper master plan was created retrospectively in 2001, based on which the outdoor layout was implemented in 2005, taking as a given the previous plantings and the existing entrances to the buildings. Despite this effort, the outdoor space remains a leftover and fragmented intermediate space between free-standing buildings. The campus continued to expand into neighboring city blocks, with the construction of the new building for the Department of Electrical and Computer Engineering, which was completed in 2020, and the new buildings for the Department of Civil Engineering and the Department of Mechanical Engineering (currently under construction) on adjacent urban blocks. The addition of those new buildings makes the problem of the role of public intermediate space even more evident: the Department of Electrical and Computer Engineering is separated from the main campus by a large anonymous street, while the other two departments are disconnected because the river Krafisdonas, a truly abandoned and unmanaged area, constitutes a strong and untraversable edge.

The campus, therefore, presents a hybrid character. The urban system of public spaces made by the underused green area situated at the center of the campus, the significant streets - but deprived of every function except for the accesses to the departments -, and the ghostly river looks to be the primary references for the university's buildings more than the intermediate spaces of the buildings themselves. In this sense, it could be described as an outward-facing campus rather than an enclosed campus built around a central open space.

However, it is also located at the edge of the city, and therefore the network of these streets mainly accommodates traffic rather than urban uses. As a result, the street network cannot support the activities that sustain communal presence on a campus, not it can serve as a meeting point between the university community and the city. While public urban spaces in university buildings located in the city center can fulfil this role, this does not happen at the city's edge.

Redesigning public spaces in the Pedion Areos Campus therefore cannot be thought as a simple management of the open space, but it requires thinking about it as a lively part of the city where students are engaged in



Figure 1 -
Students' activities that took place in the central public space of the campus.

collective actions. In recent years, various activities of the Department of Architecture took place in the outdoor areas, like the wood and iron workshop that is hosted in container and managed by students, various lessons and events were delivered on the grass or in the outdoor amphitheater - that unfortunately is underused due to the specific climate condition -, some craft workshops encouraged students to build furniture and installations both inside the campus and in adjacent plots, while sits and benches built with pallets placed under trees are populated during breaks (Figure 2). Although this cannot be considered a programmed transformation of the public spaces of the campus that requires a more structured and holistic strategy, these activities show the inner potential of the academic community in being engaged in the renovation of these spaces.

The contemporary campus: new trends in educational processes. The students' point of view

Keeping in mind the unresolved questions of university education today, of the design of campus public spaces, and the specific case of the campus of the Pedion Areos Campus, during the academic 2024-25, a research project was conducted among third-year students of the Department of Architecture in the framework of the course of Urban De-

sign I. During the semester, the students studied examples of university complexes around the world - collecting 80 examples - and at the end they were asked two questions. The first question concerned how they think technological changes (e.g., online education) affect the organization and scope of the functions required in a campus. The second question was about their opinion on the importance and role of public open and closed spaces in a campus. The students responded with descriptive texts.

A total of 100 students (87 women and 23 men) participated in the survey. The analysis of the texts, using keywords /concepts, and the results are as follows:

- All participants believe that digital technologies have accelerated education, enhanced student mobility, provided access to services that were previously difficult or costly to obtain, and have become an integral part of university education.
- A large percentage (22%) mentioned that this has a significant impact on social life, as it leads to solitary education and competition among students, as well as isolating students in their homes.
- 72% of respondents believe that new technologies, on the one hand, tend to shrink a campus in terms of its physical space (since they create conditions for students not to be physically present) and, on the other hand, create new educational needs, such as strong digital infrastructure, technologically equipped classrooms, libraries, and spaces for laboratories.
- An interesting issue raised by 20% of respondents was the need for study rooms, spaces for relaxed studying, collaboration, meeting, and eating, without requirements for silence.
- 80% of the respondents believe that under these circumstances, the public space of the university has become more important than before, as it constitutes the necessary framework for socialization. They believe that in order to strengthen this role, activities beyond classes, such as recreation, sports, workshops, and opportunities for student intervention, should be enhanced. Many mentioned that the outdoor space helps to create a more relaxed relationship between students, as well as between students and professors. Several respondents also highlighted the importance of public spaces as places for informal or spontaneous meetings, where there is ambiguity between boundaries (of education and relationships), and mentioned how these encounters contribute to the creative process (inspiration).
- A smaller percentage (30%) specifically referred to the importance of green spaces for students' social and mental well-being. Most referred

to these spaces as break areas for relaxation, but one-third of them also proposed other activities, such as conducting classes within these spaces or hosting other activities, such as meals.

- Regarding the relationship between university spaces and the rest of the city, the answers ranged widely. First, there was a difficulty in understanding the concept of public space within the university and distinguishing it from common-use spaces. No one seemed to view the (public) streets that cross the campus as common-use spaces for the university. Everyone referred to the space within the university's property boundaries. Only 26% of the 100 respondents referred to this issue. Of these, half mentioned issues related to security, such as vandalism, and suggested controlled access for the external community to university spaces. The other half highlighted the need for spaces, particularly outdoor ones, to be accessible to a broader public for recreation, events, and sports.

From closed spaces with strong programs to open spaces with weak programs

The students' responses lead us to a model of strong and weak programs in the campus. We could say (following Bernstein's theory on modes of knowledge transmission) that, on the one hand, the students describe a dominant form of education (especially in the current age with technological advancements) as having a strong program. By this, we mean that there is a strong pedagogical relationship between the teacher and the student (within classrooms), which is further intensified by online education because it is more solitary. On the other hand, the students describe the need for weak programs, particularly in the outdoor spaces of the campus. This means that there is a relaxed relationship in the process of knowledge transmission and this process can encompass what we consider everyday life, such as food, sports, discussions, but also collaborative workspaces, different programs that may overlap without disturbing each other. In this sense, public space is claimed by students as a field of informal knowledge and also as a community enhancer or creator.

These findings seem to confirm the view of Jay Deshmukh (2025), who argues that higher education is shifting from the strong guidance of the instructor to the independence of the student, interdisciplinary research, debates, and projects. Multifunctional spaces are those that inspire curiosity and cultivate the framework for innovative thinking. Such spaces should succeed classrooms and become the places where people and

ideas can commingle. The promise of having one's intellect challenged between formal classes and uncovering associations not previously contemplated cannot be easily replicated online and should be placed at the center of campus reinvention.

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Programs and Practices of Architectural Design Education Using University Campuses as a Potential STEAM Education

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1. Introduction

In Japan, university campuses historically expanded in suburban areas as city-center campuses could not accommodate the surge in enrollments driven by the growing young population in the 1970s. The construction of public housing complexes and the expansion of university campuses were the most prominent developments in urban sprawl during the rapid economic growth that began in the 1960s. Many of these buildings were reinforced concrete structures, defining feature of modernist architecture, with some adhering to Le Corbusier's five principles of modern

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Figure 1 -
*Tokai University
Shonan Cam-
pus General
View*

architecture¹. In the 1980s, the population of individuals under 15 began to decline. By the 2000s, some universities were operating below capacity, prompting a shift in campus locations. University campuses, once dispersed in the suburbs, began to city centers.

Given this historical context, the design and construction of Tokai University Shonan Campus (TUSC) [Fig. 1] began in 1962, when Shigeyoshi Matsumae (1901-1991), the university's founder, requested Mamoru Yamada (1894-1966), an architect who worked as an engineer for the Ministry of Post and Telecommunications (MPT) and his former colleague, to build a new campus. The design was initiated in response to Matsumae's request.

Since the 1930s, Yamada has designed numerous MPT facilities, even those disrupted by World War II, adhering to the rationalist and functionalist philosophy of modern architecture. His designs emphasize smooth flow lines, incorporating ramps, extensions, and renovations. For the TUSC, Yamada personally selected the campus site and developed an environmentally symbolic campus plan that integrates the rich natural environment at the foot of the Oyama Mountains.

¹ Manfred Tafuri, *Modern Architecture in Japan*, MACK, 2022

Until the completion of Building No. 20 in 2022, new constructions, extensions, renovations, conservation, and refurbishment efforts were continuously undertaken despite the demolition of some college buildings. Notably, in 2008, DOCOMOMO Japan, an international organization that promotes the preservation and investigation of modernist architecture, registered the campus buildings designed by Yamada during his lifetime².

In this study, we examined research on the preservation and reuse of modernist architecture. The first author, Kenji Watanabe, is a professor at the Faculty of Architecture and Urban Design, Tokai University (FAUD-TU), who specializes in the history of modern architecture. The co-author, Katsuya Iwasaki, is a professor at the FAUDTU with extensive experience in designing large-scale buildings, including campuses, at Nikken Sekkei Ltd. Another co-author, Kentaro Taki, is a special-appointment associate professor at the Department Art, Faculty of Liberal Arts, Tokai University, who specializes in video art. This study aims to highlight the importance of the program and methodology in adapting a modernist university campus for architectural education and its potential for STEAM (Science, Technology, Engineering, Arts, Mathematics) Education³.

2. Architect: Mamoru Yamada and the Historic Value of the Tokai University Shonan Campus

As previously mentioned, architect Mamoru Yamada designed the TUSC building complex from 1962 to 1966, including site selection and landscape design. After Yamada's death, his office continued the design and construction of the campus. However, since the 1970s, various design firms and construction companies have undertaken these projects. Dr. Katsuhiro Daiguji, a Tokai University graduate who has studied Mamoru Yamada, documented changes the campus plan in his doctoral research. By organizing architectural drawings, interviewing related individuals, and conducting measurement surveys, he clarified the significance of Yamada's work beyond TUSC in modern architectural history. Additionally, he has proposed conservation and reuse strategies aligned with DOCOMOMO Japan's activities.

Mamoru Yamada was a member of the Bunriha Kenchiku Kai (Secession Architectural Group), formed in 1920 by architects advocating a new phi-

² DOCOMOMO Japan has authorized as the first chapter in the Asian countries since 2000.

³ D.A.Sousa, T.Pilecki, From STEM To STEAM, Second Edition, Corwin, 2018.

osophy of modern architecture in Japan. Other members included Sute-mi Horiguchi (1895-1984), Kikuji Ishimoto (1894-1963), Mayumi Takizawa (1896-1983), Keiichi Morita (1895-1983), and Shigeru Yada (1896-1958). They were classmates in the architectural department at Tokyo Imperial University (TIU).

In 1920, the Bunriha Kenchiku Kai held its first exhibition of the member's graduation designs at the Shiroki-ya Department Store and simultaneously published a collection of their works, "Declaration and Works of the Bunriha Kenchiuku-Kai," with Iwanami Shoten Publisher. After graduating from TIU, each member pursued careers in private design offices, construction companies' design departments, or public offices' building and repair departments. They engaged in architectural design and overseas research while publishing several books and collections of works. By the seventh exhibition at the Mitsukoshi Department Store in 1928, they showcased and promoted their new architectural forms and continued to publish books and collection of their works⁴.

After graduating from TIU, Yamada joined the MPT, where he worked on numerous buildings, including the Tokyo Telegraph Office and the Tokyo Telegraph Hospital, until his retirement in 1945. Three years after joining the ministry, he participated in designing the Eitaibashi Bridge and other reconstruction beams following the Great Kanto Earthquake of September 1923. Additionally, he proposed new structural forms as infrastructure in the field of civil engineering.

From August 1929 to May 1930, the MPT sent Yamada on a ten-month visit to Europe and the USA. He stayed in Berlin and explored modern architectural sites in Europe, primarily in Germany, where he met the architects behinds these designs. Notably, in October 1929, he attended the 2nd CIAM International Congress in Frankfurt as an observer, where he met fellow Japanese modern architect Kunio Mayekawa, who had worked on the minimal housing project under Le Corbusier. Upon returning to Japan, Yamada published a report on the Siedlung project in Europe through the Architectural Institute of Japan⁵.

Yamada's reputation in modern architecture history was strengthened by the Tokyo Teishin Hospital, known for its cluster layout and the use

⁴ Edited by Eriko Omura and Jin Motohashi, 100 Years of BUNRIHA: Can Architecture Be Art?, Exhibition Catalogue, The Asahi Shinbun, Tokyo, 2020.

⁵ Eric Mumford, The CIAM Discourse on Urbanism 1928-1960, MIT Press, 2000, Martin Steimann, CIAM DOKUMENTE 1928-1939, Birkheuser Verlag AG, 1998.

of ramps at the wing's ends. Yamada adapted its design vocabulary and plan development in his post-war projects for public buildings, including hospitals and campus facilities at Tokai University and High School.

According to Dr. Daiguji, Yamada regarded TUSC as his most significant work. It is reported that he worked unpaid to design freely. Yamada, who was a professor at Tokai University, was determined not to burden his design office and is reported to have completed most of the design work on campus himself. The main school buildings are four-to-five-story structures aligned along an east-west axis, following the gently sloping topography toward the south. The central area houses the sports field and gymnasium, while a cluster of school buildings is situated in the south, with slopes at the edges to accommodate the cluster shape. Although some new buildings were partially demolished, they were constructed according to the design context envisioned by Yamada.

For example, in Building No.1, the first completed Y-shaped symbol of the campus, the ground floor of the three wings was initially an open pilotis but was later enclosed due to a lack of classrooms. However, the central spiral ramp encircles each floor up to the roof and halfway up the tower above, allowing students, faculty, and staff to enjoy views of the campus and the surrounding landscape.

3. Architectural Design Program for Students

3.1. Campus Architectural Tour with Lecture and Sketching for New Students

Since 2022, following the COVID-19 pandemic, the Department of Architecture at FAUD has replaced its previous training location for new students with architectural tours from Yokohama and nearby cities to TUSC. Approximately 240 new students participated in the training, where the author, Watanabe, delivered a 30-minute lecture on Mamoru Yamada's significance in modern architecture history, the TUSC project history, and the features of the campus buildings. The lecture was introduced by 18 full-time faculty members. Thereafter, they led about 15 new students and two teaching assistants (graduate school students) on a campus tour, explaining architectural features while having students sketch and photograph them during a 100-minute session, equivalent to one class period.

The sketching training during the campus tour is linked to the first assignment of Architectural Design Exercise (ADE) 1, a design and drafting class that begins the following week. In this class, students must submit a visual report on A2-size Kent paper detailing the building they sketched, its architectural outline and features, and their reflections on the building after sketching it. While students with prior experience in art—whether through high school coursework or early exposure to painting—have excellent ways of expressing their sketches, those without prior experience can still learn to convey their ideas and develop methods to do so effectively. The significance of this assignment lies in the fact that students will eventually present their ideas, whether hand-drawn, CAD, or using graphic tools, regardless of the method of expression used.

3.2. Pavilion Project as the Implementation Design

In addition to drafting skills training in ADE 1, new students undertake the Pavilion Project, an assignment designed to transform the campus into a practical training ground. The project is part of the mandatory “Introductory Seminar” for first-year students at FAUD. Approximately 340 students from both departments (architecture and civil engineering) are divided into teams of two or three and assigned a different theme each year to develop a design proposal. The process involves 28 faculty members voting on designs by three or four teams. The top designs are then presented to the university president, who selects the best one. The winning proposal is constructed on the TUSC and showcased at the University Festival from November 1 to 3.

The first session for new students explains an overview of the assignment and the overall schedule. In the subsequent session, the students work on an “esquisse,” analyzing issues and sites conditions and developing an idea and its form to create their project. In the third and final session, each team presents their ideas, serving as a training opportunity for effectively communicating their concepts to others.

Thus far, the trial has been conducted three times, from 2022 to 2024, each time at a different site and with a different task. The consistent requirement across all challenges has been to develop a proposal that aligns with each site’s theme. The proposal must be based on a tetrahedron of 1.5 m pipe trusses (a structure composed of triangles) with a maximum of 80 trusses.

Each group of students was tasked to create an esquisse by making a one-twentieth-size model using cotton swabs. With guidance and critique

from the teaching staff and graduate teaching assistants, they conceptualized their ideas by integrating their proposals with the analysis of the campus and artworks. One work, selected from 340 students and approximately 110 teams, is further developed with the involvement of postgraduate and senior undergraduate students to enhance its realization.

The first-prized team is split into five teams to refine and implement the proposal and to promote the project. The roles of each team are as follows:

1. The Design Development Team (DDT) coordinates and oversees the layout in collaboration with the university's stakeholders and the Structural Review Team. They design the benches around the pavilion and finalize the overall layout and plan after consulting with the relevant stakeholders.
2. The Light-Up Team verifies the night-time lighting based on the form provided by the DDT. They decide on the light theme, determine the position of the reflectors to be installed in the pavilions, and create the light environment.
3. The Structural Study Team checks whether the proposal is structurally feasible and supports the DDT in determining the final form through repeated feedback. They take into account mechanical safety and economic efficiency while running simulations.
4. The Construction Assembly Study Team reviews the feasibility of the construction and directs the assembly process in collaboration with the DDT and the Structural Study Team.
5. The Publicity Team connects the above four teams and is responsible for widely publicizing the production study process both inside and outside the university. They are responsible for expressing their ideas in a form, sharing them with peers to develop those ideas further, and communicating these ideas clearly to gain approval⁶.

The selected results are then promoted through collaboration between teachers and grade-level students, transcending their positions to achieve a unified form. The Pavilion Project, which condenses the entire manufacturing process into a series of steps, including the creation of actual products through essays, presentations, and collaborative production, serves as a living educational resource for architectural design education.

⁶ Pavilion Project Advisers General director: Professor Katsuya Iwasaki, Structural adviser: Associate Professor Keisuke Nomura, Lighting Design adviser: Associate Professor Ryoko Shinohara, Building Construction adviser: Professor Takeshi Yokoi, all adviser belong to FAUD of Tokai University.

3.3. Architectural Design Exercise 2: Surveys and Affordable Design⁷

The final assignment of ADE 2 for first-year students, titled "Transformation of Value," involves discovering and evaluating the value of "place" during the first half of the 20 days. In the second half, students design the "actions" generated by the "place." This assignment obviously differs from the training in drafting and modeling, reading and expressing drawings, designing chairs from paper materials, and spatial conducted in ADE 1 and 2. The focus is on how to provoke human action. It involves emphasizing the essential process of design manipulation, perception, and action in architectural design and exploring the relationship between image, perception, and physical action. The assignment brief is as follows:

The first half of the assignment: discovering and evaluating the value of "place"

"You spend much of your university life at TUSC. Carefully observe the campus you use on a daily basis and think about how you feel about the places and situations that interest you. First, pay attention to your own sensations, rather than what the people around you think. Then, select an outdoor location that seems to have potential and discover the value it has to offer. For example, the space and narrowness of the place, the density of people and objects, the view from it, the unique actions of people, the characteristic shapes and the changes with time that are unique to the place. Then, investigate the place by taking actual measurements (measuring lengths, counting, examining materials), evaluate the characteristics it possesses using objective data such as drawings, photographs, graphs and comparisons with others, and present your findings in a way that others can easily understand."

Second half assignment: design an "action" generated from the "place"

"Take the value of the place you set up in the first half and add some small 'spatial design' to it to create 'action' that have not happened there before. The 'action' can be anything, but rather relying on a specific program (café, library, rest room), envision specific situations of people's actions such as gathering, touching each other, etc., and aim for spaces and situations that you would like to use, see and spend time in. As for spatial design, try to incorporate operations such as 'enclosing' and 'covering.' These operations can be physical objects or

⁷ This program was initiated by Lecturer of FAUD of Tokai University, Naoto Noguchi who was former staff of the SANNA.

phenomena. They can also be expanded and interpreted. The scale of the proposal is open-ended, but it should be possible because of the location. And please make proposals that not only create a place where 'action' is possible, but also nurture the 'place' in such a way that the value of the 'place' is amplified by the creation of 'action'. We expect proposals that produce the greatest possible effect with the least amount of manipulation."

These initiatives in the first year play a crucial role in developing analytical thinking skills for investigation and problem finding, as well as fostering creative, integrative thinking for problem-solving, as seen in the actual design process.

3.4. Design Program 2: Design of Adaptive Reuse of Interior Spaces

The laboratory units have adopted a more practical education program to enhance architectural design education. This integrates theory (research) and practice (design). The following are several of the reasons for this approach: (1) actual involvement in design, (2) implementation within a familiar campus environment, (3) design as an extension of research, (4) collaborative participation in the completion process, and (5) students can contribute in the process. Consequently, the campus-based projects serve as a living teaching tool for the students. The following two projects are laboratory-based design programs:

Adaptive reuse of interior spaces

The Mi-3 Project is a collaborative effort between the planning laboratory and the staff in charge of facilities and equipment. Its goal is to enhance the usability and satisfaction of campus facilities by repurposing structures built before 2010 into spaces for students to relax and enjoy. The "Mi-3" stands for "Mission," "Miracle," "Million," and the plan is to renovate Building No.6 with completed schedule for 2025⁸.

In this project, 25 students—from the fourth year of the Department of Architecture to the second year of the FADU and Graduate School of Engineering—each proposed a renovation idea. After discussions, the proposal was narrowed down to the creation of giant furniture, a massive piece that defines the space. The project's progression involved discuss-

⁸ Professor Katsuya Iwasaki has conducted this project as general director of whole project.

ing the proposed ideas, narrowing down the direction, and refining them into a single proposal rather than ranking them. Initially, the 25 proposals from the first round were categorized using a design matrix. Four axes were derived: dispersed, intensive, three-dimensional, and flat, and each proposal was plotted on the matrix.

Due to cost and feasibility considerations, the works plotted in the aggregate and planar areas underwent further in-depth analysis. From these, standardized timbers measuring 450mm x 1350mm were stacked in a staircase formation, gradually shifting to create furniture that functions as both chairs and desks. Observations of individuals' movement at the entrance to Building No.6 led to the installation of two pieces of furniture of different sizes at both ends of the entrance. Those pieces, opening outwards in a semi-circle for easy entry, provide interlocking characteristics and an arrangement that does not interfere with the flow line to the classrooms in the construction process, providing students with insights into production that cannot be gained solely from the university's internal network.

3.5. Campus Video by the Department of Imaging Arts

During the autumn term, a video was produced primarily by third-year students in the Department of Art. This video documents the architectural works of Mamoru Yamada, the architect of TUSC. The main objective was for students with fresh perspectives to rediscover the design features of the campus architecture, which was completed more than 60 years ago. Additionally, it aimed to pass on modern architecture to the next generation through the 4K video technology, which emerged in the 2000s.

The participating students, proficient in video recording techniques but lacking architectural knowledge, interviewed a professor who is an architectural historian at the university and a researcher on modern architects including Mamoru Yamada⁹. This deepened their architectural literacy as they worked on the project. They extensively filmed Yamada's existing architecture in Japan, attempting to trace his design style through the captured images.

Students reflected on architecture as both a subject and an object of aesthetic research. Some noted, "I had never thought about who designed the architecture before, but this was an opportunity to become aware of

⁹ Professor Watanabe was taken interview 3rd December in 2024, Dr. Daiguji 15th December in 2024.

it,” and “I could learn about the history of school buildings that I use without thinking about them.” They also commented on technical aspects such as “how to convey space visually and clearly, angles and filming methods during filming,”

4. The Potential of the STEAM Method for Architectural Education: Building a Circulation of Learning

4-1 From the Faculty of Engineering to the Faculty of Architecture and Urban Design

The architectural education at the FADU of TUSC, centered on a campus building designed by Mamoru Yamada, one of Japan’s modern architecture pioneers, immerses students in their built environment. This enables students to experience its spatial qualities through their five senses while reflecting on its historical significance, continuity, and future development. At each grade level, efforts are made to enhance analytical and critical thinking skills (critical mind) through research and to articulate identified problems using integrated thinking skills (composite mind)¹⁰, which imaginatively synthesize through the sensitivities found in the artistic domain.

This shift toward experimentation underscores the rationale behind the establishment of a new FAUD in 2022, emerging from the Faculty of Engineering at Tokai University, where the Department of Architecture was previously housed. Architectural education in Japan in the late 19th century in the Department of Architecture at the Faculty of Engineering, the predecessor of the University of Tokyo¹¹. Under the Meiji Government’s emphasizing practical studies supported by science and technology to protect country’s economy and infrastructure from frequent earthquakes and fires. This field has its history.

¹⁰ Kenji Watanabe, The Dialogue between Architecture and Neuroscience: The Composite Mind of E. A. A. Rowse as a Precursor of Interdisciplinary Thinking- How did architects image and visualize brain for design process?, Poster Session ANFA (Academy of Neuroscience for Architecture) 20 Years Anniversary Conference, University of California San Diego, September 13, 2023.

¹¹ The Collected Writings of Henry Dyer, in 5 vols., Edited by Nobuhiro Miyoshi, Eureka Press/Edition Synapse, Tokyo, 2006, The Collected English Writings of Josiah Conder, in 4 vol., Edited by Seiichi Yamaguchi, Eureka Press/Edition Synapse, 2019.

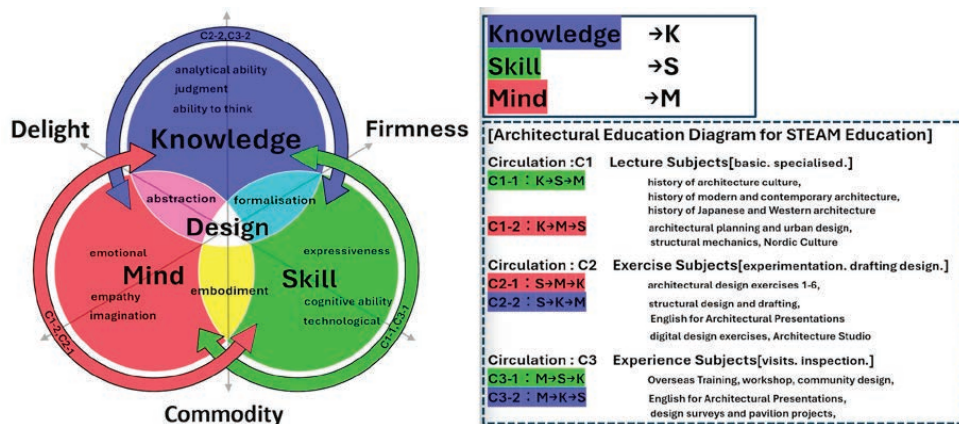


Figure 2 -
Architectural
Education
Diagram for
STEAM Edu-
cation

In the response to the Soviet space program's advances in 1956 after World War II, the USA adopted a science-based curriculum known as STEM (Science, Technology, Engineering, Mathematics), emphasizing mathematics-based science, technology, and engineering. By 2000, following to American educational system since restoration of sovereignty in 1951, the number of architecture departments in Japan affiliated with university engineering schools had exceeded 150. In this context, during Virginia Tech's university reform and faculty reorganization in 2002, Mark Sanders, a professor at the university who was developing an integrated STEM education in the technology, science, mathematics project, proposed a new postgraduate STEM education program¹².

G. Yachman, who was supervised by Sanders, widely presented this program as STEAM education, adding an 'A' for Art to STEM. Yachman argued that the arts and liberal sciences, specifically language and social sciences, were significant making STEM education more holistic¹³. Simultaneously, around the time of these educational reforms in the USA, some universities in Japan began to reconfigure their architecture departments, which were previously affiliated with engineering faculties. These departments started to attract students from both the humanities and sciences, as architecture faculties shared similar issues in STEAM education.

¹² Mark Sanders, The Original Integrative STEM Education Definition: Explained, Scholarly Works, School of Education [189] Virginia Tech March 17 2015.

¹³ Georgette Yakman, What is the point of STEAM? - A Brief Overview, research gate, August 2010 (<https://www.researchgate.net/publication/327449281>)

However, in Japan, the integration of STEAM education has predominantly been incorporated into the teaching methods of primary and secondary schools. This approach links architecture a science, which requires convergent and logical thinking, with architecture as an art, demanding diffuse and growth-oriented thinking. As extensively discussed in architectural theory¹⁴, STEAM education should also be utilized in architectural education.

4.2. Construction of an Architectural Education Applied to STEAM Education

The class program centered on architectural design at the FAUD of TUSC is described as a STEAM architectural education, illustrated using a diagram [Fig.2] The acquired abilities through architectural education are categorized into three areas: Knowledge, Skills, and Mind. The corresponding subjects are allocated as follows: lecture subjects for knowledge, exercise subjects for skills, and experience subjects for the mind. Lecture courses cover both basic and specialized subjects including the History of Architectural Culture, the History of Modern Contemporary Architecture, the History of Japanese and Western Architecture, Architectural Planning and Urban Design, Structural Mechanics and Materials Science, Building Construction and Production Methods, as well as Environmental and Architectural Design Exercise 1 to 6, Structural Design and Drafting, Facility Design and Drafting, Digital Design Exercise, Material Experiments, and Construction Method Experiments.

Experimental Subjects including Architectural Tours, Site and Factory Visits, Design Surveys, and Pavilion Projects. These three subjects are arranged as a Venn diagram, with design at the center. The overlap between lecture and exercise subjects represents formalization as a competence, the overlap between exercise and experience subjects signifies embodiment a reaction, and the overlap between experience and lecture subjects signifies abstraction as a thought. Beyond these overlaps, the three architectural elements of Vitruvius' architectural theory—firmness, commodity, and delight—are also represented. An important aspect of this diagram is that it establishes a circulation of learning between the three subjects. That is, the curriculum is designed to allow students to move fluidity between subjects, engaging in feedback and repetition, ultimately fostering more robust and flexible learning.

¹⁴ It could be comparative STEAM applied to architectural education with the program of BAUHAUS in Germany since 1919 because it emphasized Bauen=Architecture as central role of design education.

5. Future Perspectives as Conclusion

As we consider the future of architectural education in an AI-driven society, it is essential to explore the new possibilities that digitalization offers in design, drafting, drawing, model-making, and methods of architectural observation and documentation. In a field where digitalization dominates, how we can address the relationship between physical sensation and image expression? Furthermore, it is crucial to explore new possibilities for methods and documentation in design and drawing, acquisitions, model-making, and architectural visits in response to digitalization. We should also consider integrating the traditional learning methods of past architects (who were trained in drawing and freehand sketching) and their cultural methods of expression into modern STEAM education.

In contemporary design methods that often omit the temporal process of digitalization, it is essential to restore the temporal and physical processes through analog techniques such as hand drawing. This approach fosters a deeper connection with Mamoru Yamada's architectural heritage at Tokai University, where we study, and explores how to pass it on to future generations. That is, architectural education, together with students, must consider the possibility of archiving architectural materials that document architectural cultural exchanges. This effort should include disclosing information through symposia and exhibitions, bridging theory with practice or history with design, and establishing guidelines for the preservation, regeneration, renovation, and reconstruction of physical architectural spaces.

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PART 3

CAMPUS AND THE CITY:
INFRASTRUCTURES, RELATIONSHIPS
AND CONNECTIONS

Assessing the optimality and designing the transformation of universities campus using the 15 Minutes University & City model. A study case: the Polytechnic University of Cartagena

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Introduction

The current European model of university campuses has been shaped over the last two and a half millennia, with architectural examples from at least the 4th century BC. After the discontinuity caused by the fall of the Roman Empire¹, the rebirth of institutions dedicated to knowledge from the early Middle Ages took place firstly under the shelter provided by the mini-cities of the monasteries, and later in the framework of the emerging urban centers (Navascués, 1993; Campos, 2000; Bonet, 2002).

First under the name of Studies and then as Universities, they have co-evolved with the rest of the city and society (Zillich, 2018). The multiple facets of this coevolution, which implies a strong bidirectional relationship, have had different manifestations throughout history, ranging from dimensions of use and sharing of space; pro-

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¹ However, in non-Christian Europe, institutions dedicated to knowledge continued, adopting other forms or spaces, such as the mosques, madrasas and libraries of the Caliphate of Cordoba (Bonet, 2002).

viding the necessary environment for study (seclusion and protection); the training of professionals for local needs; symbolic and political functions, among others.

From the urban ensembles of buildings facing inner courtyards in the Middle Ages and Renaissance; through the state universities and polytechnic schools of the 19th century located in palatial buildings open to main avenues and public squares or gardens; then the generalization of “island” campuses located outside cities in the 20th century; and more recently to the regeneration of obsolete industrial or military areas in the interior of cities through the return of some universities (Navascués, 1993; Hall, 1997; Campos, 2000). They all represent different and specific physical responses to this co-evolution.

By the end of the twentieth century, there was a growing recognition that universities: have increasing social and economic importance and physical presence in cities; they are long-lived institutions, whose urban forms are expected to be persistent over time; and tend to grow over time (Larkham, 2000). Moreover, in recent decades, it has been brought to the front: 1) the impact of the university on the geographic area and local community, from which it frequently receives public funding and resources, and to which it must seek to compensate fostering mutual benefit² (Goddard, 2018; Russo et al., 2007); and 2) the need that universities, as emblems and drivers of innovation, stand step ahead as example to move forward urban sustainability (Hebbert, 2018).

To achieve the above, integrated governance models have been proposed, for example, the “triple helix” which considers that the private sector and the local community are also stakeholders in university planning, whose needs must also be taken into account in the processes to achieve an optimal synergistic and symbiotic design (Russo et al., 2007).

While it becomes evident that many policy aspects are to be considered when reviewing university-city relationships this paper focuses on the physical aspects. Urban sustainability³ requires uni-

² Universities have often become a source of income, replacing the former industry as a source for the local economy (Russo et al. 2007).

³ After the 2010s several sustainability models for urban design have been proposed and applied to university campuses. For a detailed compilation of design measures

versity campuses to be integrated within the global urban system, which in turn requires a holistic design of the university to achieve two goals: 1) there is substantial integration between city and university, 2) the university is still perceived as an entity, and not as a set of buildings dispersed across a non-academic setting.

Our main hypothesis is that universities' transformations can achieve the above by maximizing compliance with the 15-minute city model (15MC) criteria when both separately considering non-academic users and academic users. We try to prove our point by revising the evolution and planned transformation of a Spanish university: Universidad Politécnica de Cartagena.

In the next section of the paper, relevant arguments about both the design of university campuses and their relationship with the city are introduced. Building on these arguments, a model of sustainable relationship between the university and the city is proposed, as an adaptation of the 15MC model, the 15 Minutes University and City model, 15MUC. Then, we review the current state of the Polytechnic University of Cartagena campus and expected transformations according to the Plan Director approved in 2010. Finally, the article concludes by assessing the validity of this approach model, and making several recommendations to be taken into account in the processes of transformation of university campuses.

Latest approaches to university campuses design in European countries. Integration and sustainability

Parallel to a search for greater international presence of universities, which serves them to attract international students and talent, and gives them prestige at the local level, a trend seeking greater local integration has been particularly noticeable in the last 20 years. Relationships have been intensified, and the benefit brought to the local community has aimed to be increased and made more visible, especially since most universities receive local public funding (Goddard, 2018).

Among the benefits that universities bring to local societies, emphasis is placed on: the formation and geographic anchoring of new professionals; fitted to the local economy and industry; the interaction with local business and technological companies; the vitality university students and researchers bring to the locality; the creation of local stable employment –with low exposure to economic cycles– (Den Heijer & Curvelo, 2018; Goddard, 2018). In addition to socio-economic issues, the physical configuration of campuses is being revised. Universities, traditionally cloistered facilities are opening up to cities by designing facilities that can be used by the rest of the inhabitants, opening and integrating their network of public spaces and traffic with that of the rest of the city (Hebbert, 2018; Goddard, 2018; Zillich, 2018)⁴.

Besides, other perspectives converge to sustain these changes. The first is the negative perception of island campuses expressed by many students, who allude to their over-specialization, isolation from the city and lack of a sense of place/community (Hebbert, 2018). The second is the perception that in the prospect of climate change, universities as places of innovation have to stand out in the advance towards urban sustainability. Third, there is an extended perception that the frontiers of science are no longer rigid and that creativity emerges in the intersection of the disciplines; innovation is a process which benefits from contact between the different and the exchange of ideas, which requires promoting designs that foster the mixing of different people and functions (DenHeijer & Curvelo, 2018; Hebbert, 2018).

As Hebbert (2018) points out, in the knowledge society-economy the conventional boundaries between campus and city have been torn down transforming the university campus from a “defensive security-driven enclave into an extrovert partner, regenerating its urban setting through spatial connectivity and practical collaboration”⁵.

⁴ Moreover, there is a dimension of desirability on the part of the academic community (students, researchers...) and the perception that an attractive city, along with the integration of students into the local community, contributes to their subsequent permanence in the city, thus fostering talent retention and, consequently, socioeconomic sustainability (Russo et al., 2007).

⁵ However, there are tensions and unresolved questions about how to achieve this. In some ways, “the cloistered semi-heterogeneity of universities may conflict with the non-cloistered heterogeneity of cities” (Goddard, 2018).

Several measures have been proposed to accomplish these campus transformations, which can be grouped into three scales (Hebert, 2018) adding sustainability as a fourth transversal dimension:

DESIGN ELEMENTS FOR NEW CAMPUSES OR TRANSFORMATION OF EXISTING ONES (1)		
SCALE	SUSTAINABILITY	
CAMPUS CITY	Perimeter barriers are eliminated: - The open spaces and streets of the university are connected to the city network of public spaces and streets - Interior streets are connected to exterior streets - Pedestrian walkways; light streetcars, and express bike paths, cross the campus. - Possibility of leasing facilities to external users to provide funding to the university.	Mix of uses (attracting non-academic users) to avoid emptying at night and during non-teaching periods: - Non-academic residential buildings intermingle with (or approach) the university buildings; - Academic residences do not form a student district but are distributed throughout some areas of the city. - Mixed-use buildings on the edges with services oriented to both the university community and outside citizens.
		Metabolism approaches.
'CAMPUS	Campuses are designed aiming to form structured urban ensembles.	
	Design criteria are drafted by each university to achieve urban quality: - Buildings are connected and their size is limited to create adequate "urban scenes", seeking the creation of a sense of place. - The public spaces, tree-lined streets and squares, receive a name and are delimited by buildings with "active" facades.	Density, compactness and complexity are increased. Incorporation of biodiversity and urban agriculture.

BUILDING	Block building design criteria are adopted, and the buildings advance to the edge of the plots.	
	A mix of horizontal and vertical uses is integrated.	Low carbon buildings.
	“Active façades” are designed.	
	Courtyards and gardens are designed.	
Source: Authors’ compilation from Hebbert, 2018, with some additions from Bindels, 2007; Russo et al., 2007, Zillich, 2018, DenHeijer & Curvelo, 2018.		

From the above list, it follows that, although island campuses located outside cities are also transforming⁶, campuses embedded in the city show more advantages, allowing for a symbiosis between region and campus (Hebbert, 2018). They can integrate into the city’s network of spaces and functions; have many opportunities to collaborate with the municipality or third parties; and have the city’s inhabitants as potential users to provide density to their campuses (Den Heijer & Curvelo, 2018)⁷. Furthermore, as the population concentrates on cities, the integrated university-and-city design implies a more efficient use of an increasingly scarce resource: built and open spaces.

Many of the above measures have been incorporated into the 15-Minute City model, which we review below, proposing a list of measures that specifically can be applied to universities integrated campuses.

⁶ Specifically, through increased build-out; the mixing of uses (e.g. student housing, cultural facilities, research centers, etc.), and the redesign of buildings and public spaces for place-making (Den Heijer & Curvelo, 2018)

⁷ “The boundary between the university and the city should be at least porous, at best non-existent: ‘in a healthy knowledge society the university becomes the city and the city becomes the university’ (Sasaki 2007 cited in Hebbert 2018). However, Den Heijer & Curvelo (2018) warn that integration into the city limits the possibilities for campus growth or space, and blurs its identity, which can affect the sense of community.

A 15-Minute University - City model

The concept of the “15-minute city,” developed by Carlos Moreno (2020), proposes a transformative urban model in which residents can access essential functions—housing, employment, education, healthcare, retail, and leisure—within a 15-minute walk or bicycle ride from their home (Sepe, 2023). This model marks a paradigm shift from conventional land-use planning to an approach centered on planning urban life. It advocates for compact, polycentric, and inclusive urban forms where spatial and temporal accessibility underpin social, economic, and ecological resilience.

Central to the 15-minute city is the reconfiguration of urban time and space. As Moreno argues, urban planning must be reoriented toward slower, human-scaled spatial structures that enable proximity and multifunctionality. Rather than segregating land uses, the city must adopt a mixed-use, decentralized morphology where public spaces are multifunctional and accessible, and where urban life unfolds through rhythms attuned to everyday needs rather than motorized commutes. This vision promotes active mobility—primarily walking and cycling—reducing car dependency and enhancing quality of life through spatial proximity (Moreno, 2024).

Within this framework, *university campuses* represent a pivotal node in the polycentric configuration of the city. As hubs of education, research, innovation, culture, and public space, campuses are uniquely positioned to act as multifunctional anchors within 15-minute urban units. When integrated into the surrounding urban fabric rather than isolated as mono-functional enclaves, campuses can contribute to urban proximity by providing not only academic functions but also shared services such as coworking spaces, health and wellness centers, green areas, libraries, event venues, and cultural programming. This reimagining positions the campus as an accessible civic space, embedded in the local neighborhood and serving both the student population and the wider community.

This proximity-oriented reconfiguration of campuses aligns with key principles of the 15-minute city: it reduces commuting times, supports a balanced work-life dynamic, and allows for overlapping of uses within single infrastructures. For example, lecture halls may double as cultural venues in the evening, university courtyards can

serve as public squares, and sports facilities may open to residents outside academic hours. Such flexibility enables a higher utilization rate of urban resources and reinforces social inclusion.

The implementation of these changes requires a systemic revision of urban governance instruments. Zoning codes, development guidelines, and institutional frameworks must be adapted to support mixed-use urban campuses and their integration into neighborhood systems. Policies must facilitate open access to certain campus spaces, encourage partnerships between universities and municipalities, and promote joint management models that reflect shared urban responsibilities.

The incorporation of campuses into 15-minute city strategies also intersects with broader themes of sustainability and climate adaptation. University grounds can act as urban green lungs, contributing to biodiversity corridors, water management through green-blue infrastructure, and local climate regulation. The presence of vegetation, permeable surfaces, and shaded areas within and around campuses reinforces the ecological performance of dense urban environments.

Infrastructurally, the integration of campuses within walking and cycling networks is critical. Ensuring barrier-free access to and from surrounding neighborhoods enhances not only physical connectivity but also the symbolic openness of the academic institution to the city. In this sense, the campus functions as both destination and connective tissue—a space of transition and transformation that embodies the shift from “mobility by necessity” to “mobility by choice” (Moreno, 2020).

Digital technologies further support this vision by enabling flexible, participatory, and data-informed service delivery. Smart campus platforms, for instance, can coordinate shared mobility systems, optimize energy consumption, facilitate remote learning and working, and promote digital cultural participation. As engines of innovation, universities can thus model the digital and ecological transitions underpinning the 15-minute city.

Case studies such as Barcelona’s superblocs (supermanzanas) exemplify the feasibility of proximity-based urban restructuring. Through the reorganization of 400 x 400-meter street grids, vehicle traffic is reduced and pedestrian and bicycle accessibility is prior-

itized. These interventions create space for social interaction, cultural expression, and ecological functions within formerly car-dominated environments (Ajuntament de Barcelona, 2013). In similar ways, university campuses—when reconceptualized as open, adaptive, and multifunctional urban systems—can embody and operationalize the vision of proximity-driven, sustainable cities.

Finally, the 15-minute city is not merely a spatial strategy, but a comprehensive redefinition of urban living. By positioning university campuses as integral elements of local urban ecosystems, this model can harness their full potential to contribute to proximity, equity, sustainability, and participation. Through spatial integration, functional flexibility, and community engagement, campuses can serve as exemplary nodes in the transition toward a more humane, resilient, and inclusive urban future.

A case study: the Polytechnic University of Cartagena Campus

The city of Cartagena in Spain, founded by the Carthaginians in 227 BC and later conquered by Rome, has been a key military fortress, naval, mining and industrial center. Located by the Mediterranean Sea, since the mid-20th century, cultural and beach tourism has gained importance. Specialized education emerged in the 19th century to meet the needs of mining (1865), industry (1901) and business (1921). After several temporary locations, in 1972, a permanent headquarters was established on a 21,000 m² plot of land next to the Paseo de Alfonso XIII.

In 1998, the Polytechnic University of Cartagena (UPCT) was created. The master plan, designed by Utoplan-Pablo Campos in 1999, proposed a university fully integrated into the city, taking advantage of several historic buildings -former military or civic facilities in disuse- deeply rooted in the urban memory of Cartagena, which were retrofitted to house academic functions. This intervention served to regenerate the historic center, creating accessible spaces, connected to the urban fabric and -visually- open to the Mediterranean, improving pedestrian mobility and the quality of the environment. Building on an inclusive planning approach, public spaces were designed to ensure universal accessibility. This way, the university's new open spaces and roads helped to reduce the

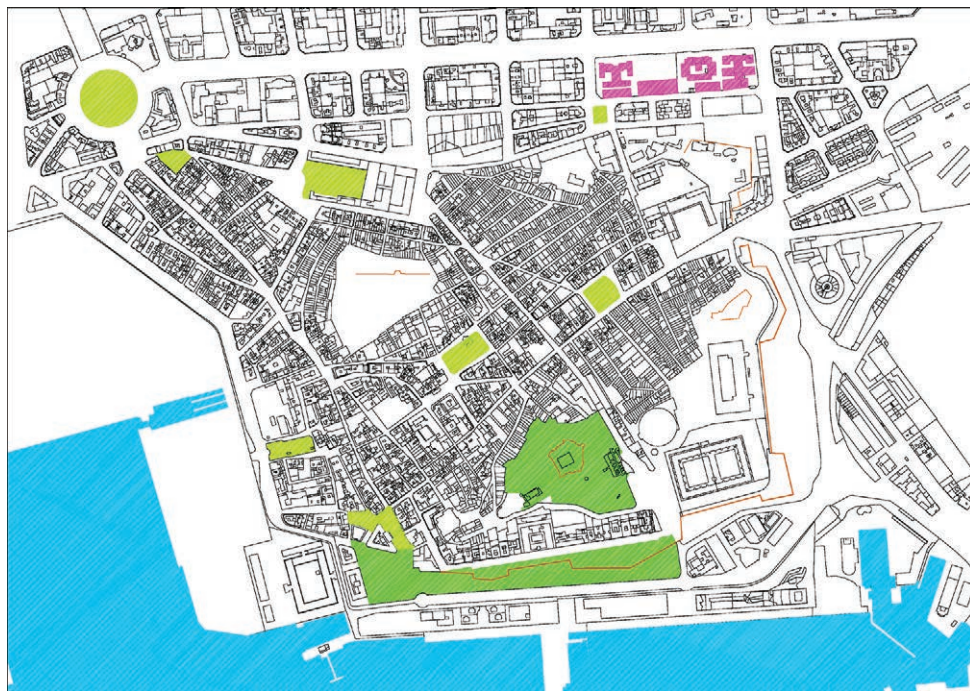
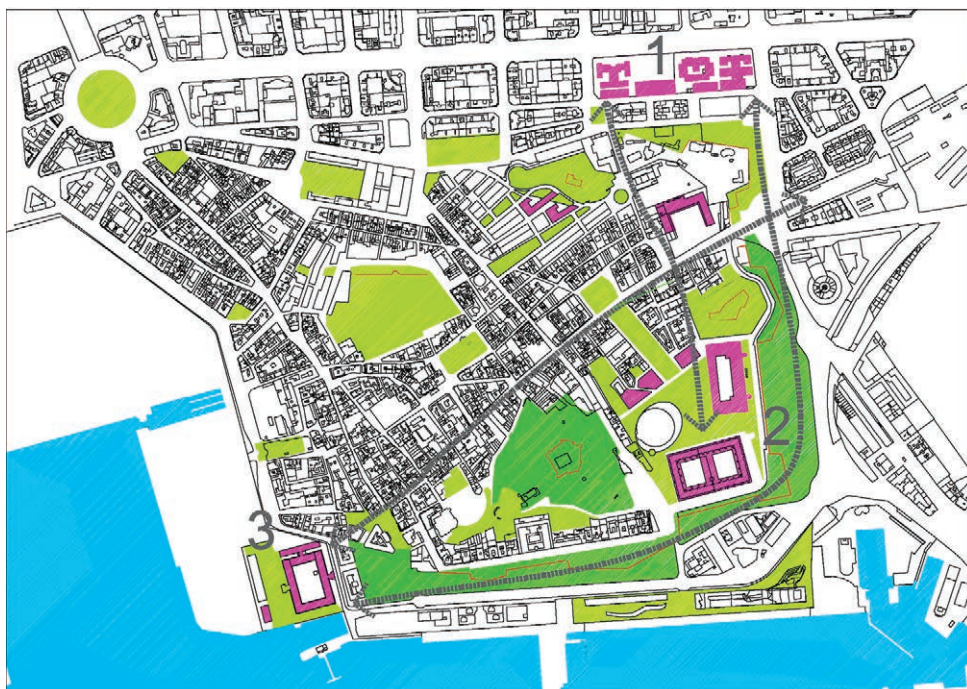


Figure 1 -
*Historic Center
of Cartagena.
State before
the Plan
Especial de
Ordenación
y Protección
del Conjun-
to Histórico.
Buildings used
for education
are coloured
in pink. Local
public spaces
are coloured
in light green,
and city-wide
public spaces
are coloured
in dark green.*

city's previous shortcomings and enhanced pedestrian mobility⁸.

The integration of the UPCT aimed to encourage social and generational diversity through a polycentric scheme, with initially two, and later three, teaching nuclei; one on the outer edge, and the other two on the inner edge, of the historic center, with the Rectorate standing approx. in the middle of the two main nuclei, slightly displaced east from the historical city center. Due to the reduced dimension of the old town, this distribution implied approx. one km on each side, encouraging pedestrian movement of the university community through the rest of the city, with culture as a connecting link. In addition, the opening of the campus has promoted cultural and recreational programs, strengthening the relationship between the university and the city, while many students required facilities (recreational, shops, copies, etc...) locate intermingled through the urban fabric.

⁸ The revision of the Master Plan in 2010 by the Martin Lejarraga studio, author of several interesting university building remodeling projects, greatly continues the first Master Plan, with some greater emphasis on university identity and promoting active mobility.



On the other hand, integration of the university into the city implies any urban transformation impacts the university. Actions such as: the creation of a park around the wall of Carlos III, which is widely used by the university community but also in municipal celebrations; a peripheral ring for pedestrians and cyclists around the historic center; and the enhancement of the five hills of Cartagena (Cerro del Molinete, Cerro de la Concepción, Monte Sacro, Cerro de San José, and Cerro de Despeñaperros), are strengthening the network of public spaces and local identity. The interconnection of these accessible spaces is shaping an urban network based on proximity, approaching the 15MC concept.

Additionally, at the city level sustainable mobility has been promoted by reducing motorized traffic within the old town through a superblocks inspired design (RE-ALLocate) and promoting active transportation, also by shading the public space with textile elements inspired by the historical heritage (Tesserae), contributing to environmental quality and urban integration.

The result is that the urban ensemble formed by the city-university approaches the 15-Minute City, paradigm, achieving that residents

Figure 2 -
Historic Center
of Cartagena.
Expected future
state. The
2000 UPCT
Master Plan
encouraged
a north-south
axis, connect-
ing the old
Alfonso XIII
Campus (1)
with a new
Muralla del
Mar campus
(2). Later, the
CIM building
was incorpor-
ated forming
thus a third
mini-campus
(3) next to the
Arsenal, ge-
nerating some
polycentrism.
Noteworthy,
this last
building houses
university and
non-university
use.

can access essential services -education, culture, green spaces and leisure- within 15 minutes on foot or by bicycle, to a much greater extent than if either of the two were analyzed as if they were independent units.

This example of integrating the university into the city shows how architecture and planning can address contemporary challenges of sustainability, proximity and inclusion⁹, generating a symbiosis in which the spaces and facilities of the university and the city complement each other, and that through appropriate urban design, the university can be a key agent in the construction of the 15-Minute City.

Conclusions

Historically, university campuses have undergone various transformations - from secluded monastic origins to peripheral “island” campuses - reflecting shifting paradigms in urban and educational planning. In the 21st century, in European countries this trajectory is increasingly moving towards reintegration within the city, a movement that is supported from a variety of perspectives. In this context, the application to both the city and university of the 15-Minute City model is proposed.

From this perspective, the case of the Polytechnic University of Cartagena (UPCT) illustrates the important potential of the 15-Minute City (15MC) model when applied to university campuses, both as physical spaces and as social institutions integrated into the urban fabric. The 1999 Master Plan for the UPCT campus anticipated many of the principles of 15MC. The project’s goals - to enhance walkability, ensure functional diversity, recover historical infrastructure, and foster socio-spatial integration - demonstrate a deliberate orientation towards proximity and human-scale urbanism.

⁹ However, the renovation of the center has also been criticized because it has led to the displacement of many vulnerable inhabitants (Guiard, 2021), and because improvements to the public space have been concentrated in the area around the main street (west part of the city), where most historical buildings are located and higher income inhabitants reside (García et al., 2022), orienting the city towards cruise ship tourism, which, however, has allowed to reactivate local economic activity after the crisis of the industrial model at the end of the twentieth century.

The campus is no longer conceived as an isolated enclave for academic elites but as a multifunctional space accessible to all urban users. The implementation of public green spaces, pedestrian circuits, and adaptive reuse strategies has created synergies between academic and non-academic communities. Moreover, by restoring and reactivating emblematic sites within Cartagena's historic core, creating a link with the sea, and accommodating some non-academic uses in its buildings, the university not only preserves the architectural and urban heritage but also contributes to the city's urban metabolism, strengthening cultural identity and public life.

The case of the UPCT shows the potential of locating the university in the city center, as a catalyst for neighborhood regeneration and urban sustainability. Noteworthy, its recent creation in 1998 with a development process interrupted by the 2008 recession means its implementation process is still incomplete. It is in this sense that the study of the new transformations, some of them pending, such as the action on the bullring-Roman amphitheater and adjacent area, through the 15MUC model, can also serve to optimize the result, both for the university and for the city.

More broadly, the example reviewed shows that universities can play a central role in fostering resilient and multifunctional urban systems. They act as nodes of knowledge production and social interaction, support the emergence of dynamic public realms, and contribute to the creation of compact and livable neighborhoods. In this context, the 15-minute city model offers a compelling framework not only for improving the accessibility and environmental performance of university campuses but also for redefining their civic mission in the 21st century, pointing toward a new integrated vision of urban and academic life.

To fully realize this vision, universities and local governments must continue to engage in co-governance processes that involve a wide range of stakeholders. Planning regulations must be restructured to allow functional hybridity and adaptive reuse, and financial models should support shared maintenance of public assets. Only through such collaborative frameworks can the 15-Minute University-City become a replicable and scalable model of sustainable urban transformation.

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University Spaces in Transition: Speculations, Crises, and Deterritorialization

*Aslı Alanlı**

Introduction

For nearly two centuries, the term “university” has occupied the agendas of numerous disciplines, ranging from sociology and philosophy to education and architecture. The problematic nature of university space, which is inextricably linked with its open public spaces, forms the central focus of this paper. University space, analyzed through diverse perspectives, finds itself in a contentious position which has been evident in discussions and speculations over the last 30 years. However, the problematic nature of university spaces has remained relevant even after the pandemic. The ongoing challenges and transformations of these spaces serve as evidence of this issue, and today, the evolution of university open public spaces continues to shape and redefine spatial practices.

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The speculations of today

In many recent sources, the impact of the pandemic on the university space is heavily present through predictions and visions (Pedro-Caraña, 2020; Peters *et al.*, 2020; Amistadi, Bradecki and Uherek-Bradecka, 2022; Beheiry, Shafik and Aboubakr, 2022). The body of discussion, which was already at a thought-provoking intensity before, has evolved into a situation where the fundamental purpose of the university space is examined (Peters *et al.*, 2020). It is questioned that “Has COVID-19 killed the campus?” (Deshmukh, 2021). It is indicated that new university design perspectives are needed (Deshmukh, 2021). The pandemic has pushed the understanding of the university in the direction of change; how the university would respond to this change¹, would determine the fate of the university in the next decade (Kinchin, 2021). Regarding this change, inquiries about the spaces that are “core” to the campus space have also been put forward. When campus life begins to dissolve with online learning, what is left of the campus space as the core spaces is questioned (Deshmukh, 2021).

In the reports of associations² concerned with higher education and education, the need for “radical transformation” (UNESCO, 2020) is emphasized for the future of campuses. Required transformation often refers to the future presence/absence -dissolution- of the physical space of a university. Even in the pandemic context which have the intensive use of communication technology, UNESCO states that physical space offers a spatiality that cannot be replaced by any options, such as distance or remote education, and will continue to be the central actor of formal education (UNESCO, 2020). On the other hand, the European University Association, in its 2030 forecast, points out that the university campus, in the future, will be a hybrid model including both “physical and digital infrastructure,” where virtual will add value to the physicality of the university

¹ From a post-pandemic perspective, it is indicated that the expansion of the student populace is not inherently indicative of campus development. It has been observed that the campuses that exhibit the highest level of endurance are the “open” campuses that possess the capacity to collaborate, fuse and interchange their spaces and facilities with those within the city (Amistadi, Bradecki and Uherek-Bradecka, 2022).

² In the reports published by YÖK (Higher Education Council in Türkiye) in the pandemic, it is seen that the discourses are not different from those before the pandemic. There are only precautions regarding the pandemic. It is not mostly spatial, it is in the form of a practical guide (YÖK, 2021). In the 2018 strategic plan, there is a section on looking to the future, but the ideas and content are generally at the organizational level (YÖK, 2018).

by being “ubiquitous”, but physical space will remain the core value (Association, 2021). Also, the Observatory of the Magna Carta stimulates the discussions on the future of university spaces over the keyword of sustainability in two webinars entitled “‘What lessons are we learning from Covid 19?’ and ‘Fostering sustainable development: the role of higher education—plans, progress, and values’” (The Observatory of the Magna Carta, 2020b, 2020a). Some point out the future position of the university which is “a serious risk of transitioning towards a post-university context” where some elements of the university would be applicable, however, such a university “would no longer be university”³.

The speculations before the pandemic

While the COVID-19 pandemic has brought the scrutiny of university spaces to the forefront of current discourse, as evidenced by seminars and lectures on topics like “The Future of the University” (Tehrani *et al.*, 2020) and “The Future of Learning” (Sarma, 2020), discussions and research on this matter had already been underway before it. In 1997, Peter Drucker, speculating on thirty years to come, claimed that “the big university campuses will be relics”, emphasizing the impact of technology on university spaces. He asserted that the universities “won’t survive as a residential institution” (Harrison and Hutton, 2014, p. 14). Then, he continued that “today’s buildings are hopelessly unsuited and totally unneeded” (Harrison and Hutton, 2014, p. 14). Jamil Salmi (2005) pointed out that through the Internet, the traditional limitations of time and space are disappearing, and he depicted a future for the university that is blurred in space and time. Also, as mentioned in *The American Interest* in 2012 by Nathan Harden, it is predicted that a digital kingdom will dissolve the traditional campus. “The residential college campus will become largely obsolete” (Coulson, Roberts and Taylor, 2015, p. 116). Harden (2012) emphasizes the mistake made by the universities regarding their attempt to expand their physical space for the future. For him, “buying large swaths of land and erecting vast new buildings is an investment in the past, not the future”. Again, Michel Serres (2015), in 2012, noted that “knowledge⁴ is distributed everywhere, moving freely in a homogeneous and decentered

³ It continues as follows: “(...) education, learning and knowledge are not possible without the cooperation that comes only with face-to-face dialogue” (Pedro-Carañana, 2020).

⁴ The current age is depicted as a shift from knowledge age to interaction age by the utilization of network-based and technological apparatuses (Beheiry, Shafik and Aboubakr, 2022).

space”; so the classes of the past are dead. In 2015, in an article “How technology will affect studies in 2020”(Agarwal and Paucek, 2015), it is implied that the digital revolution threatens on-campus universities by putting forward online learning/courses. Universities “no longer have the exclusive rights on the educational process”; they “have to redefine their role” (López-toribio *et al.*, 2015). They need to frame new design principles according to the changes they have undergone (Staley, 2019).

While some debates, as described above, claim that the university space will disappear completely, some assert that it will not become extinct; it needs to be transformed. For example, APPA Thought Leaders⁵ (2012) treated campus spaces as problematic and published a report in 2012 on the necessity of their transformation. It made some assumptions regarding campus space, such as “space is expensive”, “space is in demand”, “space is underutilized”, “space is poorly measured”, “space is poorly managed”, “space is free”, “space doesn’t work”, “space can’t be ignored”. The striking point here is that space is in great demand on the one hand, and on the other hand, there is no need for space; on the contrary, there are implications regarding the excess of space. Here, the problem is put forward as inadequate knowledge/practice/approach in how to handle space. Similarly, the report makes inferences on the transformation of campus space by implying that the most critical policy to focus on is “space management and utilization” (APPA Thought Leaders, 2012). The report “The Transformation of Campus”, published in 2015, further emphasizes the urgency and necessity of the transformation of campus⁶ (APPA

⁵ “APPA is the association of choice serving educational facilities professionals and their institutions. APPA’s mission is to support excellence with quality leadership and professional management through education, research, and recognition. APPA’s Center for Facilities Research engages in a deliberate search for knowledge critical to policy making in education. CFaR encourages the study of the learning environment, appropriate management strategies, and their impact on education” (APPA Thought Leaders, 2012).

⁶ Andrew Harrison and Les Hutton mention four critical reviews of space management even in 2006 alone. “In 2006 alone, four major reviews of further and higher education space addressed this scarce resource. The Institute of Education in the UK was commissioned by the Space Management Group (SMG) to investigate the impact on space of future changes in higher education (SMG 2006b: 17). JISC (rebadged from Joint Information Systems Committee but still championing digital technology) published a guide to twenty-first-century learning space (JISC 2006). In the US, the director of Educause, Diana Oblinger, published her ground-breaking book *Learning Spaces*, emphasizing ‘the power of built pedagogy (the ability of space to define how one teaches)’ (Oblinger 2006: part 1). In Scotland, the Scottish Funding Council (SFC) commissioned AMA architects and haa designers to identify and carry out a study of learning space types in further and higher education (SFC 2006)” (Harrison and Hutton, 2014, p. 15).

Thought Leaders, 2015). Also, such statements are not comprehended as the signals of the university's extinction. It is believed that the university undergone a period of transformation has begun to influence every bit of the campus rather than abandoning its footprint altogether. Space is expected to be conceptualized regarding "patterns of human interaction rather than specific needs of particular departments, disciplines or technologies" (Harrison and Hutton, 2014, p. 16).

Those who approach the transformation as a necessary step value the physical spatiality of the university. The university's physical spatiality is claimed to be "underconceptualized" (Temple, 2007, p. 29). "The physical environment is perhaps the least understood and the most neglected" (Strange and Banning, 2001, p. 31). University is to become a university "to the extent that we can be there, dwell in it, have a sense of (co) ownership of it and feel agency in relation to it". It comes from "the interactions between university, people and society" (Nørgård and Bengtsen, 2016, p. 5). Campus spaces with all the assets are defined as representations of a "sense of place" belonging to the university and institution (APPA Thought Leaders, 2012).

A Critical Gap: The Under-Theorization of University Spaces

The discussion landscape, which proceeds over mentioned and similar common concerns, refers to the scarcity of research on this subject in the literature of architecture and educational science. For the last 20 years, it has been emphasized by many researchers that this subject -university space/learning space⁷- is an under-researched and under-theorized field (Strange and Banning, 2001; Temple, 2008; Harrison and Hutton, 2014; Boys, 2015; R. Ellis and Goodyear, 2016). Although it is strongly stated that the online learning experience, which includes technology, can never replace the physical learning space, little attention has been given to the value of physical space (R. A. Ellis and Goodyear, 2016). It is argued that the existing literature approaches this issue, the university space, only as space usage management⁸, and it needs a specific theo-

⁷ Although much money is spent on the maintenance of university buildings due to their "practical, emotional and symbolic" role, this subject is still an under-researched topic (R. A. Ellis and Goodyear, 2016).

⁸ In meetings such as the internationally organized "APPA Thought Leaders", which raise concerns about the university, practical issues are more prominent.

retical infrastructure (R. A. Ellis and Goodyear, 2016). Elkington and Bligh note that while there is much research on the impact of technology on educational practice, a similar concern is not valid for learning spaces. The common problems are “teaching-learning, the student experience, institutional management, academic work, system policy, quality, and course design” rather than the learning space itself (Elkington and Bligh, 2019) with open public spaces. Higher education space/university space being under-theorized, which started predominantly with the discourses of Paul Temple in 2008, has been going on for 20 years. During this time, it increases its volume incrementally rather than radically (Elkington and Bligh, 2019).

In parallel with the “silence of literature”⁹, emphasized until 2019, at the beginning of 2020, with the pandemic making online learning compulsory for a certain period, it is possible to observe an increase in the number of research. However, it did not lead to a change of interest in the university space within open public spaces. Still, the rank of physical variables of the university compared to universities’ other issues remained the same (Beheiry, Shafik and Aboubakr, 2022).

Consequently, the primary focus revolves around “said things” such as the current discussions, speculations, concerns, and alarming aspects surrounding the university space. They play a pivotal role in conceptualizing the problematic through the notion of “deterritorialization”. Whether implicit or explicit, these statements shed light on the future university space’s potential survival. The COVID-19 pandemic, which has acted as a possible turning point in recent years, has significantly altered and transformed the landscape of these discussions. However, even before, speculative and questioning discussions concerning university space had become noticeable within the literature, serving as an alarming issue. In this respect, in the face of such intensely visible (even metaphorically vociferous) debates, the “silence of the literature” drives the problematic. Although studies exploring the impact of the pandemic on learning spaces/practices are on the rise, the conceptualization of university space within open public spaces remains insufficient, rendering it an undertheorized domain, thus motivating the present investigation.

This paper addresses this gap by exploring how deterritorialization serves as a conceptual lens for understanding the reconfiguration of univer-

⁹ “[T]he literature is almost silent on how universities can improve the design of the campus” (R. A. Ellis and Goodyear, 2016).

sity spaces. By doing so, it contributes to the under-theorized discourse on university space and highlights the need for a more comprehensive spatial framework that considers the evolving role and significance of open public spaces in fostering engagement, socialization, and learning within university communities.

“Deterritorialization” as a Framework for University Space Transformation

The concept of deterritorialization, originally developed in the context of social and spatial theory, provides a useful lens for analyzing the ongoing transformation of university spaces. It captures not only the displacement and dissolution of physical spaces but also the emergence of hybrid, flexible, and interconnected learning environments that redefine the university’s spatial identity.

At this point, this paper conceptualizes the problematic over the notion of “deterritorialization”¹⁰. All the speculations mentioned are assumed to be the indicators of the deterritorialization of university space. Although deterritorialization is likely a negative meaning corresponding to all operations and processes that disrupt/blur/dissolve spatial boundaries, it is a potential term for reconsidering the university space whose ontological and epistemological ground has been shaken.

Neil Leach associates the discussion on university space that has been going on since 1999 with the concept of “deterritorialization” (Tehrani *et al.*, 2020). “Any process which either destabilizes spatial boundaries or increases internal heterogeneity is considered deterritorializing” (DeLanda, 2006, p. 13). Manuel DeLanda (2006, p. 13) illustrates one of the reasons which causes deterritorialization.

(...) communication technology, ranging from writing and a reliable postal service, to telegraphs, telephones and computers, all of which blur the spatial boundaries of social entities by eliminating the need for copresence: they enable conversations to take place at a distance, allow interpersonal networks to form via regular correspondence, phone calls

¹⁰ “Deterritorialization” as the concept was first introduced by Gilles Deleuze in 1980 in the book “A Thousand Plateaus”. Later, Manuel DeLanda reconsidered this concept referring to Deleuze and made expansions on that concept in 2006 in the book “A New Philosophy of Society”.

or computer communications, and give organizations the means to operate in different countries at the same time.

At this point, communication technology with a technological invention can trigger “deterritorialization.” Another possible reason for deterritorialization is assumed to be the change in daily practices. “Drastic changes in routines” may be resulted in the deterritorialization of spaces (DeLanda, 2006, pp. 98–99). Although deterritorialization is evaluated based on “loss of stability” or identity, it is also an influential concept by bringing “augmentation of capacities” into discussion (DeLanda, 2006, p. 50). For example,

When a young child learns to swim or to ride a bicycle, for example, a new world suddenly opens up for experience, filled with new impressions and ideas. The new skill is deterritorializing to the extent that it allows the child to break with past routine by venturing away from home in a new vehicle, or inhabiting previously forbidden spaces like the ocean (DeLanda, 2006, p. 50).

The child whose daily practice changes and adds new habits to their habits opens new areas for themselves, which arises as an opportunity to use their capacity. For example, the body of a child who has just discovered riding a bicycle is shaped together “with a bicycle, a piece of solid ground and a gravitational field” (DeLanda, 2006, p. 50). New partnerships and new togetherness are somehow formed as a necessity. In this respect, deterritorialization becomes a chance to increase the capacity of an entity.

Concerning this conceptual understanding, university spaces have had to change their daily practices, and they are moving towards adopting new routines to acquire new habits. The deterritorialization of university spaces may provide a chance to use their capacity by rediscovering their tendencies, potentials, and dispositions. That could be uncovered by redefining new associations through a new coexistence instead of abandoning university spaces.

Another element leading to deterritorialization can be a crisis which is put by Hannah Arendt. She depicts “the disappearance of common sense” as a symptom of the crisis. For her, “in every crisis, a piece of the world, something common to us all, is destroyed” (Arendt, 2006). However, such a crisis can be seen as both “destructive and productive” like the processes of deterritorialization. It “dissolve(s) but also reconstitute(s) human

communities”(Raaper and Brown, 2020).

The crisis can be triggered by a momentary event, or it can be a dissolution of the concept that unfolds over time. Here, for the university space, it has worked twofold. There has been both an ongoing dissolution of the university space over 30 years and a shake-up of university space triggered by an event like the Covid-19 pandemic.

In such crises, the old answers to fundamental questions can no longer be given, and it is vital to get rid of prejudices¹¹ and return to these fundamental questions (Arendt, 2006). In line with DeLanda’s statement, a return to these fundamental questions “offers an opportunity to explore and find new structures and forms of engagement” (Raaper and Brown, 2020).

Conclusion

University spaces, whose common sense has been dismantled, have undergone a significant transformation due to ongoing crises, the development of communication technologies, and changing spatial dynamics, and have entered a process of deterritorialization. However, instead of viewing this change as a mere dissolution, this article argues that deterritorialization offers an opportunity to reimagine university spaces. In this context, the study, which offers a framework through the concept of spatial deterritorialization, aims to contribute to the theoretical discussions on university spaces that have not been sufficiently addressed. Future research can examine how deterritorialized university spaces can promote academic participation, social interaction, and urban integration. In addition, the role that open public spaces can play in reshaping learning environments can be evaluated from a critical perspective. As a result, the sustainability of university spaces in the post-pandemic period will depend on their capacity to transform, hybridize, and redefine their spatial identities by adopting a dynamic interaction in open public spaces, rather than abandoning their physical spaces.

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¹¹ When preformed judgments are not overcome and similar responses are given to the preformed questions, the crisis turns into a disaster (Arendt, 2006).

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CAMPUS AND THE CITY: TYPOLOGIES RELATIONSHIPS AND CONNECTIONS

Student housing in Milan: shortages, imbalances, and metropolitan opportunities

*Giacomo Balconi**

Milan as a University City lacking affordable student housing

Milan is currently one of the most prominent university hubs in Europe and the largest in Italy in terms of educational offerings and student enrollment. However, the increasing demand for student housing has exacerbated residential challenges, highlighting the urgent need for policies supporting the Right to Education (DSU). Despite being a center of innovation, culture, and research, the city faces rising living costs and significant housing pressure, which risk limiting university accessibility to a restricted segment of the population. Milan's attractiveness as a university city is reinforced by the high quality of education, a dynamic job market, and a stimulating creative environment (Costarelli, 2023). The city is recognized as a center of excellence at the European level and a national reference point due to the widespread presence of universities across its territory.

Students constitute a significant portion of the housing demand, with many coming from other regions or abroad, requiring accommodation to

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attend universities and Higher Artistic and Musical Education Institutes (AFAM). The city offers a well-structured university system, comprising 15 universities, 27 AFAM institutions, and several Higher Technical Institutes (ITS). The spatial concentration of these institutions within the Municipality of Milan is considerably higher than in other provinces of the Lombardy Region, which hosts nine universities in the Metropolitan City, two universities in the Province of Varese, two in the Province of Pavia, and one each in Bergamo and Brescia. In addition to university campuses, the regional education system includes a secondary structure of institutions with lower student volumes, namely the AFAM institutions. These institutions account for a significant share of the overall student population, enrolling approximately 20,000 students, of whom 16,000 are concentrated in the metropolitan area, along with around 300 international students.

Lombardy hosts fifteen universities, fourteen of which offer in-person courses and one that operates exclusively online. The total number of students enrolled in Lombard universities is estimated at approximately 380,000.

Finally, another essential component of the education system is the presence of ITS (Higher Technical Institutes), which are post-secondary vocational schools offering highly specialized training. Despite their relevance to the business ecosystem, for the purposes of this study, ITS institutions are not considered, as their student base is predominantly local. According to estimates, the Lombardy Region has a total of 20 ITS institutions, distributed geographically in a pattern similar to AFAM and universities, with a total of approximately 3,600 students enrolled in 2023. The vast majority of these students reside in the same municipality as their institute (MUR, 2023). This implies that their mobility rates and out-of-region student presence are nearly negligible, meaning they do not generate significant local housing demand.

Through an initial survey conducted in collaboration with the statistical offices of individual universities in Lombardy, it was possible to extract disaggregated data by province, region, and degree program, relating to the total number of students enrolled in different institutions, thereby configuring a sort of "regional matrix." This matrix assumes a specific definition of non-resident students, referring to "those who choose to study at a university outside their home region."

Based on the acquired data, an "O-D matrix" (Origin-Destination matrix) was constructed, with Lombardy positioned as the destination, while the

remaining Italian regions served as places of origin. This approach made it possible to determine the volume of students enrolled in Lombard universities coming from other regions. To improve data accuracy, a twenty-first “container region” was introduced, which includes all students residing abroad but who nonetheless chose to pursue studies in Lombardy estimated at just over 14,000 students, the majority from Asian countries, followed by European nations (MUR, 2023).

This migration movement sees approximately 76,000 non-resident students in the Milan area alone. The highest mobility is recorded within the Lombardy region itself, where the strong centrality of the capital city stands out, absorbing a large share of regional student movements (Comune di Milano, 2023).

Of particular interest is the historical trend of enrollments in Milan, compiled by the Municipality of Milan based on data from the Ministry of University and Research (MUR), which highlights a significant increase in the international attractiveness of the region’s universities. In less than ten years, between 2002/2003 and 2008/2009, the percentage of international students choosing to study in Lombardy grew by 77%, compared to an initial 2.5%. This demonstrates the investment made by Milanese universities in attracting international students, supported by enhanced educational offerings and new global partnerships (Assolombarda, 2022; Zoboli, 2006).

However, at the same time, the expansion of Milan’s university system has led to a steady increase in the number of non-resident students, which is not supported by an adequate supply of affordable student housing. Data clearly show that, at the European level, Italy currently has one of the lowest percentages of student housing units compared to other university cities (Eurostat, 2021). This structural shortage reflects a lack of investment in student residences, forcing many students to turn to the private rental market at prohibitive costs. The gap between supply and demand has become particularly evident in major university hubs, where market values for rented rooms, studios, and one-bedroom apartments have surged, placing significant pressure on student housing demand (Bruno, 2025). Universities and higher education institutions are working to expand their residential offerings on campus, with a noticeable increase in construction permits. Nevertheless, most new developments are being promoted by the private sector, following market-driven, profit-maximizing logic.

Figure 1a-
The historical series of enrolled students and the ratio with off-campus students enrolled in Milan Universities: the variation between 2012 and 2023 according to data from the Ministry of University and Research (MUR) and the Municipality of Milan.

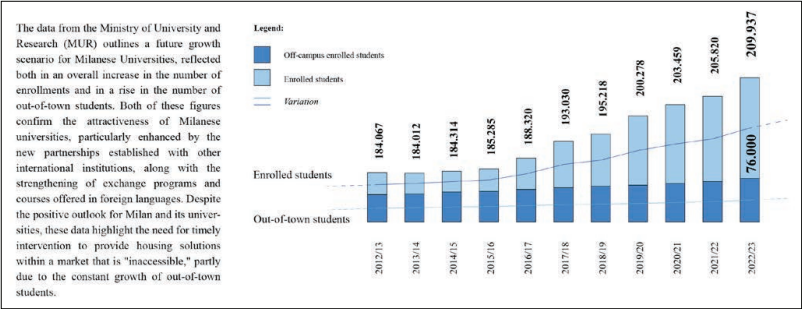
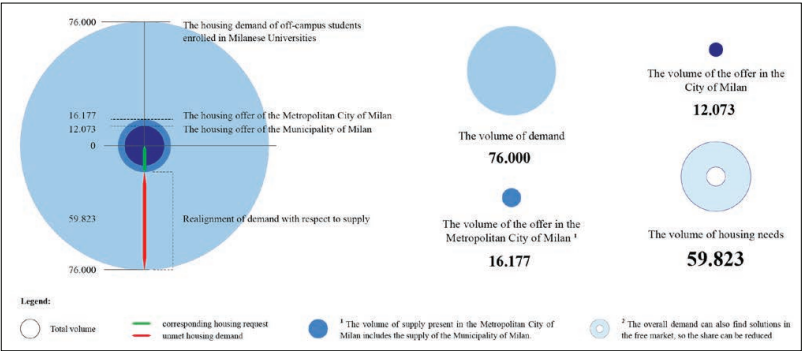


Figure 1b-
The housing demand to be met in terms of beds in relation to the number of students living away from home in Milan



Currently, the total student housing supply within the metropolitan area is just over 16,000 beds, including facilities operated by universities, public entities, private stakeholders, foundations, and diocesan colleges. This supply gap calls for new accessible housing solutions, as even the planned and projected developments will only meet about 20% of the student housing demand in Milan. This percentage is expected to rise if the measures introduced by Mission 4 of the National Recovery and Resilience Plan (PNRR) successfully deliver approximately 60,000 new student beds nationwide by the end of 2026.

This is a critical opportunity, with 960 million euros allocated to the initiative. However, significant limitations exist from its inception. The mission primarily focuses on constructing new student accommodations rather than ensuring affordable housing. It does not impose strict rent caps, apart from a 15% reduction from the average market rate in the area, while only requiring that at least 30% of the units be allocated to DSU (Right to Education Initiatives) (MUR, 2024). Consequently, the student residences built through the PNRR may provide an insufficient number of

affordable units relative to actual needs, potentially excluding students unable to afford “quasi-market” rates.

The infrastructure investments outlined in the plan and those currently under consideration are inadequate in addressing the growing influx of non-resident students, exposing the limitations of a “right to education” increasingly linked to a broader issue: the right to the city and access to affordable housing (Costarelli, 2023).

Towards a new metropolitan housing offer for a more inclusive Milan

The broader metropolitan area represents an opportunity for revitalization across the entire metropolitan territory. The areas identified for enhancement, selected through close dialogue between municipalities representing the local dimension of the issues and the Metropolitan City, which defines its strategic vision, can be integrated into a transformation process aimed at fulfilling, but not limited to, the needs of the central city. Both entities are key to a planning approach that seeks to address emerging challenges and leverage the potential of each territorial context, transforming them into perspectives for territorial rebalancing. In this framework, Milan’s role is complemented by an attractive multipolar system that generates metropolitan-wide opportunities, identifying priority development axes and new territorial centralities to be structured within the Urban Mobility Hubs (LUMs) introduced by the Metropolitan Territorial Plan (PTM) (Città Metropolitana di Milano, 2021; AUDIS, 2021).

Here, the activation of large-scale reconversion, management, and networking programs for spaces dedicated to hospitality, social cohesion, and particularly youth and student housing will help overcome speculative market dynamics in the city center and better meet the growing demand for student accommodations.

To bridge the “distance barrier” between the city center and the hinterland, interventions must be concentrated around high-accessibility transportation nodes in proximity to higher education institutions. Stations and transit stops thus become the primary areas of intervention, with public transportation serving as an infrastructural extension that reconnects Milan with its broader urban region, fostering synergistic growth. The metropolitan area provides its surrounding territory, characterized by a vast inventory of decommissioned and underutilized spaces, which through the introduction of new forms of affordable youth housing could

reactivate local communities by generating new economic revenues (Città Metropolitana di Milano, 2023b). This approach is significantly more viable and achievable compared to Milan, where areas that could potentially be redeveloped for housing purposes follow market dynamics that are unsustainable for the public sector. Here, services, multifunctional gathering spaces, and activities tailored to the needs of young people and out-of-town students could trigger revitalization processes in these areas, which, although distant from the city center, offer high accessibility due to integrated and efficient mobility solutions supported by existing railway and metro lines (structural transit backbones). These core transit corridors are complemented by first-mile and last-mile mobility solutions, which are being implemented through Municipal Sustainable Urban Mobility Plans (PUMS).

Thus, if the concept of urban proximity were extended to include rapid transit options such as the S-line railway system and Milan's metro (MM lines) as an extension of traditional walking and cycling methods, then proximity would no longer be restricted to short distances, but instead expanded to a much broader territorial scale, bridging the geographical gap between hinterland municipalities and the central city (Staricco & Brovarone, 2021). These areas, in order to maintain their attractiveness for talent, investment, and innovation, must adopt an inclusive and sustainable growth approach, supported by strong public governance across multiple levels. The Right to Education (DSU) must therefore be accompanied by the right to housing, ensuring that Milan remains an accessible hub of academic excellence (Costarelli, 2023).

For this initiative to materialize, the new metropolitan vision is launched within the Metropolitan Thematic Territorial Strategy 2 (STTM2), introducing the Urban Mobility Hubs (LUMs). These define a new strategic horizon for the Metropolitan City of Milan, directing action towards a broader territory capable of establishing new sustainable connections through public transport, within a coordinated planning framework. This initiative integrates opportunities arising from decommissioned urban areas around the LUMs, presenting prospects for the development of new student accommodations. However, not all LUMs can be incorporated into metropolitan strategies, nor are they all suitable for student housing. For this reason, the PTM identifies only a subset of nodes as the most suitable for fulfilling STTM2 objectives (Città Metropolitana di Milano, 2022).

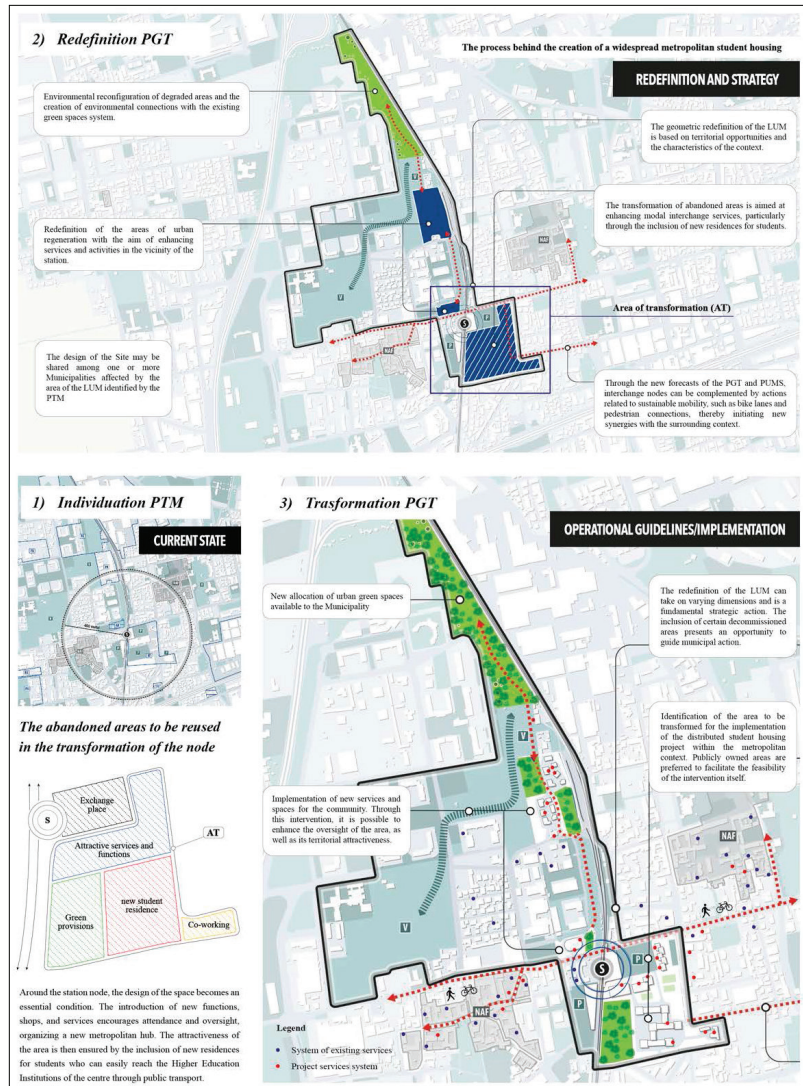
The selection of appropriate locations to host distributed student housing within the metropolitan area follows various criteria, designed to pri-

oritize large-scale interventions and focus resources efficiently. The key considerations include:

- I. **User Base and Strategic Functionality:** A thorough understanding of the user base is essential for optimizing resource allocation and mobility development, ensuring that interventions benefit not only students residing near metropolitan nodes but also those commuting daily, thereby serving a broader community function and facilitating exchanges with the city center. Additionally, integrating student housing in densely populated areas offers locational advantages, leveraging existing services and vibrant urban environments, preventing the residences from becoming isolated dormitory complexes.
- II. **Infrastructure System and Transit Frequency:** The metropolitan infrastructure network is the foundation of Milan's polycentric urban model, with LUMs serving as anchors along major transit corridors. Metro lines offer faster connections, while rail lines operate at lower speeds but higher capacity. High-frequency transit service is crucial to reducing student commuting times.
- III. **Morphological and Functional Context:** A targeted planning approach allows interventions to be adapted based on the specific characteristics of each location, prioritizing strategies for different areas depending on their existing functions. Urban and residential contexts provide established services and infrastructure, making them ideal for integrating student housing into a well-connected urban fabric.
- IV. **Service Ecosystem and Social Synergies:** A structured network of essential services is critical to ensuring livability and attractiveness. The interaction between students and local communities can generate positive economic spillovers and foster a vibrant metropolitan social fabric.
- V. **Transformation Potential of Transit Hubs:** Transport interchanges offer strategic locations for new student residences, facilitating sustainable urban regeneration through the adaptive reuse of public-owned decommissioned properties, which are currently in a state of stagnation (Paris, 2021).

Considering the specific characteristics of each location, it is possible to outline key action guidelines. The northern part of the Metropolitan City of Milan exhibits greater urban continuity, and a denser public transport network compared to other territorial quadrants, with densely populated municipalities offering a high mix of services. Additionally, this area presents opportunities for the development of new student residences, given the availability of medium- and large-scale decommissioned areas,

Figure 2 -
The process of
identification,
redefinition of
the geometry,
and the
operational
guidelines of a
LUM.



connections to local public transport, and proximity to Milan's northern university hubs.

The integration of student residences within metropolitan LUMs aims to rebalance Milan's housing supply, while also promoting a more equitable polycentric development model capable of mitigating housing pressure and activating the regeneration of peripheral areas. It thus emerges as an intervention capable of revitalizing urban fabrics, fostering synergy between the student community and the urban environment through the

creation of shared spaces and services accessible to the public. Libraries, study halls, cultural centers, recreational areas, and green spaces can become places of exchange and interaction, encouraging student engagement in neighborhood life and strengthening social ties with local communities. Integration with the public transport system and proximity to academic hubs are complemented by a broader offering of cultural, social, and recreational services, transforming these student residences into catalysts for widespread urban regeneration at the metropolitan scale. In this way, housing interventions not only address a functional need but also contribute to the construction of a more equitable, dynamic, and participatory city, where the very structure itself becomes a place of gathering and interaction for both students and residents (Del Nord, Baratta, Piferi, 2016).

The conducted analysis highlights how mobility-oriented territorial planning and urban regeneration strategies can serve as effective solutions to student housing challenges, ultimately enhancing the overall quality of urban life. The selection of LUMs not only ensures an immediate response to student housing needs but also contributes to transforming Milan into a more inclusive, accessible, and sustainable urban region within an integrated metropolitan development framework. The new structure developed through highly accessible metropolitan locations can be framed within a three-dimensional process, starting with:

- I. Identification: This phase outlines the process by which the Metropolitan Authority identifies key stations and stops crucial for developing a polycentric territorial model, enhancing intermodal transport exchange functions and implementing public services. Not all stations and stops are included.
- II. Redefinition: Following identification, this phase constitutes a second hierarchical level. Here, municipalities redefine the function of LUMs based on regulatory prescriptions from the Implementation Technical Norms (NTA) of the PTM, the PTM itself, and the metropolitan PUMS (Sustainable Urban Mobility Plan). Municipal districts that host a Urban Mobility Hub integrate its definition into local urban planning tools (PUMS and PGTs), shaping the geometric configuration of the node within the territorial fabric. This perimeter serves to determine the inclusion or exclusion of areas for metropolitan planning directives and municipal strategies, ensuring that urban regeneration and transformation areas are effectively incorporated to enable the development of new student housing quotas.
- III. Transformation: The final stage represents the operational and implementation phase. The spaces, areas, and buildings within the

designated perimeter contribute to shaping the LUM's vision. The primary focus includes student housing integration, urban greenery expansion, intermodal mobility connections, and the introduction of mixed-use services. The transformation process marks the culmination of this approach, to be illustrated through sample case studies (non-realistic) that will aid in understanding the actions required for each location. This transformation effort primarily targets publicly owned decommissioned areas to facilitate implementation feasibility, ultimately enhancing the value of the affected urban contexts.

Finally, the diffused student housing model requires strong national and European support through funding programs and grants to simplify the development of a significant student housing supply. The PNRR and European funding programs represent key opportunities to support this initiative. The concept of diffused student housing within LUMs equipped with specific characteristics is undoubtedly a viable strategy for identifying functional areas to meet initial housing demand. Although constrained by financial limitations and tight PNRR deadlines, this approach enables a partial and limited intervention, which can serve as a starting point for large-scale replicability, generating widespread benefits and positive spillovers across the entire metropolitan region.

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- *This paper is based on the contributions of the thesis "The Emergence of Student Housing in the Milanese University System. Strategies and Guidelines for an Initial Metropolitan Housing Response in the Urban Mobility Hubs (LUM)" by Giacomo Balconi (Politecnico di Milano, 2024).*

Covilhã: from industrial town to a university campus

*Ana Bordalo**,
*Ana Paula Rainha***

Introduction

When we think about university campus, naturally, we are transported to the large European and American universities ambiances, with big buildings infrastructures and large green areas. This paper presents a succinct historical framework about this concept, in Europe and north American universities, and, as a counterpoint, the case of University of Beira Interior (UBI) which, in an existing urban structure, in Covilhã - in its abandoned industrial park - transformed the city in a University Campus.

This paper does not pretend to present the urban evolution of Covilhã, neither the context about its industrialization and, later, its deindustrialisation. It intends to bring a different way how a campus was created, that became the soul of the city¹.

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¹ The history of pre-modern European universities in a nutshell | CEPR

Historical environment – The European and the American context

The concept of university campus evolved significantly since the establishment of the first European universities in the Middle Age. This evolution reflects cultural, social, economic and educational changes. While European and American universities share common academic goals, their physical manifestations and organizational structures developed into different paths, resulting in distinct campus models.

The European University tradition dates from the 11th century, with the University of Bologna (founded in 1088) considered the first University in the western world. However, the exact date of its foundation is discussed by some researchers as being back to 1088, while others suggested that the University had truly functioned (as a university) until the 1150 or even 1180. Following Bologna, the University of Paris, established between 1150 and 1170, became another significant institution in the development of the European university model¹.

The middle age European universities were clearly different from the modern campus. These institutions were often integrated into the urban structures of the cities. The typical organization consisted of a collection of buildings scattered throughout the town, with students and faculties living and working close to the local population. The main features of medieval universities included: colleges, residential communities for students and faculties, lecture halls and spaces - often rented within the city – like libraries, usually with small collections of manuscripts and churches, fundamental to the university life, often used for ceremonies.

Universities were deeply connected with their urban environments, creating a unique academic atmosphere within the existing city. During the Renaissance, European universities experienced significant changes, both in their physical structure and academic focus. In an innovation architectural point of view, the Renaissance period brought a renewed interest in classical architecture, which also influenced university buildings. These notable developments included: enclosed courtyards surrounded by buildings, inspired by monastic cloisters, new building for lectures, and more specialized spaces for teaching and expanded libraries - to keep the collections of printed books².

² The history of pre-modern European universities in a nutshell | CEPR

During the last centuries, the European Universities campus model evolved gradually, influenced by various factors, including historical traditions, urban planning and changing educational philosophies. Many European universities maintain their historical connection with the city centres. This integration is characterized by dispersed buildings throughout the city, the using of historical structures and limited green spaces³.

In the first decade of the 20th century, the Staatliches Bauhaus School, (1919), in the Weimar Republic, major expression of modernism, became known for its avant-garde methods, not only in terms of teaching, but also by its buildings and facilities, known by being built by the teachers themselves⁴. Under the direction of Walter Gropius, the Bauhaus would implement completely new concepts in teaching arts and architecture, which would be implemented later in various parts of the world, from Russia to the United States. The buildings themselves suggested the new paradigm associated with the new pedagogies and methodologies.

The second post-war period assisted to significant changes in European Education, like the expansion of higher education systems, the construction of new built campus and the inevitable influence of Modern Architecture. As an example, the first university campus in Great Britain were not established until the late 40's, with the University of Reading moving to Whiteknights campus in 1947, and the University of Keele being established on the Keele Hall estate in 1949⁵.

The American university campus developed a different trajectory, influenced by its historical and cultural context. The history of American campus began in 1636 with the foundation of Harvard College⁶. Early colonial colleges were modelled after English and Scottish institutions but gradually developed their own distinct characteristics. The early American campus included: single buildings, expanded into multiple structures; blocks, an influence from enclosed English courtyards; and emphasis on green spaces and landscaping⁷.

³ In the Waldorf model (1919), teachers also built their own houses in the enclosure of the campus.

⁴ <https://www.reading.ac.uk>

⁵ <https://www.keele.ac.uk>

⁶ <https://www.harvard.edu>

⁷ <https://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0223415>

The 19th century assisted to a significant growth and innovation in American campus design: introduction of the “mall” model at the University of North Carolina; the adoption of gothic architecture, as seen at Kenyon College⁸; and the emergence of professional campus architects.

The contemporary American universities campus, in general, are characterized by its extensive, self-contained areas, comprehensive facilities, including dormitories, dining halls and recreational spaces, emphasising on creating a complete living and learning environment⁹.

The difference between European and American universities campus reflects cultural and historical distinctions, including their architectural and urban layout. The European campus, often, are integrated into urban environments, have dispersed buildings throughout the cites and use their historical buildings. On the other hand, the American are more contained and expansive, with new buildings for specific facilities, green spaces and landscaping.

The urban characteristics of the campus, in the conventional cities, influence the lifestyle of the students. In generally, in European ones, often limited to campus housing, provide fewer services and encourage the integration into the community. The American universities usually provide extensive campus housing, with services – like gyms, dining halls, among others - and create a more insular concept.

The European model presents, as advantages, the promotion of a sense of independence and reliance in their students. Encourages integration with the community, often more affordable, and preserves historical architecture and urban landscapes. As disadvantages, it is possible to identify limited campus housing and facilities, fewer opportunities for social interactions and, eventually, a less cohesive student community (yet this approach could be non-consensual). The American model, as advantages, promotes a comprehensive living and learning environment, offers extensive facilities and resources, as well as a strong sense of community (“school spirit”) and supports a wide range of extracurricular activities. As disadvantages, can create a “bubble”, separate from the local city.

It is easy to understand these differences between European and American campus if we consider the growth of cities models themselves, as well as their own genesis. In Europe the urban fabric developed in a more

⁸ <https://sah-archipedia.org/buildings/OH-01-083-0029>

⁹ <https://sah-archipedia.org/buildings/OH-01-083-0029>

concentrated way, most of them from the old medieval centres, while in the United States, a more dispersed development allowed the campus models, like we know them.

The Covilhã case: from industrial town to a university campus

The city and its symbiotic with Beira Interior University

Covilhã is part of the TRANSLANA Wool Road, that is an identified itinerary, and characterizes a sector that preserves all its authenticity, to allow its integration into a European Cultural Itinerary. From a historical point of view, this road was travelled by the merchants who transported the washed wool to the factories of the city.

The route defined as the Wool -TRANSLANA Road is developed in the peninsular territory, in the NNW-SSE direction, in a cross-border area that connects the territory of Beira interior of Portugal and the Spanish Extremadura. In Portugal, the itinerary of the wool road has a length of about 120km, between the city of Covilhã and the bridge of Segura, on the border of Spain. The itinerary begins in the city of Covilhã, in the hills of Serra da Estrela, the origin of the road and arrival of the wool, from different origins, as well as the historic centre of Portuguese wool. The practice of transhumance has taken particular importance, due to the number of cattle involved, and due to the historical and socio-economic importance of this activity, that involves all the dynamic related with cattle breeders¹⁰.

During the 1970s Covilhã faced an industrial crisis, and its textile factories began to close, causing severe economic and social consequences. It was in this challenging context that the idea of establishing a higher education institution in the region emerged. In 1973, the Polytechnic Institute of Covilhã (IPC) was founded, marking the beginning of what would become the University of Beira Interior - UBI¹¹.

The University played a crucial role in repurposing abandoned industrial buildings. The university campus is integrated into the city's urban centre,

¹⁰ Pinheiro, Elisa Caldo (coord.) (2008). Rota da Lã Tanslada. Museu dos Lanifícios Universidade da Beira Interior ed.

¹¹ <https://www.crup.pt/universidade-da-beira-interior>

with former textile factories converted into modern educational facilities. As the textile industry declined, the University became a major element of Covilhã's economy, attracting students and researchers, and contributed to a cultural revival of the city - with events, museums, and research centres.

The impact in the city was clear. The University attracted young people to the city, contradicting the decline of population in the inner regions of Portugal. The city was transformed in an Innovation Hub, focused on research and innovation, transforming Covilhã in a centre for technological advancements, particularly in areas like aeronautical, engineering and computer science, among others.

Nowadays, Covilhã and UBI continue growing together. The city, once known for its wool, is now recognized as a "City of Knowledge". As UBI expands its academic offerings and research capabilities, Covilhã is being transformed into a modern, sustainable urban campus (city), that honours its industrial heritage, while embracing a future to education and innovation. The story of Covilhã and UBI exemplifies how a university can be a catalyst element for urban regeneration and economic diversification, breathing new life into a city with a proud industrial past.

The evolution of the Covilhã Campus

If we consider that a university campus functions as a small city/community, we can apply the same principles and concerns that affect city models and urban design.

The tendency is -for a functional matter, in the true sense of the word, but also in the theoretical sense of the rationalist principles, which we immediately associate with the Modern Movement - to apply the mono-functional principles of "zoning", with well-defined and differentiated functions, without mixing leisure, work, or sleep. But, if this has given, and continues to give, so much controversy and contestation, in terms of the city's production, the same can be applied to the planning and design of university campus.

The University has contributed significantly to the rehabilitation of the built heritage in the city. Over the years, UBI has expanded to different areas, creating several hubs: Polo I, located at the southern entrance to Covilhã, next to Ribeira da Goldra; Polo II, (1990s), in the north of the city, close to Ribeira da Carpinteira; Polo III, (2007), the Faculty of Health Sciences. The transformation of Covilhã from a factory town to a univer-

sity campus reflects the deep impact that UBI had on the region¹². The University not only appropriated itself of the physical space of the city, but also became a structural part of its identity and a driving force behind its development¹³. These process represents about 50% of the total area of the city's industrial heritage (fig.1), which began in 1975 when Polytechnic Institute of Covilhã promoted the rehabilitation of the former *Real Fábrica dos Panos*¹⁴ (Royal Cloth Factory), a project of Architect Bartolomeu Costa Cabral (1929-2024), which corresponds to what is mentioned above as Polo I – which later expanded through the rehabilitation of other abandoned industrial buildings¹⁵. As an example we can refer the rehabilitation of the old factory *Ernesto Cruz*, converted in the Faculty of Social Sciences and Humanities and other industrial complexes along the rivers of *De Goldra* and *Carpinteira*.

One of the most emblematic buildings in this process of reconversion of the old heritage of Covilhã is the main library, in Polo I, designed by the architect Bartolomeu Costa Cabral. Built in 2001, it occupies what was an old palace from the 19th century, as well as the Wool Museum, designed by the same architect.

This strategy of rehabilitation and reuse makes of UBI a singular case in Portugal, contributing to the substantially and to the regeneration of previously abandoned areas in Covilhã. The university has taken a unique approach by establishing its facilities in former industrial buildings, mainly abandoned textile factories. This not only preserved the city's rich industrial heritage, but also bring a new life into structures that otherwise may had fallen, creating new spaces for living and activity.

The presence of UBI has been crucial in attracting and retaining young people in the region, “versus” the exodus and population aging. Nowadays, the University has approximately 9, 000 students, of which around 1, 700 are international students from 50 different countries¹⁶. This di-

¹² https://www.ubi.pt/ficheiros/pdf/conteudos/livro_ubi.pdf

¹³ <https://www.ubi.pt/Pagina/Sociedade>

¹⁴ Built in 1764, ordered by Marquês de Pombal. Currently corresponds to the first nucleus of the wool museum of UBI.

¹⁵ Brito, Joana (2012) Dissertação de Mestrado Integrado em Arquitectura “A cidade industrial – Renovação e reabilitação de identidade. Caso de estudo: “Tinturaria Petrucci”. Orientação João C. G. Lanzinha, Coorientação Miguel Santiago, Universidade da Beira Interior, Covilhã, Portugal

¹⁶ https://www.ubi.pt/Sites/international/en/Pagina/why_ubi

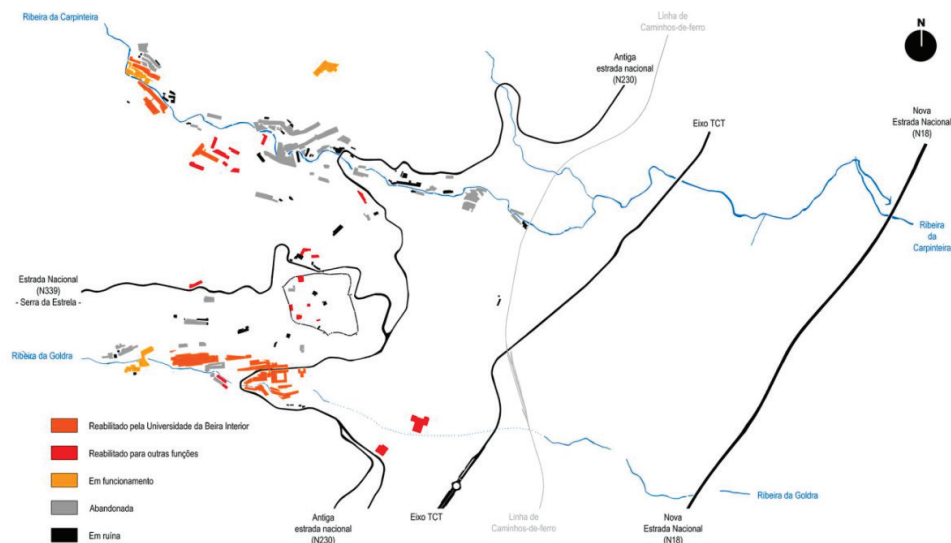


Figure 1 -
Industrial complex in Covilhã - use of buildings and state of conservation
In: Brito, Joana (2012), *Dissertação de Mestrado Integrado em Arquitectura "A cidade industrial - Renovação e reabilitação de identidade. Caso de estudo: "Tinturaria Petrucci". Orientação João C. G. Lanzinha, Co-orientação Miguel Santiago, Universidade da Beira Interior, Covilhã, Portugal*

versity creates a cosmopolitan environment that enriches the academic experience, promoting a variety of cultural and scientific activities that enrich the life of the local community¹⁷.

The fact that the city is located on a hillside, forced the existence of a series of infrastructures, which adapt themselves to its morphology, through walkways, pedestrian bridges and elevators that connect different elevations, which turn Covilhã into a special city in terms of urban landscape¹⁸.

There is no proper place for student residences, nor for the canteens, nor for restaurants, nor leisure bars. Everything proliferates throughout the city in a healthy, diverse, multifunctional intersection, capable of making postmodernist theories of planning and designing the city envious. The University has rehabilitated factories and industrial buildings in several academic buildings of indisputable quality, but not only. The whole city has engaged in a transformation, towards a new logic, necessary for the new structure, in which it, the city, would have a primordial role, without losing authenticity. The image that the city transmits to us is that of a large university campus, not so much for its form, but for this diversity of experiences and functions, where the institutional mixes with the private, the pre-existing with the new, in a permanent up and down, which gives that particular characteristic, which is Covilhã.

¹⁷ <https://www.ubi.pt/Pagina/Sociedade>

¹⁸ One of the most famous bridges (2003/2009) was designed by the architect Carrilho da Graça, 1952, which leaves an unmistakable mark on the urban landscape.

Conclusions

The evolution of universities campus models in Europe and America reflects the distinct historical, cultural, and educational philosophies, with different social, economic and cultural specific characteristics. While European universities have traditionally been integrated into urban environments, emphasizing academic buildings and activities within the existing city structures, American institutions have developed expansive and contained campus. These differences have implications in the students' experiences - community integration and the overall approach to higher education. Lately, the future of universities campus will be shaped by a combination of factors, including technological advancements and changing demographics. Both models, European and American, will need to adapt themselves to face the challenges of the 21st century, while preserving their own strengths and traditions.

By the other hand, the strategy of rehabilitation and reuse makes of UBI a singular case in Portugal, contributing to the substantially and to the regeneration of previously abandoned areas in Covilhã. The university has taken a unique approach by establishing its facilities in former industrial buildings, mainly abandoned textile factories. This not only preserved the city's rich industrial heritage, but also bring a new life into structures that otherwise may had fallen, creating new spaces for living and activity.

The appropriation of the city by the University is more than an act of appropriation of space. It is an act of sharing, of inclusion, of hospitality. The student community allows itself to be welcomed by the locals, in an exchange of cultures, without anyone wanting to dominate the other. The various "milestones" so much talked by Lynch¹⁹, come together with Cullen's surprise effects²⁰. The city is recognized by these academic communities, and even its topography instead of hindering, validates this perception of the city, in a continuous discovery process²¹.

¹⁹ Reference to the 5 elements of Kevin Lynch, in "The Image of the City": paths, nodes, edges, districts and landmarks (1960).

²⁰ Reference to "Townscape" book, by Gordon CULLEN (1961).

²¹ Reference to Jane Jacobs, author of "The Death and Life of Great American Cities" (1961).

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City and University. Relationships, connections and new development opportunities

*Teresa Cilona**

Introduction

Numerous studies recognize cities as a physical place, an economic engine, a hub of networks of social, cultural and political interactions that involve the people who live there, the activities that take place there, the institutions that govern them, and the companies and businesses that generate jobs. But cities are also the set of all those components that contribute to the creation of innovative public places and spaces - indoors or outdoors - that aim at the well-being of the community. In the cities of the globalisation era, higher education and universities are one of the fundamental pillars for the development of society, playing a decisive role as 'complicit' in the production and distribution of knowledge. The presence of the university in cities has a strong impact on the dynamics of social and physical regeneration of settlement systems and for these reasons it is essential to establish a synergic dialogue with all the subjects operating in the territory. In this study the focus is on the University in Agrigento. The city, from the time of the establishment of the University Territorial Polo to today, has invested a lot in terms of social and econom-

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ic capital and has gone through important stages that should be remembered as cornerstones of the growth of the Agrigento area. The survey carried out contains some reflections on the relationship between the city - "Italian Capital of Culture" in 2025 - and the University, in order to propose the *best urban practices* essential to face future challenges and new development opportunities.

The "contamination of ideas": advantages and benefits

In the urban planning debate, we often ask ourselves how universities bring benefits to the population, to the evolution of urban centres, to the creation of areas for sharing and socialising. University "involvement" takes on a fundamental meaning by opening new approaches towards sustainable planning especially in those cities where there is inadequate *governance* and a political class with little *vision*. Extensive literature describes the importance of the university system not only in terms of knowledge and training but also in the city policies of the urban contexts in which it is inserted. In fact, the "contamination of ideas" that is generated thanks to the presence of universities in the territories - indicated as a paradigm shift already in 2015 by the European Commission - allows, through joint relations between local authorities, business organizations, companies, the academic world and citizens, to co-create and guide the changes and the future of cities. In this scenario, the relationship - both physical and functional - between city and university should not be underestimated, paying particular attention to the position of the university headquarters with respect to the inhabited centers (physical function) and to the triggering cultural impact, determined by all those components that influence and affect residences, commerce, leisure facilities, academics or other related activities. Therefore, physical and functional relationships between cities and universities can be used to create innovative, intelligent, healthy, stimulating, attractive environments that improve the quality of life in cities. Usually, university structures present two types of settlements: the "campus" and the "university city". The "campus" is almost self-sufficient, separated from the urban centre, with isolated settlements independent of the housing systems, conceived as a true colony dedicated to training and research. This model, more widespread in the Anglo-Saxon world and in the United States¹, has evolved

¹ In America, in particular, the term "campus" qualifies structures integrated into a single organizational system of educational, residential and service functions, providing for

over the last twenty years into a “green/sustainable university”, or “green campus”². It is an urban-scale laboratory that aims to experiment and disseminate new models of energy and environmental sustainability that translate into new forms of social behaviour. The second model, “university-city”, very widespread in Europe and Italy, has an ancient tradition and is made up of university structures scattered within the historical urban context, as demonstrated by the cases in the United Kingdom (Oxford and Cambridge), in Belgium (Leuven) or in Italy (Bologna, Perugia, Urbino). This model allows students to easily enjoy museums, libraries, archives, as well as the quality of urban spaces. Of course, each model has its strengths and weaknesses. In fact, the almost absolute coincidence of the university with the city has led to some distortions in rental prices, as in the case of the Italian cities of Urbino or Perugia which, in the absence of adequate public policies, has led to a disproportionate increase in the cost of accommodation for out-of-town students. However, in any case, the presence of the University in a city generates positive social and cultural effects as well as a strong economic spin-off: the need for building structures for teaching and research; accommodation for out-of-town students, commercial activities of various kinds, including gastronomy and leisure.

A Sicilian case study: Agrigento towards new “challenges”

The Sicily region boasts the presence of three large state universities - Catania, Messina and Palermo³ - located in prestigious and/or recently

almost all student residence within the campus. The morphological layout is structured, for the most part, in single-function buildings (lodgings, gyms, library) designed for conventional typological models and low-density building structures immersed in greenery, with the distribution of collective services in central areas serving multiple residential structures.

² The case of the university campuses of Bristol (Inghilterra), di Salford (Munchester), di Usek (Kaslik- Beirut).

³ The university citadel of Catania, designed in 1961 by architect Luigi Piccinato, is located on the Santa Sofia hill in the north of the city. It has 106 technical-scientific degree courses, a polyclinic and the university sports centre. The University of Messina, founded in 1548, today has twelve departments located in different areas of the city: “Annunziata” Campus (northern area); “Central” Campus (historical center); “Papardo” Campus (northern area); “Policlinico” Campus (southern area). The University of Palermo has 74 three-year degrees, 70 two-year master's degrees and 9 single-cycle master's degrees, 4 online degrees and 25 study paths in the Territorial Centers (8 in Agrigento, 5 in Caltanissetta and 12 in Trapani).

built historical structures, which can be broadly traced back to the two typological models of “campus” and “university city”, briefly described above. In reality, in all three universities it is possible to find a “third model”, characterised by building complexes located both within the cities themselves and in other more or less consolidated extra-territorial areas, as in the case of the decentralised university centres⁴. Our focus is on the University of Palermo, founded in 1806, and its various locations which do not reflect the tradition of the “campus” and the characteristics of the Anglo-Saxon model due to reasons also connected to the periods in which they were established. In fact, the UNIPA university system, pursuing the ambitious project of creating the University of Western Sicily and the Mediterranean Basin, is developing in several parts, which can be found both in municipal areas and in extra-provincial areas. The Palermo model is made up of a first part, the largest one - whose perimeter extends along via Ernesto Basile, on the southern outskirts of the city, inside the Orleans Park, crossed for its entire length by viale delle Scienze - where the various departments and some of the additional university services are located. The latter, such as guesthouses for teachers and students, places for leisure and sports, are however not sufficient and, probably, it will not be possible to create, even in the short term, accommodation for teachers or students. The second part can be traced back to the “city-university” model, in which some buildings of the historical building heritage, located in the city centre, are used as the headquarters of the departments, for example of Law (in via Maqueda) or Political Science (in via Amico Ugo). This has favoured a better integration between university structures and the urban context, triggering by reflection the recovery of the surrounding environment so much desired by the city government in the Plan for the historic centre. Among all the redevelopment projects, we would like to mention one of the most significant places for the University of Palermo, Piazza Marina, and the restoration of the Steri Chiaramontano, home to the Rector’s offices. These interventions have allowed the area to recover its identity and activate a new social and cultural liveliness. Furthermore, the presence of university buildings in the town centre⁵ has contributed, and contributes, to giving oxygen to traditional commercial activities in precarious conditions of equilibrium, pushing the recovery of dilapidated

⁴ Many Italian universities, encouraged by local administrations and stakeholders, have created decentralized university hubs. The idea is to provide a development tool to disadvantaged territories, bringing the university to these cities.

⁵ We refer in particular to the facilities of the Policlinico in via Alfonso Giordano, to the departments of mathematics, pharmacy, physics, chemistry, earth and marine sciences in via Archirafi.

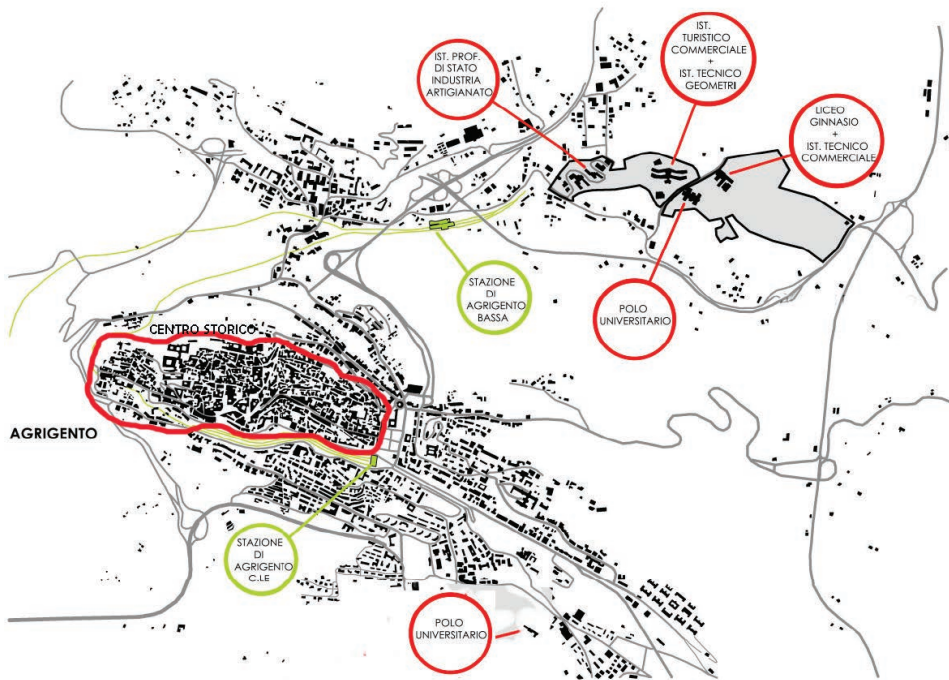


Figure 1 -
Agrigento. City plan with identification of the University Polo locations.

buildings with a consequent increase in real estate value. The third part, extra-territorial, is defined by the building complexes of the decentralized University Territorial Poles of Agrigento, Caltanissetta and Trapani. Our attention is focused on the Agrigento case where the establishment of university structures was never designed as a “campus” or “university city” but was adapted to the places and structures already existing, recording clear critical issues that require a more mature and organic rethinking together with a planned and shared *vision* that takes into account the needs of the community and local resources. Currently, the Agrigento University Territorial Polo is divided into two locations: Villa Genuardi and Via Quarataro - which are distant from each other and from the historic centre (fig. 1), both with insufficient services and equipment for carrying out teaching and research activities - awaiting a third location, with the completion of the restoration project of the former hospital complex of S. Giovanni dei Teutonici, in Via Atenea, right in the city centre⁶. The headquarters of

⁶ The building was purchased by the University of Palermo in 2004. The restoration project includes the creation of classrooms and spaces for teaching. On the first floor, three classrooms will be built, each measuring approximately 70 square meters, two offices and the related toilets; on the second floor, a lecture hall, measuring approximately 140 square meters, two offices, a meeting room and toilets. The construction site was

Villa Genuardi, in via Ugo La Malfa, a prestigious historic building from the late 1700s, within the consolidated city, enjoys a privileged position as it overlooks the archaeological and landscape park of the Valley of the Temples (a UNESCO heritage site since 1997). Over time, the building has changed its use several times. It was originally a country house, then it was purchased by Baron Genuardi and transformed into a villa, later into a hotel. Today it is the headquarters of the Superintendence for Cultural and Environmental Heritage and the University Territorial Polo, where the administrative offices of the Polo and three degree courses are located: Architecture, Economics and Archaeological and Artistic Heritage. The facility, however, lacks additional university services - there is no canteen, study and sports spaces, a press centre, guesthouse, shuttle bus services to the train and bus stations - and this causes inconvenience to the student population and beyond. The other structure, that of in via Quartararo, is located in a peripheral area of the city, in the Calcarelle district, to the north-east of the city centre, poorly served by public transport, difficult to reach due to the orographic and morphological characteristics of the site, characterised by architectural degradation, by a disorderly arrangement of school and university buildings and by the almost total absence of those infrastructures and services that are absolutely essential to support the educational activities of the schools it hosts.

An area that is not very suitable as a university location, with significant differences in altitude that create many difficulties on a daily basis for students, teachers, non-teaching staff and anyone who gravitates there on a daily basis. All these fragilities have been widely studied over the years, both within the teaching activity of urban planning courses and laboratories⁷ and within the scope of a national competition of ideas - specifically announced to resolve these problems - aimed at university students from all over Italy. Through the competition - which saw the synergic collaboration of the city, university and various local stakeholders⁸ - various

inaugurated in 2021, as of February 2025 the works have not yet been completed.

⁷ Teaching activities of the Urban Planning II course and the Urban Planning Laboratory carried out from 2007 to 2017 at the Master's Degree in Architecture in Agrigento and organization of exhibitions of design documents containing analyses and forecasts for the rebirth of the historic centre of Agrigento.

⁸ The national competition of ideas entitled "The Citadel of Studies of Agrigento - urban and architectural redevelopment, roads and services", reserved for university students enrolled in the degree courses in Architecture and Civil Engineering Architecture of Italy, was announced in 2007 by the Specialized Degree Course in Architecture of Agrigento, by the Order of Architects of the Province of Agrigento and sponsored by the University Polo and the Regional Province of Agrigento. General coordinator of the design



design solutions were acquired and donated to the city to redevelop the site, providing it with important services such as a university canteen, a hostel for students, areas for sports and cultural activities, public greenery, street furniture, parking, etc. (fig. 2). Particular attention was paid to the road system, providing solutions to better connect the university site with the city centre and making the area easily accessible from the main road S.S.640. Unfortunately, nothing has changed since the outcome of the competition and, in reality, we are recording the now chronic lack of services and the ever decreasing liveability of the surrounding environments and infrastructures. In this scenario, if Agrigento wants to face new challenges for the future, it must decide with greater awareness on a topic so important for the development of the community and for the regeneration of the urban context. And it can still choose the “city-university” model by placing points of strength and vitality within the historic

Figure 2 -
Proposals for the redevelopment of the Via Quattararo site of the Agrigento University Polo. Winning project of the competition “The Citadel of Studies of Agrigento”¹⁰.

competition prof. arch. Teresa Cilona. On October 16, 2007, the awards ceremony and the inauguration of the exhibition of projects relating to the National Competition of Ideas took place in the “Luca Crescente” lecture hall of the University Polo of Agrigento.

centre, as happened in Palermo or in other Italian cities, where the presence of teachers and students has contributed, and still contributes, to revitalizing the city. The historic centre of Agrigento is a marginal and dilapidated part of the settlement system and can be defined as a “suburb in the centre”. Characterized by the presence of monumental architecture, commercial activities, buildings with important functions of public life, it has a real estate heritage, also of extraordinary architectural quality, in a state of significant degradation and abandonment that certainly deserves to be redeveloped. Several valuable buildings are underused or unused, such as, for example, the former Oblati College or Gioeni Institute⁹ which, if restored, could be a cornerstone of the new cultural system of the city - an ideal place to set up training, museum, research and advanced university teaching activities - thus becoming one of the strong points of the redevelopment of the historic city, also in relation to the extraordinary endowment of cultural, archaeological, artistic assets and archive materials. We must also aim to recover the historic building heritage for residential purposes, including special residences, small hotel structures, residences, homes for the elderly, reception centres, homes for protected categories, guest houses for professors and students. And again, the “Rabato” or “Santa Croce” district, despite the abandonment and depopulation caused by the landslide of 1966, characterized by suggestive and panoramic public spaces, could become the area of university residences, animated by bookshops, service centers, cafes, ateliers, meeting places, gardens, artisan workshops. As well the large green area of the Addolorata Park, northwest of the historic centre, could also be used as a university sports centre or a place for open-air concerts and student socializing. The redevelopment of the historic centre is a fundamental objective to turn the development of the Agrigento area around and to expand the cultural and tourist offer. However, this must not be the project of a few visionaries but of everyone, and the university can certainly contribute a great deal to the realisation of this change as it has a neuralgic role and as an active, dynamic and attractive ‘player’ is capable of strategically generating urban and social renewal.

⁹ The Oblates’ College (or the Forgotten) built between 1730 and 1745 by order of Bishop Gioeni, was born as a hospice for the elderly, a house for spiritual exercises for priests and a training institute for orphans and the poor. The building was abandoned after the landslide of 1966.

¹⁰ Group “AESR3102” - Sarolli Estella, Roveda Alessandra - Faculty of Architecture of Genoa)

Concluding remarks

The development of a territory does not depend only on natural resources or the formation of capital, but on the presence of stakeholders - public and/or private - who make innovative decisions and behaviors, producing economic, social and cultural progress. Among these, universities represent an important part from various points of view: for the presence in the city of students and youth meeting places, for the potential for participation in local life, for the social role that can be played in marginal communities, for the job opportunities offered directly and indirectly, for the impact on the urban identity and image, for the contribution to the redevelopment of abandoned and degraded areas. It is useful here to recall the EU vision according to which urban regeneration is configured as a process aimed at improving the quality of settlements and creating the conditions for sustainable, inclusive growth (EC, 2010), capable of intertwining architectural and urban dynamics with economic development, social integration and environmental protection (Agenda 2030 for Sustainable Development and the 17 SDGs).

In recent decades, the process of urban regeneration that has affected many cities has highlighted how these dynamics act in a decisive manner both on the change of the physical structure and the prospects of social and economic growth of the urban system - in which universities are located - and on the processes of growth of spaces and services within of university seat. The University, therefore, and all the activities connected to it, are a decisive element *"within the urbanized network and assume a determining role in the city, understood not only as a center with a predominantly mercantile-instrumental function, but as a community whose ideal function is to favor a process of circulation and diffusion of culture"*¹¹.

However, a very important aspect must be highlighted: the transformation produced and generated by the presence of the university does not occur automatically or immediately, but it takes time, and often we witness the loss of considerable development opportunities for the city. In this context, the reflection on the Agrigento University Territorial Polo fits in, understood as a "strategic place" from which to start to rethink the relationships with the city and its community and to accelerate the processes of change. To achieve this goal it is necessary to: reduce urban fragmentation, acquire residual areas, strengthen areas dedicated

¹¹ De Carlo, 1968. Pianificazione e disegno delle università. Edizioni universitarie italiane, Venezia.

to research, incubation and business support; develop innovative housing and cooperative models; integrate and increase urban services for leisure, sports and outdoor cultural and recreational activities; plan the joint use of public spaces; strengthen ecosystem networks and urban mobility routes.

In summary, city and universities need to consciously dialogue and interact in order to create new connections and enable new development opportunities.

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Porosity of a hostile border

*Silvia Dalzero**

Porosity of a hostile border

Introduction

The border lands increasingly divided by the granite material of the wall put the question of the “middle space” back at the center, which, at the border, as a caesura, seeks in the project a redemption to return to being a threshold, and to regain the etymological sense of *limes* as an essential condition of the city, or of shared habitability in which the role of the architect becomes crucial in recognizing the spaces that not only respond to the primary needs of living but also favor social and cultural interaction and the formation of a shared identity, be it social-cultural or architectural-territorial.

Starting from the hypothetical, yet evident, thesis that in the years following the fall of the Berlin Wall, walls between states and even within cities themselves have multiplied in the world, in this paper we try to contribute to this line of research through the description of those new

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typologies of shared space that reveal themselves as useful terrains for experimenting and investigating new forms of habitability in which the short circuit generated by the granite division of the border can be resolved, and the space in between can be understood as a socio-cultural reality that opens discussions, favors cooperative processes of planning, production and change of the space that holds together and favors visions for the city of the future, divided and shared at the same time. How to change the perspective on the “space in between” and use it as a means and tool for the creation of knowledge is a theme that is, in this paper, addressed and explored through the concept of “cooperative architecture” capable of rethinking and reactivating that discipline of architectural design that is a social, creative and common practice. For this reason, it is necessary to interpret the border space as a tool to promote new roles and spatial characteristics within the relationship between full and empty spaces, the latter understood as new catalysts in which, through the concept of “cooperative architecture”, a community can become aware of itself and rethink the architectural and urban project as a social and creative practice as demonstrated, for example, by the (UCSD) Cross-Border Community Stations Studio, conducted by architects Teddy Cruz and Fonna Forman on the US-Mexico border between Tijuana and San Diego¹¹In this case, it is precisely the four UCSD stations, coordinated by the University of California San Diego, located in marginalized neighborhoods in the area straddling the border, that recognize themselves as the first relational forms in which people are placed at the center and their social interactions are the basis in the re-foundation of communities, useful for breaking the division imposed by the wall and dynamic architectural combinations with social, economic and cultural practices, ordered to establish relational ways reminiscent of the primordial concept of gathering, typical of the Greek Agora, or meeting place for the production cultural, for political organization and social coexistence.

For this reason, architecture, in the borderland inhabited by the stranded migrants there stranded, suggests a possibility that is currently only suggested, mindful of the Japanese concept of *en*, the art of creating connections and relationships between people, things, nature and cities, and intervening to generate new spaces for sociality and sharing.

¹ The aggregation of individuals (synoecism) is at the basis of the birth of many cities where the principle of community preceded and founded the identity of the inhabitants.

The extreme idea of ultra-informal architecture

The opportunity for interrelation, for dialogue, proves to be a reaction to the border wall and reveals an unprecedented morphology of space, generally more public than private, which identifies the city of the migrant in which the wall structure causes settlement dynamics outlining an urban development in which the relational, managerial and functional forms are discovered to be intrinsically changeable and capable, over time, of implementing innovative practices and projects in the construction of our cities. In other words, the border wall is not only an obstacle, it does not cancel the spatial reality in the form of closure and control but rather implies precious opportunities on which to configure a territorial reality that, from the barricaded front, in an oppositional process, generates a dualism typical of the formal and informal city that, in the emblematic expression of the dialectic between the two, demonstrates the possibility of activating plans of ultra-informal settlement. This is a less outdated hypothesis than it may seem if only to suggest a fusion between antithetical realities on which to structure the inclusive and selective process given by the border.

In this context, it is useful to draw attention to the concept of the “traditional house” to understand how the housing structure can be transformed by social changes, in this regard, I recall the Japanese pavilion at the Venice Architecture Biennale 2016 which explored how the new housing nuclei reworked the connection between internal and external space through the creation of housing units more functional to meeting and dialogue and where, architectural thinking declared that, to the conceptual matrix oriented to re-propose some aspects of the language and aesthetics of the formal, it placed the accent on movement and developed a different look at living in an era of migration.

Having said this, it is hypothesized, that in the border city inhabited by the migrants, an antinomic construction that, over time, identifies the space of coexistence and social interaction between oppositions. We can therefore recognize a complex, flexible and changeable urban architecture that from a unicum - the wall - develops a multiplicity of narratives that, from the figure of the migrant, stranded at the border, outlines a new way of living, more open than closed, more inclusive than exclusive.

It could be understood that, in an allegorical game, the unicum of the wall gives shape to an idea of multiple habitability where multiplicity is the start of a beginning and not of an end. It is an opportunity that allows

us to analyze the wall as a driving force of a new way of architectural thinking useful for inventing new openings, visual or physical, to overcome them, or to settle them as new cities of waiting where the multiple and the antinomic are strategies of settlement design. From what has been said, it is understood that at the border, the denied movement emphasizes the transformation of nomadic living as well as the dimension of reciprocity, of action and reaction, identifies and reflects on the meaning of living that, in a reshuffling of formal and informal, of stable and unstable, projects an extreme idea of ultra-informal architecture.

This tension, implemented between inclusion and exclusion, proposes a different idea of belonging that, by contrast, recognizes more open spaces than closed ones, more public places than private ones, experimenting with ways of building the city more suited to dealing with an urban environment in which living is irreversibly precarious. In essence, it is understood that living, which until now has stimulated the sense of place in terms of rootedness and stability, finds the key to understanding the design of the border city, in living as a product of movement in which the multiple is an interpretative strategy and coexistence experiments with new ways of building public spaces and contact spaces (Choay, 2003)². In other words, it is understood why, in an era of fluidity and precariousness compromised by the fortification of the border, the settlement density proves to be an architectural opportunity useful for producing social cohesion and alternative models of living together. In this regard, it is useful to recall the Guest House project in Takaoka, Nousaku Architects³ in which a semi-public courtyard was covered by four studios for young artists and included, in a modern key, not only an original form of space, adding elements such as the staircase and the triangular shape, but also a variety of lifestyles that opened up to the surrounding environment.

The private rooms were arranged on the second level to take advantage of this spatial character in the section. At the same time, the ground floor became a "square" with high ceilings and open to the surrounding environment or better said, where the limits were made of light and ambiguous curtains allowing the apartment to be part of the whole and to belong to the city in its alternating rhythm of public and private, and to expand the range of action that concentration, in architectural units, people and different ways of living. We, therefore, understand the need

² Choay, F. (2003), *Espacements: l'évolution de l'espace urbain en France*, Skira, Milano.

³ Guest House in Takaoka, Nousaku Architects: project presented at the 2016 Venice Architecture Biennale in the Japan Pavilion.

to expand the space in which the use of light, fragile, temporary materials refers to an idea of living not designed to protect and isolate but to integrate and live together⁴. Once again the unstable and temporary material declares itself, paradoxically, the reflection of the wall and experiments, reinterpreting, new architectural forms which resolve this mixing between unstable and stable that forces us to think in dual terms complex housing solutions that are more open than closed, more public than private. Among the list of architects who have developed an idea of “unstable” architecture, I remember the Chilean proposal of Meeting Point, by Smiljan Radic, Gonzalo Puga and Osvaldo Sotomayor, which raised a large red bubble of 152 square meters, suspended three meters above the ground, called: “The Shadow of the Moon”. This sphere was visible from great distances and recognized as a meeting and gathering space that found protection there, from the sun and rain⁵.

Among the iconographic apparatuses of Smiljan Radić I also remember the extraordinary circus tent placed on the roof of the Nave-Arts Hall in Santiago de Chile for which a gust of wind was enough to swell up to lift the poles that structured it from the ground.

It is therefore agreed that using what is maximally unstable, the air, at the service of the precarious consistency of architecture is also what feeds the migrant’s tent that constitutes the first idea of home, unstable, set up at the border wall and that, similarly to the tubes of Smiljan Radić’s circus tent pushed upwards by the wind, gives “form to the visible” destined to disappear or to settle as new cities of waiting capable of resolving the historical opposition between unstable and stable, formal and informal, in the form of hyper-informal settlement that interprets nomadic living as a chance to test the potential of architecture and the construction of cultural-territorial identity.

⁴ The result is a sort of engawa of the Japanese house, or veranda that modulates the relationship between the interior and exterior space, protecting from the rain and at the same time opening up to the garden in the summer months and closing up to become a living extension in the winter months.

⁵ Project by Radic, S., Puga, G. and Osvaldo Sotomayor, Meeting Point. The assembly of the sphere consists of a pre-compressed polyester structure covered in vinyl. The red bubble is self-sufficient thanks to inflation with a 100-Watt compressor. Its engine, powered by photovoltaic panels, keeps the air pressure constant inside the membrane, compensating for the variations associated with daily temperature changes in the desert. Its appearance is the result of the inflation of two disks, each 15 meters in diameter, simply joined by the perimeter line, without resorting to the use of particular cutting and sewing patterns, so that the deformations and wrinkles of the inflatable are incorporated, in the search for the informality of the project.

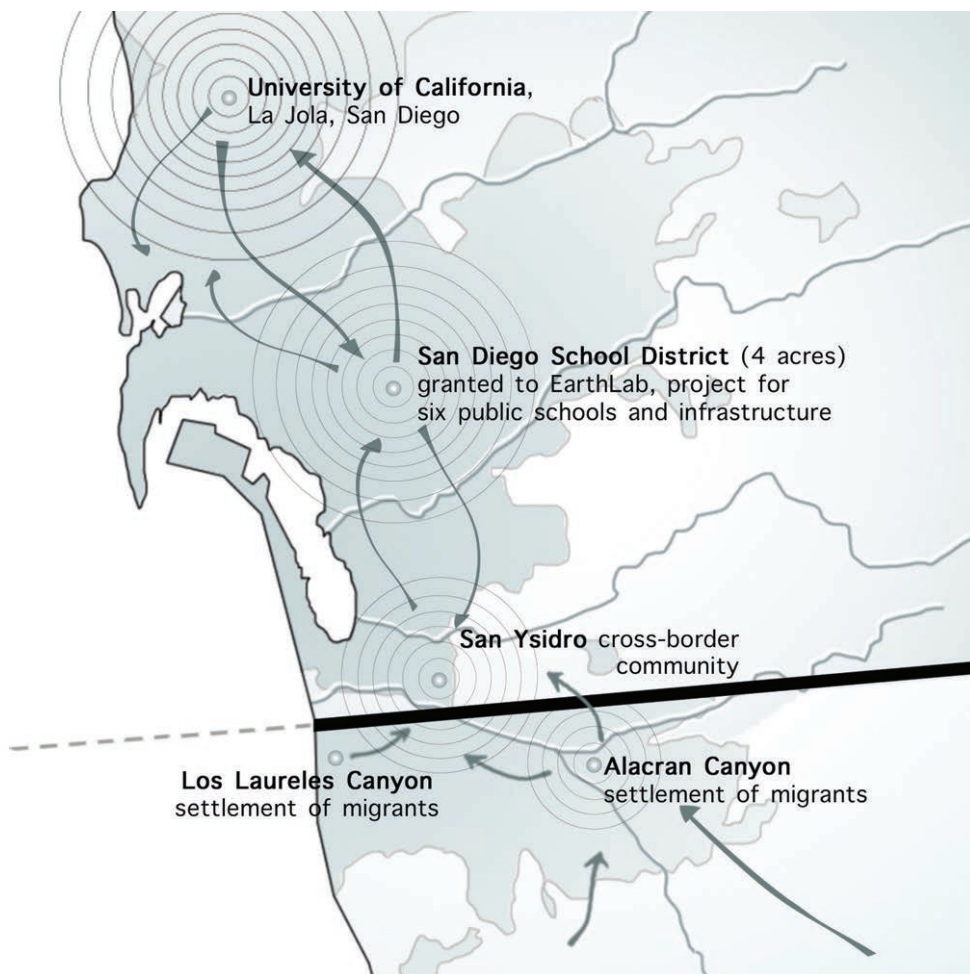


Figure 1 -
*Analysis map
of the San
Ysidro-Tijuana
crossing about
the UCSD
Community
Stations study
by Teddy Cruz
and Fonna
Forman.*

At this point, it is a priority to focus our attention on the space that holds together and overcome the fatalistic resignation to a future made of isolation and individualism. We want to go beyond the word division as a dictat to hypothesize a new form of housing and translate the need for open spaces where one can experience sociality despite the desire, today prevailing, for control, isolation and security.

From this perspective, it is interesting to explore the potential of border spaces as places to experiment with new forms of public space or creative and sharing space in which the place manifests itself in its essence and where to stay means something deeper than stopping for a moment or just by constraint, and corresponds instead to want to listen to the place,



to recognize its soul” in the sense provided by James Hillman (2004)⁶ It is, therefore, a question of understanding how the concept of border, as a line that separates States and Nations, is an abstraction of space in its political-administrative meaning that recovers the value of threshold as representative of a collective eidetic character that cartography synthesizes in a segment and that would like to go beyond that implicit declaration of an Us and a Them to tell instead a shared territorial-environmental belonging. It follows that, for example, on the border between Mexico and the United States, the construction of the border, as a wall intended to divide, generates a short circuit in that place with a shared past and which becomes the spokesperson of binational collaborations, of economic, political and social ties contradicted, however, by the fracture imposed

Figure 2 -
Waste from the shanty town in Laureles Canyon flows toward the estuary in the nature reserve beyond the US-Mexico wall, revealing it as an artefact of environmental insecurity.

⁶ Hillman, J. (2004), *L'anima dei luoghi. Conversazione con Carlo Truppi*, Rizzoli, Milano.

by the wall which, in addition to being a machine intended to divide and hinder, declares itself an artefact of environmental and social insecurity.

The land divided by the border

The border wall is a paradox if thought of in a shared social, spatial, formal territorial system where identity bonds become blurred as one enters the territory and migrants, in the psycho-spatial experience of the limit, discover compromise or rather coexistence, mutual acceptance as well as the formulation of an unprecedented territorial belonging. One could say that, astride the borderline, a shared region is recognized that becomes porous in which the idea of border, commonly understood as a fracture, conquers another image, not only cartographic but also spatial, and identifies a Third territoriality, composed of grafts and references, of cross-border mixtures that, in some cases, recognize specific characteristics preserved over time and ecological-environmental relationships, direct and consequential. It is therefore agreed that, without taking anything away from contemporary conceptions of borders, rooted in historical cartography and developed to recognize national limits, there is also an alternative history that concerns the real experience of places and identifies, in this Third Territoriality, a new way of inhabiting and organizing the divided city.

Therefore, the fracture operated by the wall fades to the margins and comes into contact with the urban identity to which it joins in multiplicity, permeability, and organizational porosity as mixtures of different territorial-environmental and cultural-social histories. Despite the emergence of these problems, deriving from the complexity of the settlement operations, the hyper informality, now generated, constitutes the factor of greatest interest for our reasoning, revealing two main intentions: the first, a renewed search for social, spatial and relational complexity specific to the city, which recognizes the intermediate sphere between public and private, between stable and temporary as a creative and sharing space. The second is understanding the border wall as a violation of an environmental-ecological and social-cultural bond that continues to pass, to exist in its intrinsic continuity. The rivers and winds do not stop, nor do the people who continue to pass and also the constitutional rights of freedom of movement, of possible territorial belonging from which comes that spatial, social, and cultural continuity recognized, for example, at the border between the USA and Mexico and in particular, where the migratory flow is more intense, that is, at the border between Tijuana and San Diego and where the architectes Teddy Cruz and Fonna

Forman, recognize clear manifestations of that geography of the border that at times tries to challenge the fortification and escape surveillance and control, and recognize inclusive spaces from which to restart and renegotiate the spatial and social bonds and start an urban architectural development born "from below". Thus begins the Studio (UCSD) Cross-Border Community Stations, a cross-border infrastructure of partnerships arranged at the disposal of four stations, coordinated by the University of California San Diego, located in marginalized neighbourhoods in the area between San Diego and Tijuana, where research teaching and urban design activities transgress the wall, and spatialize social and environmental justice by mobilizing the culture of citizenship through cultural action. In particular, the Stations establish, each in its way, new interfaces between internal and external education, academic and experiential, to promote creative intersections between science, art, humanities and socio-emotional learning, all mobilized through restorative practices as catalysts for a new ecological imagination. One could say that Teddy Cruz and Fonna Forman fuel a platform of mutual knowledge that challenges the limit and blurs it in research and activism, sharing and decolonization to co-produce new narratives, new alliances and new forms of solidarity, as well as proposing more equitable projects for the city. The dialogue between institutions, universities and communities in the conscious and aware sharing of an inclusive, environmentally coherent and characterized by mutual community recognition and the right to housing and shared territorial identity is demonstrated as the incipit of every story.

Therefore, a cross-border reality with controversial spatiality appears, developed by the sum of different elements, of constructive objects recombined and adapted by people to the place thanks to the elasticity of the spaces to be open and shared or closed and private. The space that is generated could be said to be the negative of Cartesian geometry, made of predefined angles and lines, and rather assume a composite freedom that follows the needs of an unpredictable and self-built living.

In this way, the life of migrants seeks to shatter its granite material and open new visual openings and infrastructural connections that can pre-figure fragments of a shared identity of place. For this reason, the UCSD Stations, starting from the most complex areas of the border area and in particular in the interstices that hold them together, identify formally stable structures, often connected to the pre-existing urban fabric, which represents the new nerve centres for generating value and a role within the migrant and resident communities. It is observed that, in these places, the role of the open space that completes domestic life and becomes the

interpreter of a shared cultural and social value changes, the house itself extends into the streets and goes beyond its physical limits, integrating into the urban fabric. Stairs, roofs and empty spaces thus become useful terrain for stimulating an integrated development of the migrant settlement and shaping new community imagery. It is not just a colonization by migrants, nor an intrusion into the interstices left by the pre-existing city, but a broader phenomenon that could be said to be re-founding and belonging to the community logic with which, in general, these border areas are formed. In this scenario, we recognize the point of action for a community-based environmental justice, founded, precisely, in the first Station north of the wall, the UCSD-EarthLab Community Station, which with Groundwork San Diego, occupies a plot of land of 4 acres, owned by the San Diego Unified School District and which wishes to develop the educational power of the eight public schools a few steps from the wall to promote a shared environmental value. Thus, cross-sector collaboration is consolidated between a large research university, a local school district and a grassroots organization to co-develop a community public space based on education and ecological value. Ultimately, the UCSD-EarthLab Station functions as a “Climate Action Park” designed to mobilize restorative practices as matrices of new ecological possibility.

Moving further south, in the border neighbourhood of San Ysidro, home to the busiest land crossing in the Western Hemisphere, is the UCSD-CA-SA Community Station, a community-based social service organization that recognizes, in this case, a dual project: a lot-scale social infrastructure of spaces for cultural and economic activities, flanked by affordable housing, and a historic church, which has lain in ruins for decades, as a catalyst for its adaptive reuse as a community theatre with an outdoor stage and adjacent ancillary facilities.

Now moving across the border, the other two Stations are in Laureles Canyon, a settlement adjacent to the wall, inhabited mostly by migrants who have been stranded there and are in a state of perpetual waiting. This is an area where the topography of the Tijuana Canyon collides with the wall, before spilling north into the San Diego Coastal Reserve and revealing the wall as an infrastructure of environmental insecurity. This site represents the short circuit generated by the granite division of the wall that sees, to the south of it, landfills, drastic erosion, floods and landslides, and all of this is exacerbated by the lack of infrastructure for the management of water and waste that, together with tons of sediment, flows north ending up in the San Diego estuary, contaminating the shared bio-regional resource.

Conclusion

In light of what has been said, Teddy Cruz and Fonna Forman, through the Stations project, promote an ambitious regional project⁷, aimed at environmental conservation that connects the estuary in the United States with the informal settlement in Mexico, forming a continuous social and ecological envelope that transgresses the wall and protects the environmental systems shared between these two urban border realities.

In particular, the landslide that destroyed several housing units in the community of Miramar is remembered and the architects planned a model of regenerative and transitional hydrological space. Today, the topographic scar, left by the landslide on the slope of the canyon, is being transformed into a green hydrological promenade useful for connecting stormwater drains, from the upper part of the basin to the stream below designed to mitigate the risk of landslides and the integral management of stormwater.

A double concept of public space is thus recognized: as an eco-pedagogical walk, designed to incorporate the participation of residents, ensuring the maintenance and sustainability of the system, but also as a node of awareness of the importance of water as a common good, as a tool to fuel joint responsibility between neighbours, organizations, universities and the national government.

It is also noted that the Stations project represented an opportunity to develop research on architecture and informal urbanization in which urban waste, coming from San Diego for years recycled as architectural parts to build homes and infrastructures in Tijuana, was mediated through materials and structural systems made in local factories and then collected in a catalogue of prototypes and configurations useful for training local labour and self-construction of settlements. This project represents a model for developing the construction of informal settlement reality, integrating it with issues of social and environmental justice and becoming a laboratory for rethinking the city in terms of a more integrated and inclusive urban ecology.

It is therefore agreed that the project of the Stations (UCSD), starting from the middle space, of contact between the local and migrant population, recognizes a new cross-border urbanity. For this reason, in this paper we want to concentrate on the space that holds together, or rather

⁷ The *Cross-Border Commons*

to place the accent on the “movement” (be it environmental or community) through which it is possible to decode the value of living and of the community-public space. It is no coincidence that I now recall the studies conducted by the engineer, psychologist and neurophysiologist Alain Berthoz (1998)⁸ and those developed by Tagliagambe (2005)⁹ exemplary in expanding the concept of a “habitable” city as it brings voice to an interrelation of languages and multiplicity that allows the movement to be transformed into a project, even if ephemeral. In other words, it changes the point of view from the stasis of the wall passes to the movement of the migrant and determines a project that, rather than imposing a silent control and hegemonic constraint, emphasizes sharing and contemporary living, that is, renegotiated from stable to temporary, and generated through the concept of movement as a supporter of transformative space similar to that identified by Soja as “Third space”¹⁰ useful for weaving relationships willing to assemble a set of interactions, of reciprocity between migrants and residents, between oppositions and contradictions.

Therefore, in these particular borderlands, the central challenges that concern, today, the studies of urban planning and architecture regarding the many settlement spatialities are addressed: not always completely open and not always completely closed, formal and informal at the same time, public and private, which do nothing but aggravate the unresolved issues of the city and the territory and which, here, find an answer in the hyper informality of the settlement that promotes the dualism given by their confrontation and integration.

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Communities Campuses and Universities as a micro-city

*Maria Lodovica Delendi**

University Campus as a micro-city

*The concept of a university campus is developed here not only as a place of education, but as a real “micro-city” in which social, cultural and environmental dynamics coexist. The campus thus intended replicates the functions of a city: in addition to educational buildings, there are residential areas, recreational spaces and infrastructures that facilitate mobility and socialization, giving life to an ecosystem that is partly autonomous but can act as a shoulder with activities of interest and large open spaces for the urban community. An *eutopia* that would like to summarize in itself the principles of the best tools available both in urban design and in the architectural design of sustainability and resilience, energy autonomy, organizing spaces for the social and individual well-being of its inhabitants, whether they are residents or temporary guests. Campus life is rich and complex and public spaces are important not only for training but also for socialization: open spaces and common areas encourage informal learning, creativity and interaction between students, teachers and support staff, encouraging outdoor activities and contributing to a high-*

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er quality of life for the entire university community. The project proposal aims to transform the urban layout of a campus, integrating residential areas with public spaces and services for shared use. The campus as a micro city provides an integrated residential area equipped with services offered (such as shops, cultural spaces, sports and recreational areas) harmoniously connected with the surrounding urban environment.

The criteria of economic, environmental and social sustainability for urban design are therefore sought for the campus intended as a micro-city and university district and are in turn developed on three levels *physical*, *psychological* and *spiritual* that the planning and design of the campus settlement conceived here see as potential.

Eco-district model and the physical-chemical-biological level

Modern eco-districts that are based on the concept of resilience and sustainability, with different gradients of applied technologies, can be a point of reference as they focus on the efficiency of systems that are based on the first characteristic: they act on the physical system as they satisfy the first criterion of sustainability at the physical-chemical-biological level, with experimental and applicative attention to energy saving, the use of alternative energies, immersion in nature, direct contact thanks to the presence of neighborhood gardens, pedestrianization and sustainable mobility. Presence of greenery: precious and irreplaceable production of oxygen, capture of CO₂, cooling thanks to summer shading, ability to modify the microclimate, urban reference point and liveability of open spaces, living presence capable of interacting energetically with the organs of the human being, collecting fine dust and PM₁₀, balancing and calming physiological parameters including the immune system. Particular attention is also given to:

- water cycle, separation of runoff recovery water from black water, water containment basins for water emergencies for maintenance of green areas in the summer months
- use of natural and biocompatible materials, recycled, promoting the circular economy, composting cycles for urban gardens
- energy management, experimentation of energy communities, forms of local self-production with self-consumption and common management of energy resources. Geothermal systems for neighborhood units.

At this level belong the disciplinary areas and solutions that deal fundamentally with the physical aspect: analysis of chemical-physical parameters on physiological systems, on ecosystem processes, but also identification of damage containment systems thanks to natural biophilic devices such as NbS, Green Infrastructures, supported by the vision of the Green Economy, Circular Economy, etc. The ongoing research sees in the therapeutic approach (Health Lens) a reversal of perspective capable of placing the environmental infrastructure as a connective, pervasive tissue, a container of Ecosystem Services, of Nature based Solutions, a therapeutic device in its multifunctional layers capable of that capillary and isotropic infrastructure that can therefore integrate the campus project that becomes part of it. Let us therefore imagine the open spaces of the campus in continuity with the urban environmental infrastructure, part of the symbiotic city according to Applegarth's vision of 'symbiotic city'.

Within the green infrastructure it is possible to differentiate the different gradients, the different layers and the different functions of the natural element. For each layer a sum value of different functions can be placed: e.g. oxygen production, permeability factor to the aquifers, capture of fine dust, heat island cooling effect (evaporation factor), recreational capacity: indirect use (perception only) direct use, productive capacity. Therefore, benefits on the environment, to which are added the benefits on human health from the physical chemical point of view (oxygen production) rebalancing of physiological parameters and benefits on the psyche (anti-stress presence).

The campus project in fact includes a green infrastructure scattered along main arteries and widespread diffusion, green areas such as parks, of small and large size, wooded buffer zones for acoustic and visual protection, private and semi-private courtyards, urban gardens, where the presence of rows of trees and internal walks satisfies the need for mitigation of the summer microclimate, the need for biophilia, the purification of the air by retaining carbon dioxide and especially fine dust. It promotes the permeability of the soil, avoiding as much as possible extensive concreting.

The large pedestrian areas are served by electric means of transport and cycle paths, the green areas for the enjoyment of greenery are distributed and reachable on foot, with paths for jogging, outdoor gymnastics, and anything else the community wants to have available. Multifunctional squares could be planned with collection of runoff water both in sight and in filtering tanks and water collection usable for summer irrigation, cleaning etc., both at public and private level in residential areas, filtering

and recovery of non-potable grey water for residential uses, possibility of storage in tanks and reservoirs, for irrigation given the possibility of self-production of food in therapeutic urban gardens or importing it directly from organic production at almost zero km.

Sustainability at a psychological level

I. The second criterion, sustainability at a psychological level, cascades from the first thanks to both the presence of the natural element and the possibility of close contact tuning into its processes thanks to the possibility of living and cultivating it, common gardens, sustainable mobility that positively influences movement, sociability in the presence of semi-private and public spaces, and the particular attention to the morphology of spaces and architectural language. Closely linked to the first in a two-way relationship with regard to the therapeutic nature of immersion in natural systems, contact with nature, but also contact with harmonious forms, with beauty, with spaces that respect certain characteristics and proportional relationships. Environmental psychology has dealt with these studies to build a series of cognitive maps of preferences that are used in the use of spaces. Recent neuroscience studies confirm the effective action at a physical level of perception, for example of beauty, of colors, even though there is still no scientific evidence on spatial experimentation that will make use of the latest augmented reality technologies. Thanks to the discovery of mirror neurons, concepts such as empathy and empathic perception have been given scientific reality, recognizing the ability of the user to capture the author's intention since physiological responses are recognized (Gallese 2015). The obsession for scientific verification therefore confirms the importance of the empathic-perceptive dimension that has always been expressed in the infinite forms of thought and the language that gives it shape. To avoid the risk of flattening the richness and complexity of the psychological-perceptive level on physiological responses, it is important to consider the spiritual value level.

So pay attention to contact with natural elements, with water, walks and panoramic points, sports activities of movement, but also simple bike rides in the countryside, but also the social aspect of creating potential spaces for communities, and the architectural backdrops that such spaces design.

In fact, sometimes attention is also paid to architectural language, with attention to perception, rarely it translates into the study of the morphology of neighborhoods, with attention to the rhythm of the spaces that create the open-closed pulse of our historic villages, with the intimacy of

the small squares or the openness of large spaces for events. Attention to these two levels becomes a priority element in the choices made for the open spaces of the new campus structured as a microcity. Let us remember that the open spaces are determined by the morphology of the built backdrops, which determine behaviors, gather or disperse, open or close.

Urban system and the campus: why the organic fabric

The choice to refer to the historical “organic” system, with reference to urban settlements as they have stratified over time thanks to the needs of the population, arises from the current debate on the importance of considering first of all the well-being of residents, creating an active space, stimulating from an emotional and psychological point of view, thus reacting to the comfortable habit of relying on pre-established grids that are monotonous and devoid of interest. The intent is to design sequences of spaces or sequence-spaces with emotional resonances as indicated by Gordon Cullen’s analyses.

The attention paid by neuroscience to the effects of architectural and urban spaces on the psyche makes us reflect on how, since the 1960s, some authors have focused on the influences of spaces on the psyche, on emotions and therefore also on the physiology of users, recognizing in historically appreciated spaces sequences of spaces with emotional resonance that make the user interact, keeping attention alive, suggesting avoiding monotonous and uninteresting spaces. Recent studies confirm the importance of pro-social design in urban settings that promotes sociability and the liveability of spaces.

This line of thought refers both to organic architecture and to organic urban design as Gordon Cullen’s studies on the emotional effects of sequences of urban spaces remind us, but also Richard Neutra’s studies on physiology, in his “designing to survive” the revaluation of the dimension of the ‘district’, of the neighbourhood, to the sociological studies of De Carlo, which in turn refer to Sitte’s criticism and to empathy in architecture recalled by Mallgrave in his ‘Empathy of spaces’ to the current studies of neuroscience on the influences of the environment on human behaviour.

The quality of public spaces from Sitte to environmental psychology

It is a humanistic urban planning, as a design of the city, that Sitte proposes to us, and it places in the foreground the importance of freedom in

the organization of the square to bring movement and life back into the architectural form of the city (Sitte, 1981, p. 167). "But let us try to reproduce what we normally feel when returning from Florence or Venice we are attacked by this empty modernism. Perhaps this is precisely the reason why the fortunate inhabitant of these cities does not feel the need to leave them, while every year we rush to escape to the countryside, at least for a few weeks, so that after having toned up, we can begin to tolerate the city better" (Sitte, 1981, p. 179). Here too the criterion of judgment, the discernment is given by feeling. It is interesting how precisely in the most recent theories on the philosophy of mind in contrast to the cognitive approach, feeling becomes an unavoidable step in the knowledge of reality that connects our cognitive level to the world (Desideri, 2004). Sitte's criticism of the uniformity of building blocks, of the monotony of rectilinear streets where "the straight line and the right angle outline a building composition without sensitivity", that "the rectilinearity alone constitutes an unfortunate element for a street" (Sitte, 1981, p. 115), that "a rigorously rectilinear avenue that is kilometres long causes boredom even if the landscape is pleasant, because it contrasts with the natural feeling and does not adapt well to the variety of the environment" (Sitte, 1981, p. 115), are considerations that are shared in the criticism of progressive urban planning of the 1960s made on the basis of studies and scientific investigations of environmental psychology. What Sitte recognizes is the ability of artistic sensitivity to create order, harmony, but also to balance spaces or simply to fit harmoniously into the spirit of the times. Multiformity, surprise, are ultimately requirements that are required to create spaces that can avoid the damage caused by progressive urban planning and recognized by environmental psychology studies of the 1960s. "Feeling" becomes of primary importance in the spatial relationship and recovering this dimension allows us to open up unexpected perspectives in our current way of thinking about spatiality. Recovering this dimension that Sitte presents to us with literary simplicity is at the center of contemporary studies for a redefinition of aesthetics. Perception, sensitivity to spaces goes hand in hand with the need to recognize languages, relationships, and to feel immersed in the "universe" environment thanks to the presence of natural elements and other living beings.

Environmental psychology helps us to broaden the perspective on the therapeutic effects that the perception of certain environments, their spatial and environmental configuration can have on us, in continuity with those that are the benefits that we have seen linked to the biological and physiological aspect of the presence and contact with nature

and being part of the ecosystem. Green infrastructures and tree-lined squares, pocket gardens and urban micro forests.

According to Lewin, psychology must conceive the living space of the person and the environment as a single field in which the individual and the environment mutually modify each other" (Gilli, 2008). Studies in environmental psychology have been dedicated to the spatial effects on the psyche: "Indicators such as place identity, urban identity, which concern our individual and social individuality become possible indicators of an adequate therapeutic design that recognizes them as a fundamental factor for the well-being of people. The particular points of reference that allow orientation and the monumental points of reference for which the space is evaluated not only for its environmental qualities, but also for its emotional and relational values. For example, Gordon Cullen's urban analysis works have followed and deepened this line of emotional-spatial research. The environmental stress that we have seen measured with physiological parameters with respect to sources of pollution, sources of noise and overcrowding is actually caused by a multiplicity of factors among which the cognitive emotional part of a psychological nature has a notable importance. For example, feeling the threat to one's privacy in urban spaces that are too dense and unqualified.

There are some tools for evaluating environmental quality Environmental Quality Indices: for example the POE (Post Occupancy Evaluation), or indices of perceived environmental quality (PEQs Perceived Environmental Quality Indices) (Bonaiuto et al., 2005). These studies fit perfectly into a recent review of architectural languages that have followed the conquests of the modern movement, creating a dangerous semantic indifferenciation and trivialization, precisely in light of the need to evaluate the identity of a community or even individuals who can recognize themselves spatially. Residential figures and housing models of the historic city are reevaluated "while modernist evocations pay for the failures that have stigmatized the urban peripheries" (Magni, 2017).

The studies on the Biophilia Hypothesis, cited by Wolf, widely discussed by Terrapin Bright Green, cited by bio-urban studies and already addressed by the author, have been grafted onto this line. "It is the notion that humans have an innate, ancient connection to nature. Studies show that this affiliation with nature supports a wide range of health and well-being benefits. Our nation, cities and towns need to integrate high quality experiences of nature into everyday places. It is important to codesign our residential, commercial, and retail areas for co-benefits of clean air,

clean water, and better quality of life. Understanding the economic value of human health and wellness helps community planners and leaders make better investments in nature...

Further studies broaden the concept of therapeutic: in the United States in San Diego in 2003 the Academy of Neuroscience for Architecture was founded, which brings together hundreds of architects and neuroscientists and which deals specifically with investigating the reactions of the nervous system based on the shapes and geometries of the environment (Eberhard, 2009): "Exploring the mental and physiological state of urban pedestrians both in the field and in virtual environments has highlighted that the physical variables of the environment that surrounds us, including the design of facades, the presence of urban greenscapes, and the geometry of streets, produce predictable effects on our minds, brains, and bodies. These findings suggest that the consideration of psychological sustainability in urban design is practical, achievable and an essential ingredient for public health" (Ellard, 2016). Harry Frances Mallgrave highlights how empathy with forms and the role of beauty is a line of studies that can be traced from Vitruvius to Alberti but develops with Heinrich Wölfflin's theory of empathy which in turn should be placed in the aesthetic debate of the late 19th century in Germany. Not only that, but neuroscience now seems to be able to give scientific confirmation to the bio-aesthetic theories that can be traced throughout the 20th century, between empathy and emotional resonance of architectural forms (Mallgrave, 2015). Indicators for perceived urban quality are studied and provided, Perceived Residential Environment Quality Indicators (PREQIs) (Bonaiuto et al., 2015) with which the results of the scientific literature on environmental and architectural psychology are assumed.

Spiritual sustainability

In addition to the physical and psychological aspects, the project explores the spiritual dimension, understood as a deep connection and sense of belonging that shared spaces can create

The implementation of housing models such as co-housing and the creation of shared gardens promote interaction, collaboration and the creation of communities based on the ethical values of the community dimension, such as shared responsibility in use and management.

Naturally, at an individual level it can always be present, but here we turn to a criterion that can include intentions that are broader than the in-

dividual, and therefore to a focus on the sharing of a community that comes together with some basic intentions that are part of the same cultural sphere, such as associations of students but also of residents for the autonomous management of common interests, the destination of semi-private green areas for shared leisure activities, all activities that mark a regeneration of the community itself (Harnick, 2010). These acts of civic ecology can activate social cohesion, improving local social resilience (Krasny, Tindball, 2012). Social neuroscience has already promoted a series of studies that prove “Our data reveal neural effects of urban up-bringing and habitation on social stress processing in humans...”

To this we can add forestation and wilderness spaces, where the psychological benefit and epiphanies given to immersion and contemplation in nature have been proven. We therefore consider man and the environment deeply connected according to the teachings of James Hillman, trying to provide on different levels, physiological, psychological, spiritual, acting on the spatial and functional distribution, acting on the morphology and paths, on the need for biophilia and contact and the presence of nature, but also of the emotional component in the perception of spaces and their action on the emotional component, of their ‘sociability’, in fact the scientific literature of the area of environmental psychology provides us with useful elements for design considerations. A new emotional approach emerges: attachment to places seems to depend first of all on aesthetic evaluation and pleasantness, then on safety and finally on sociability or the offer of opportunities for socialization, it is important in the evaluation of preferences in mobility. Pedestrianism, walking is stimulated by reaching places that are primarily sociable, but choosing mobility depends on pleasantness and the feeling of safety, as well as on the amount of stimuli that the journey offers (Ferreira et al. 2015). Considerable attention is given to significant places that have emerged from recent research: preferential places with emotional resonance, which bring an experience of regeneration on an emotional and psychological level with great social consensus: Urban parks with the possibility of outdoor activities, picnics, jogging, equipped for outdoor gymnastic activities, large spaces for ball games, team games, walks with diversified places: fountains, avenues, woods, clearings, lakes; panoramic places.

Finally, the paper offers a vision for the future, suggesting that the integration of environmental, psychological and social approaches is the key to creating campuses as resilient and livable urban neighborhoods, capable of responding to contemporary challenges. This study aims to highlight how a campus model can be outlined as a micro-city that com-

bines innovation, sustainability and human well-being, proposing an integrated and multidimensional vision of urban regeneration.

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A campus in a park. The Architecture Campus of Politecnico di Torino

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Politecnico di Torino and its role within the city

The Politecnico di Torino is experiencing significant growth, characterised by an increasing involvement with the local community and the city, a continuous growth in the number of students, and a push towards internationalisation. In this context, space is paramount in broadening course offerings and intensifying collaboration with industrial partners. This problem cannot be regarded as purely a planning issue; the lack of consistency between political intentions and the scheduling of building activities often results in a misalignment of timings, objectives, and language.

The establishment of the Masterplan Team of the Politecnico in 2016 was a strategic response to these coming challenges. The Masterplan is a research group entrusted with translating the university's policies into spatial strategies through continuously developing scenarios and spatial configurations. Given that every policy is materialised in space and necessitates spatial considerations, the Masterplan employs architectur-

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al design as a tactical and dialogical instrument, serving as a medium for debate and experimentation with innovative, mission-driven solutions (De Rossi & Deregibus, 2020). This approach enables an inclusive and effective dialogue on spatial and urban issues, clarifying visions and potential conflicts. It also serves as a mediation tool for Politecnico's governance, supporting the implementation and revision of its Strategic Plan. The Masterplan Team also aims to involve and coordinate the university's development projects with external stakeholders, such as the City of Torino, the Metropolitan Community, the Piedmont Region and other economic and social private actors. This process contributes to the enhancement of the urban environment, thereby positioning the Politecnico as a key player in the improvement of Torino's built fabric, reflecting the contemporary role of an institution of higher education within the city, aligning both its demands with those of external stakeholders (den Heijer & Curvelo Magdaniel, 2018).

Therefore, the Masterplan is not merely a strategic or policy document; it functions as a dynamic research facility that perpetually translates policy statements into spatial forms and anticipates future scenarios. The Masterplan Team's approach situates the project within strategic and operational contexts. The effectiveness of this approach is also due to the Team dynamic and minimally hierarchical structure, which ensures tight control over project resources and communication. Through presentations, reports, drawings and visualisations, the Masterplan Team orients stakeholders through project development, promoting understanding and encouraging proactive engagement. The Team is also responsible for managing external factors, including policies and regulations. Furthermore, the Team fosters collaboration to create synergies for projects in shared spaces where multiple interactions occur. Hence, the Masterplan Team plays a pivotal role in the urban development of the Politecnico di Torino, designing its campuses and their integration and participation in urban spaces, contributing to «break[ing] down the conventional boundaries between campus and city» (Hebbert, 2018).

This paper will address one of the main challenges that Politecnico will face shortly: the reorganisation of the architecture, design and planning schools, which are currently spread over several sites within the City. The project aims to create a more centralised campus that establishes a deeper relationship with the city's urban fabric and natural environment.

One university, two campuses, many mission-oriented sites

A key output of the Masterplan Team is an urban plan showing (and simultaneously planning) the atheneum's campuses and site organisation. The plan defines two main hubs: the Engineering Campus and the Architecture one (now called *Campus delle Architetture, del Design e della Pianificazione*, or *Campus for Architecture, Design and Planning Schools*). These two hubs are surrounded by a network of mission-oriented sites that exploit third-mission and research opportunities throughout the City and the region. Within this framework, the ambitious Architecture Campus aims to consolidate all architecture, design, and planning activities and spaces – like teaching facilities, classrooms, departments, offices, research laboratories, and soft spaces – into the Parco del Valentino area along the river Po. Moreover, by enlarging the present spaces with new spaces, there will be a complete reorganisation of all historical sites, possibly defining the two thematic campuses. Hence, due to its indirect effects, the Architecture Campus also has a broader strategic dimension.

In opposition to the Engineering Campus, which, as per the classifications proposed by Van den Berg and Russo (2004), is characterised by a formal relationship with the City, as evidenced by its enclosed perimeter, the Architecture Campus will adopt a more informal approach, situated within a public, rhizomatic, and permeable space. Its boundaries will blend seamlessly into the urban fabric, the Parco del Valentino's natural environment and along the river Po's banks.

Toward the Architecture Campus in the area of Parco del Valentino, Torino

Historically, the Parco del Valentino has a strong cultural and anthropic vocation. Currently, the Parco del Valentino area is home to three locations dedicated to the school of architecture and planning: the historic headquarters of the Castello del Valentino and two smaller branches located on Via Morgari and at the Istituto Galileo Ferraris. In addition, new spaces will include three pavilions from the Torino Esposizioni complex, the latter representing strategic elements of the entire project, essential for developing the new Campus inside the Parco del Valentino. In addition, within the park's perimeters and immediately south of the castle, Politecnico will realise a small pavilion in collaboration with Tongji University of Shanghai (Figure 1).



Figure 1 -
The new Campus delle Architetture, del Design e della Pianificazione in the Parco del Valentino, along river Po

The Architecture Campus project has a specific procedural and organisational framework. The university governance has appointed a representative of the rector to oversee the campus development. This representative is responsible for collecting and synthesising the requirements of the two departments involved (DAD – Department of Architecture and Design and DIST – Interuniversity Department of Science, Project, and Territorial Policies). The representative works closely with the Masterplan Team, which, in addition to having authored the Torino Esposizioni project, also acts as a mediator for the needs of external stakeholders such as the Superintendence or the City. This organisational structure satisfies all internal university needs while enhancing the relationship with the other external stakeholders. For instance, the City of Torino plays a key role in this initiative. In fact, leveraging the opportunities afforded by the PNRR funds (National Recovery and Resilience Plan), a comprehensive redevelopment initiative has been initiated for the entire Valentino area. The project encompasses an area of 400,000 square metres and is designed to restore the park's cultural and natural identity. The initiative involves the restoration of the Po River's navigability, establishing a direct connection to the city centre through the river axis. Inside the refurbished

Pavilion 2 of Torino Esposizioni will take place the new Central Civic Library, while the Teatro Nuovo will undergo restoration to its original entertainment purpose. At the same time, a significant redevelopment process will be undertaken at Parco del Valentino. The asphalt surface will be replaced with permeable paving, the riverbanks of the Po will be renovated, and the roof surface of the subterranean pavilion designed by Riccardo Morandi at Torino Esposizioni will be refurbished. All parking spaces will be condensed within Morandi Pavilion, freeing up green areas and routes for vehicular traffic. The complementary interventions carried out by Politecnico will affect the configuration of the entire area, which will become a significant cultural hub of the city. Nevertheless, the presence of a diverse range of functions and activities, extending beyond the boundaries of academia, in conjunction with substantial green spaces and notable natural elements, has been demonstrated to foster not only the well-being of campus users (Siu, Gou & Liu, 2014) but also that of the broader neighbourhood and its diverse demographic (Sepe, 2017).

In any case, the intervention philosophy closely looks at the vocational dimension of the existing places, developing and enhancing their potential (Jullien, 1996).

Vocational purpose of the spaces and enhancement of the campus identity

A short history of Castello and Parco del Valentino and Torino Esposizioni

The Campus will take place in an environment with significant historical, cultural, and natural value. The two main focuses of the Campus will be the Castello del Valentino and the complex of Torino Esposizioni, both renowned for their historical and architectural value. These, in combination with the Parco del Valentino, will contribute to the strong identity of the new Campus.

The Castello del Valentino, owned by the Savoy family since 1564, was transformed into a *Maison de Plaisance* in 1620 by Cristina of France, who commissioned the architects Carlo and Amedeo di Castellamonte. After several morphological changes, the castle ceased to be a royal residence at the beginning of the 19th century. The Royal School of Engineering was inaugurated in Castello Valentino at the beginning of the 1860s, as authorised by the Casati Law of 1859. Concurrently, the Parco del Val-

entino was established in its present form, becoming Torino's most significant monumental park. The park was designed by the gardener and landscape architect Jean-Baptiste Kettmann and has always been used not only as a natural environment linked to the City but also as a highly anthropised space where numerous cultural activities occur. The cultural and academic characterisation of the park can be traced back to the 1880s when the mayor Ernesto Balbo di Sambuy launched a project to create a university campus known as the *Città delle Scienze* (Cardoza & Symcox, 2006). In the meantime, the park has been utilised for several cultural events, including the *Esposizione Generale Italiana* in 1884 and the *Esposizione Internazionale di Torino* in 1911.

The genesis of the Torino Esposizioni complex can be traced back to the cultural ethos of the Parco del Valentino. Situated on a triangular plot of land to the south of the park, the complex's origins date back to 1936, when Ettore Sottsass Sr. won the design competition organised by the City (Pagano, 1936). Sottsass's winning project featured four pavilions surrounding an open green courtyard. The four pavilions – the main hall or Pavilion 1, the exhibition hall, the theatre and the offices – and a fifth circular pavilion called the Rotonda were inaugurated in 1938 but had limited use. In 1943, during the Second World War, the complex was severely damaged by bombing, especially in the southeastern part, including the theatre and the exhibition hall.

After the war, a collective of local industrialists established the *Società del Palazzo delle Esposizioni* to reconstruct the complex to accommodate important trade fairs and promote the emerging local industrial sector (Tralbaut, 1957). The architect Roberto Biscaretti di Ruffia and the engineer Pier Luigi Nervi led the project. In 1947, the exhibition wing, or Pavilion 2, underwent reconstruction. Here, Nervi employed a distinctive technological solution, utilising prefabricated ferrocement elements to cover the impressive barrel vault (Nervi, 1957). The theatre, subsequently renamed Teatro Nuovo, was rebuilt, retaining its original design with one closed and one open proscenium arch. A few years later, in 1950, the open-air theatre was replaced by Pavilion 3, which Nervi also designed. This structure was notable for its use of prefabricated ferrocement elements, a technique previously employed in Pavilion 2, and its design featured a centrally planned structure with a large pavilion roof supported by four reinforced concrete arches (Nervi, 1950). In the sixties, the eagerness for additional exhibition space led to the construction of an underground pavilion designed by engineer Riccardo Morandi, located just north of the Rotonda, towards the Castello del Valentino.

Since the 1980s, the Torino Esposizioni complex has gradually fallen into disuse, except for sporadic sporting and cultural events, and has been completely abandoned in recent years. Over the years, various extensions have been added, including Pavilion 3b in the 1970s, located adjacent to the east of Pavilion 3a. In 2014, the City of Torino developed a preliminary proposal for its restoration in collaboration with the Politecnico, resulting in a feasibility study. Here, the School of Architecture of the Politecnico was relocated to Torino Esposizioni, specifically inside the subterranean pavilion designed by Riccardo Morandi.

The prospect of renovating the pavilion proved unfeasible due to the imminent implementation of stringent structural and seismic regulations in 2018, which mandated extensive modifications, structural adaptations, and consolidations. This challenge was further compounded by the declaration of monumental interests of the pavilions in 2022 and by the constraints imposed by the town plan. Nevertheless, the site remained of paramount importance to the Politecnico, as it represented the sole viable opportunity to establish a comprehensive campus for the School of Architecture, capable of integrating the historic headquarters in the Castello del Valentino and utilising the Parco del Valentino spaces as common areas for all campus users. Finally, in 2020, the Masterplan Team was appointed to develop new proposals for Torino Esposizioni, toward the *Campus delle Architetture, del Design e della Pianificazione*.

The project of Torino Esposizioni

The Masterplan Team devised numerous scenarios to reuse the entire complex, conceptualising alternative and hitherto unexplored options. The analysis of different scenarios allowed a comprehensive assessment of each scenario's pros and cons, ultimately leading to the selection of the most suitable and financially viable solution. Following an evaluation process and a series of political mediations with multiple stakeholders, including the Superintendence, potential co-users, the City of Torino, and the administration and governance of Politecnico, the Team proposed to the City that three pavilions of the complex should be assigned to Politecnico (namely pavilions 1, 3a and 3b).

While formulating the new hypothesis, the Team developed a novel framework to address the diverse needs and requirements of all the future users of the Campus. The analysis evaluated prospective future developments in terms of numbers and facilities, with a particular emphasis on environmental and spatial quality as the central tenet of the design.

External and open spaces were given particular consideration, with the project's development as a series of public and accessible spaces interconnected by green fields, park paths and internal *promenades architecturales*. The teaching spaces were designed to be flexible and comfortable to accommodate a variety of teaching methods, favouring the possibility of hosting experimental and atelier-like activities and laboratory courses. Finally, much attention was paid to the inclusion of soft spaces.

The design actions have exploited the historical dimension of the complex, using sources and documents to ground the modifications and valorising the space consistently with the designers' original intent. New technologies, a respectful attitude, and a bold design approach have been used.

The Sottsass Pavilion (formerly Pavilion 1) has been restored to revive the monumental atrium's expansive spatiality while retaining the marble's original materiality and restoring the large external portico. The upper level features a versatile floor plan accommodating research centres and department offices. The primary structure has been implemented with a newly constructed floor, which facilitates the establishment of two-storey classrooms facing the park.

The Nervi Pavilion (formerly Pavilion 3a) is the most iconic and recognisable space, serving as a genuinely international showcase of intrinsic cultural, architectural and historical significance. Accessible from the Gallery, also designed by Pier Luigi Nervi, which features a continuous longitudinal skylight, the pavilion serves as the new Campus's focal point and main public space. The space's multifaceted nature allows it to function as a workroom for students, an exhibition space, a venue for events, and a construction workshop. Two small glass boxes on the sides of the central hall will allow for various facilities, depending on the needs of the Campus, without compromising the architectural lines of the vault (Figure 2).

The New Pavilion (formerly Pavilion 3b) has a minimalist and hi-tech exterior and retains all the complex's architectural lines, making it the perfect end to the series of buildings. Here, many of the classrooms from across the complex are gathered. It also connects the two sides of the park, following the Gallery's path, and creates a visual axis of over one hundred metres.

Construction began in 2024, whereas completion is scheduled for 2027. After completion, the Torino Esposizioni operation will ensure the operational functioning of the new *Campus for Architecture, Design and Plan-*



ning Schools. The Campus will be a key asset for the City of Torino and, more importantly, provide innovative and inspiring spaces for students and faculty at Politecnico di Torino, reflecting the institution's international scope.

Figure 2 -
The large hall of the Nervi Pavilion will be the core of public life in the Campus

Public spaces in a public campus

The new Campus is set to become a significant international hub. Its unique position within one of the most important public green areas in Torino guarantees seamless integration into a vast public open space of over 400,000 square metres along the Po River's western banks. This expansive public space will serve as a venue for social interaction, well-being, and welfare for all campus users. The architectural significance of the Campus's spaces is further emphasised by their potential to enhance the learning process, mainly through their integration with the external environment and the environmental and naturalistic dimension of Parco del Valentino. Consistently with many international best practices (Bacevice & Dunkle, 2018; Soares, Weitkamp & Yamu, 2020), the Campus aims to provide a vibrant living space that is welcoming to its users and the public. In this sense, removing all the present fences and gates around Torino Esposizioni will enormously increase the permeability of the complex and its relation to the terraced outdoor areas, a feature glorified by the opening of twelve entrances to the three pavilions of Politecnico, compared to the present two.

Then, interlaced with the public spaces, three will be the major public cores of the Campus. The first and most obvious is Pavilion Nervi, with its large

vaulted hall. The pavilion is planned to be entirely open and permeable, functioning as a covered square where citizens can participate in exams, exhibitions, conferences, and workshops. The flexible space can be equipped according to different uses, needs and levels of interaction between the student population, faculty and administrative staff and citizens. Therefore, the hall acts as a key connector to the park, capable of expanding the cultural mission of Politecnico beyond purely academic boundaries. Despite management and access control challenges, the planned operational strategies will ensure that the diverse needs of users and the community are met, adapting to different levels of social interaction.

The second is the atrium of Pavilion Sottsass, whose public role will further support this dynamic engagement, reinforcing the institutional relationships with the public. Designed as a pleasing and welcoming space, the atrium is directly connected with the primary access to the park and the complex of Torino Esposizioni, blurring the lines between the built environment and the natural surroundings.

The third is indeed the Castello del Valentino, whose historical relevance also plays a central role within the Campus, offering several spaces for academic and cultural activities. The spaces within the Castello are key to fostering a deeper connection to the city's cultural heritage while integrating with the modern learning environments. The courtyards and open spaces within the Castello del Valentino add further layers of interaction, creating an environment where the boundary between the Campus and the city is effectively minimised. Hence, a future intervention would aim to eliminate the car parking in the south courtyard and change the space into a soft, permeable space, providing new areas for outdoor events, public art, and informal gathering spots. Envisioned but not yet planned, this intervention would be critical for the entire Campus, as the space is directly connected to the core of the park.

Furthermore, the integration of these spaces will be characterised by a cohesive network of connections throughout the Campus, with the relationship to the Central Civic Library being pivotal in ensuring that students, faculty, and the public can seamlessly access knowledge and culture. The open spaces will encourage collaboration, relaxation, and social interactions, as well as the connections between the buildings, the library, and outdoor spaces, fostering a sense of community and offering a rich and dynamic environment that encourages academic and social engagement. Integrating the two focal points, Castello del Valentino and Torino Esposizioni will activate the intermediate spaces of the Parco del

Valentino, creating a fertile ground for cultural and social exchange between the city and the Politecnico communities. Implementing the *Campus for Architecture, Design and Planning Schools* will foster a symbiotic, sustainable, and mutually reinforcing relationship between the university and the city.

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Regeneration strategies from the campus to the city. A case study in L'Aquila, Italy

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Introduction

Although it is well established that increasing urbanization harms the liveability of cities, soil continues to be consumed and urban settlements continue to grow (SNPA, 2023). Often this trend leads to impoverishment of natural resources, increasing average temperature and worsening of living conditions in urban areas (SNPA, 2020, UN-Habitat, 2020).

Such framework produces diverse implications in terms of management of cities and quality of life. Cities' growth has been based on the increase in soil sealing due to the need for more residential and productive areas.

This trend impacts more in a city affected by seismic events and thus by reconstruction processes such as L'Aquila, Italy. Located in the Abruzzo region, the medium-sized town (475 sq. km) is the regional capital with 70231 inhabitants.

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The urban system has undergone a long process of reconstruction after the earthquake of 2009. The seismic event caused around 300 victims, and it has deeply damaged some high-urbanized areas both the historical and peripheral city. The reconstruction involved changes in the town's configuration and it fragmented the built-up areas. Instead, reconstruction should have been guided by proper planning and disaster management instruments (Forino, 2015). Both regulatory framework and technical instruments were not able at all to deal with the complex series of issues related to residences, mobility and public services (Romano et al., 2015). Also, a process of expansion has been a consequence of rebuilt processes in the damaged historical centre with rapid interventions for new housing solutions in the nearest areas, then consuming soil. Often, the damaged peripheral areas have been rebuilt as it were before the earthquake without any change in configuration (Romano et al., 2022). To this day, decisions made have reconfigured the city and many issues on complex urban assets are still unsolved (Marucci, 2021). Although the city center is almost rebuilt, the centralities that have been developed during the years of reconstruction have not lost importance.

This complex framework has impacted on multiple aspects of the reorganization of the city's services. It impacts also on education, particularly university. It has more than one location inside the city, also due to changes in location that occurred after the earthquake. The specific case study is in one of the bigger areas that hosts the university's spaces.

In 2020, University of L'Aquila financed the project "UniCo – Preliminary feasibility studies for the redevelopment of the Coppito University Campus" to begin a process of project rethinking on the area. The fund gave the opportunity to study the main issues on the campus and the relationship established with context. The project was followed by the municipality's commitment to implementing interventions aimed at improving roads, buildings and green areas (Il Capoluogo, 2022). The paper aims to reflect on findings related to livability and the quality of green in the campus.

Study area

A sort of prevalent linear pattern is readable in the case study area. It is a north-west fringe from the historical centre. Pettino district is the main residential settlement with a complex polygonal tissue. Functions are mixed from residential to services. On the average, actual characteristics of the area have originated after the seismic event in 2009, since it has

been one of the most compromised after the event. Since reconstruction has not gone in pair with an updated rethinking of the overall settlement and some gaps are still readable, such as lacking of parks and green playgrounds and a balance between built and open areas.

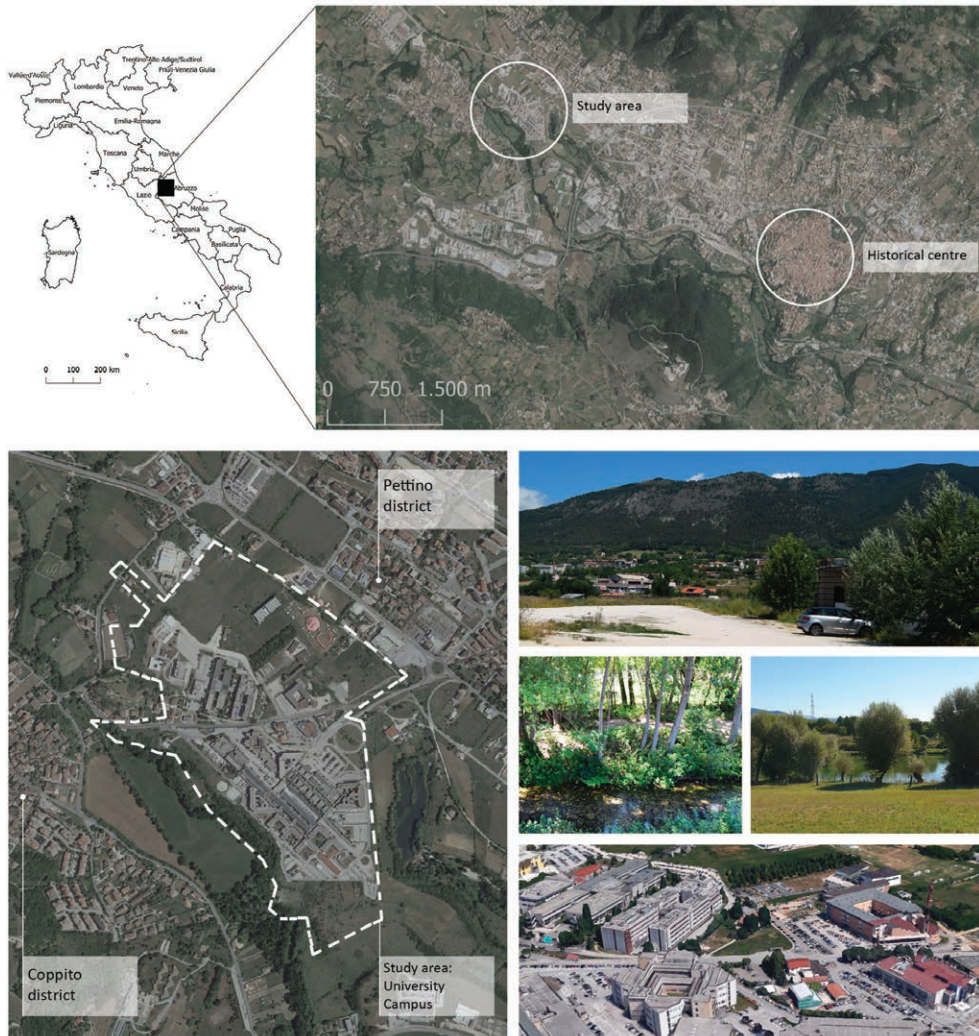
The environmental configuration of the area is noteworthy. The urban fringe stands in between two big relevant areas. From the northside, Pettino Mountain is 1147 meters high, and it extends in the northern area of L'Aquila from north-east to north-west. Its surface is covered by wood of holm oak. Aterno river is the longest river in the Region and the biggest for river basin (3190 km²). It passes through all the city crossing the southern area from west to east. It houses fish species that are under protection.

These natural elements then have influenced the expansion of the settlement, that has followed the path of the valley area between the mountain and the river. As other relevant natural elements, there are the Vetoio natural lake, and the surrounding park and the sport facilities park called Centi-Colella.

In this context, the campus was built in the late sixties due to the building of the hospital in that area. It is composed of the campus nearby the neighborhoods called Coppito and Pettino, from which the denomination "Coppito Campus" for referring to such university structure (Fig. 1).

The campus area represents a pole of interest for workers and students. The two main services (university and hospital) with some others (public offices, bar, restaurants) make the area a point of interest and commuting. It is an around 2,5 square-km wide polygonal shape between some residential neighbourhood and natural areas. The campus itself presents architectural discontinuity if compared with the surrounding area. The shape of the pole itself has been influenced by the design of the vehicular access, and it is surrounded by a series of main streets.

After the earthquake, the north part of campus housed temporary lecture halls and small emergency laboratories for research purposes. Following a brief period, temporary buildings were dismantled. Other donated structures remain, although the area paved during the emergency time has not been renovated. Over the years, no other use has been proposed for this area except for parking.



Materials and methods

At least the following primary integrated goals are pursued by the feasibility project:

- Redevelopment of buildings that resulted from emergency procedures without proper design or sufficient formal inclusion.
- Rearranging the internal mobility network with multimodal differentiation of nodes and linkages, as well as reconfiguring the urban structure.

- Conversion of the green matrix from marginal areas to a functional connection for the campus and the adjacent green areas.

The primary focus of this case study is the transition from impermeable zones to a more extensive linking green initiative inside and outside of the campus. Therefore, some main issues are considered relating to the open spaces. The case study includes the pole in its entirety, including the hospital. The analysis focused on:

- Analysis of the main soil destinations for measuring the impermeable soil using the municipality's land use map.
- Analysis on presence of temporary buildings, assessment of their possible removal, pedestrian accessibility, green areas inside and outside the campus through satellite imagines, drone flight and on-site surveys.

Figure 1 -
The case study area in L'Aquila, central Italy. The University Campus as study area inside the dotted shape and photos of Petino mountain, Aterno river, Vetoio Lake and a view of the University Campus (Source: photos and elaboration on Google Satellite Imagery by the authors)

Results

Among the preliminary studies, analysis on the use of soil highlights heterogeneous functions in the area. As expected, urbanized areas and sealing soil is dominant (37% that corresponds to around 80 hectares). The area is also characterized by crops and agricultural land that cover around 30% of the area surrounding the campus. Instead, green areas with trees vegetation are about 10-15% of the area, that is 30 hectares.

Indeed, there is more than one parking space. Also, the large usage of parking areas demonstrates the high use that users make of their own vehicles. A poor pedestrian accessibility then is encountered by users who do not use private vehicles or public transport to reach the area. Then, campus has a lack of a pedestrian use project: narrow sidewalks without a clear design and improvised pedestrian paths over flowerbeds or through parking lots.

Even if the area is surrounded by large plots of arable land, inside the settlement the presence of green is almost lacking. There are some isolated trees, no tree-lined streets while the areas covered with grassland are limited to roadsides. The existent trees are too scarce for producing environmental benefits. Then, the missing design control over the open areas can be detected in the poor relationship established with the immediately surrounding unbuilt landscape. On the contrary, it has several quality elements that could be enhanced in a coherent landscape system. From a general perspective, conditions of the main natural places are not excellent. Through

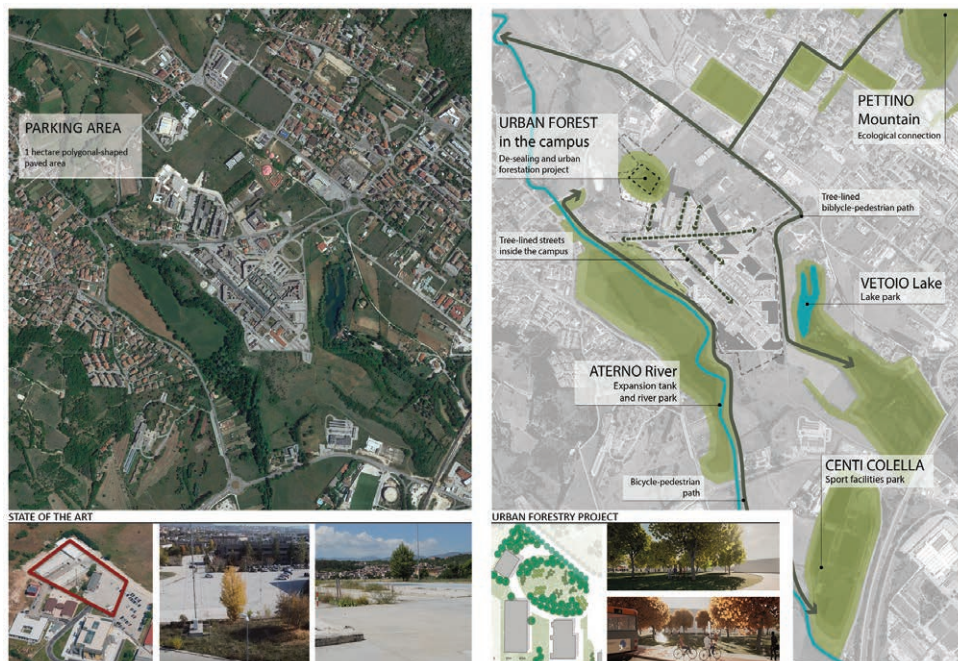


Figure 2 -
State of the art of the area and focus on the parking lot inside the campus (left) and the scheme of green reconnection with the 1 hectare-wide forestry project (right). (Source: authors' elaboration on Google Satellite Imagery)

the years the process of conurbation has left few internal residual green areas in disconnection with the relevant ecological assets nearby. Any relevant environmental links among these main systems are lacking.

Although the presence of the river is relevant, any relationships with the campus are lacking because of the state of abandonment of riversides. Such areas are also characterized by private properties and scattered informal buildings that creates land use for housing and storage of agricultural materials in an area that is supposed to serve as expansion tank in the area close to the river. There is a general state of degradation since the area is neither maintained nor exploited according to its recreational potential.

Lastly, during the summer of 2020, the mountain area was affected by a series of fires that burned 800 hectares of forest near the Pettino neighbourhood. The disastrous event was caused by excessive temperatures and was discovered to have a dubious explanation. The event highlighted the importance of the forest in the area and its capacity of providing ecosystem services (Estreguil et al., 2019).

Then, a scheme of green reconnection is designed from north (Pettino Mountain) to south (Aterno River) connecting also the Vetoio Lake Centi-Colella sport facilities park. In such a strategic asset for green areas, the

campus stands in the center (Fig. 2). Then, an area from the campus is chosen as an example of a requalification project.

Among the open spaces, in the northwest part there is a polygonal-shaped paved area of around 1 hectare. It is used as parking and as place for temporary buildings. Among the other open spaces, such an area can be potential for its position both near some of the main university's buildings and near the other open spaces outside the campus.

The chosen area then is designed for becoming a de-sealed area. A grass-coverage with trees of native species is put in place in consideration of main winds. The restricted and confined space created by the trees ensures the windproof function, since they shield cold winds from the north. Trees also create a barrier to the adjacent road. In terms of ecosystem functions, the mass of trees can provide benefits such as CO₂ storage and then contributing on heat mitigation. Such a feature also creates an ideal area for climatic comfort. This is why the project also includes drainage paving and furniture for open space activities for students and workers. Also, the urban forest can be ideal also as playground for the near neighbourhood.

Then, the project of de-impermeabilization continues inside and outside the campus for connecting to the external green areas. Whereas the campus is equipped with tree-lined streets, a bicycle-pedestrian trail leads from the campus to the nearby riverbank. The river is then restored by removing informal constructions or discordant components and adding native vegetation species and street furniture. The bicycle-pedestrian path also connects the other green areas. Toward north, the ecological reconnection to the mountain is enhanced by providing the Pettino neighbourhood with open playgrounds and urban forests. Such projects provide green areas inside the residential district.

Discussion and Conclusions

Low-density settlements request high mobility and transport dependence to longer commuting distances, and they can also imply fragmented communities and degraded landscapes (ISTAT, 2017; Piore et al., 2011). Such an extensive urban model can create a mixed use of the territory at the expense of rural areas (European Environment Agency, 2006). The urban gradient which leads from the compact city to peri-urban contexts generates hybrid landscapes in which boundaries between urban and rural are difficult to manage (Geneletti et al., 2017; Shaw et al., 2020). Im-

pactful events like earthquakes and the subsequent reorganizations of city's function risk to increment such a situation. In fact, temporary solutions risk impacting on the possibility to implement long-term biodiversity strategies together with the diminishing livability of places. On the contrary, the knowledge of green infrastructures and ecosystem services embedded in planning process have become the norm for enhancing urban quality (European Environmental Agency et al., 2014; Estreguil et al., 2019; European Environment Agency, 2011).

The analysis highlighted that, although the campus appears to be provided with open spaces, the quantity and quality of the green areas inside the campus is quite poor. In contrast, the analyses have pointed out lack of green connection and relevant areas capable of providing ecosystem services' benefits. Similarly, in the past few years inhabitants have started to perceive the lack of green parks inside the neighborhood.

In 2022, the neighborhood committee of Pettino protested for different kinds of projects that would have consumed soil, such as a new shopping center's project and a new parking area. They complained about the inadequacy of locally equipped parks and proper green spaces for leisure activities.

For the same reasons, the local association has asked for the re-utilization of abandoned fields in green areas. They claimed that the potential of such areas is wasted since they are occupied by building material that is temporarily stocked following the most recent reconstruction works in the district (L'Aquila Blog quotidiano online, 2021).

In view of these needs, the forestry project inside the campus is designed to be accessible also to the residents.

The case study focuses on the campus for proposing an improved coherence among environmental elements and different parts of landscapes and with the idea of addressing further open and green spaces. Quality of open spaces to improve land management and inclusiveness of the urban district. Also, support from nature is necessary for reassessing healthier conditions and urban comfort, even though urban expansion tends to reduce the presence of green areas.

In this perspective, the de-sealing and forestry project for the campus is a concrete design for a broader strategy. The recently approved deliberation from the local administration reveals the potential importance of the campus chosen from a strategic point of view.

In conclusion, the interest through this Campus is high because of its role in the city, and due to its peculiarities in terms of case study. The clear vocation of urban centrality (for students, workers, doctors, patients and so on) has therefore not been fully developed in the past years. Also, the area composed of the University Campus and the hospital is considered with great interest from different fields in relation to implementation of better practices and a better connection to the city. The campus has been the platform for experimentations in terms of models for simulating risk scenarios and designing environmentally hazard-conscious solutions (Eugeni et al., 2024). For these reasons, this area should be the one to be addressed by policies of greenery and implementation of Nature Based Solutions as the study has shown.

Aknowledgment

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Green Networks Between the Historic City and the Sapienza Campus

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Introduction

The “University City” of Rome, designed by Marcello Piacentini with extensive open spaces, was inaugurated in 1935. Initially partially wooded, these spaces have gradually been occupied by the construction of new administrative and educational buildings, transforming them into residual areas and modest flower beds devoid of functionality and environmental benefits.

The expansion of university functions has also extended to the immediate vicinity of the campus, towards the south first to Via De Lollis and then to the entire San Lorenzo district, utilizing vacant lots following demolitions or repurposing existing ones through the conversion of disused buildings. Repeated urban redevelopment interventions have introduced new activities, repurposed abandoned spaces, and constructed new buildings, contributing to the revitalization of the urban and social fabric of the district.

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Figure 1 -
Historic photo of the last decades of the 20th century by Paola Agosti with the view from the Rectorate. In this photo you can see how even at that time there were few permeable university spaces (catalogue of the exhibition "1935/1985. La Sapienza nella Città Universitaria")



The Department of Psychology has been established in the former brewery on Via dei Marsi, the Department of Letters in the former Sciarra glassworks on Via dei Volsci, and the Department of Oriental Studies in a former postal sorting depot—some emblematic examples. While these projects constituted substantial building reuse efforts, their redevelopment has not extended to the surrounding areas, nor has it improved urban quality. Despite the active presence of resident associations, San Lorenzo's public spaces

remain degraded and are invaded by parked cars, even in the most valuable areas adjacent to the Aurelian Walls and the ancient Tiburtina Gate. From a demographic point of view, San Lorenzo district also had a decrease of -13.5% of total residents, compared to an increase of +1.6% recorded in the territory of Rome Capital.

"The desired reorganization of the urban University system must take into account the overflowing of the original perimeter and the rationalization of the Roman area as a whole" wrote Ciro Ciccocelli in the catalogue of the exhibition "1935/1985. La Sapienza nella Città Universitaria".

To envision new urban strategies to deal with the impacts that the university produces on the outside, a pilot project named "Greening San Lorenzo" was launched, involving applied research and contributions from Urban Planning students. This regeneration initiative was based on a hypothesis of a green network linking the district's main locations with the University City, comprising various "types of spaces," including unconventional ones such as gardens, street tree alignments, vegetated pathways, urban forests, rooftop and vertical greenery, and urban vegetable gardens.

Green spaces are a vital part of the public sphere, and their widespread presence offers social, economic, and environmental benefits by improving public health, collective well-being, and quality of life, as numerous Anglo-Saxon studies have long highlighted.

The project aimed to enhance urban quality while simultaneously increasing safety and social cohesion, stemming from the dual awareness that cities need more green spaces and slow mobility networks, alongside direct and active citizen involvement supported by local administrations.

Project Strategies

Several site inspections and analyses were carried out with university students in order to understand the specificities of the neighbourhood and to propose feasible and coherent project interventions.

The experimental design strategies adopted are twofold. One requires municipal-led actions, while the other promotes active citizen collaboration. The first strategy focuses on pedestrian con-

nections between various facilities (university buildings, market, schools, sports facilities, association headquarters, etc.), restoring their central role in animating public spaces.

A dual network model has been developed, partially overlapping:

- A grid aligned with the existing urban fabric, integrating widened sidewalks to create pedestrian-friendly spaces suitable for social activities and tree planting.
- A neighborhood-scale ring route providing secondary pedestrian connections through courtyards and underutilized or abandoned spaces.

The second intervention strategy is based on fostering widespread environmental awareness, counteracting soil impermeabilization by reclaiming and greening private open areas—often paved, residual, and used as courtyards or storage spaces.

Residual Space Inventory for Green Networks

San Lorenzo's square-grid blocks are dense and compact, leaving only limited public green spaces, restricted to the small Parco Caduti 19 Luglio 1943 along Via Tiburtina and the sports facility area at Largo Passamonti, which is difficult to access due to the elevated roadway.

Initial cartographic analysis revealed a relative "impenetrability" of these densely built blocks. However, repeated and meticulous site surveys uncovered unexpected green hubs, lush trees, and small flowering gardens—unanticipated breathing spaces offering opportunities for a green-oriented vision. Engaging with local residents allowed students to access hidden courtyards and reopen old obstructed passages, revealing surprising green enclaves amidst asphalt and bricks.

A comprehensive inventory of all residual and potentially transformable open areas was thus initiated. Student groups were assigned specific quadrants of the district for exploration. They were provided with a list of existing and potentially transformable open spaces, including sidewalks, courtyards, gardens, bare soil areas, interstitial spaces, abandoned lots, rooftops, blind vertical walls, terraces, and balconies. The classification system was refined progressively, distinguishing between mineral and vegetated open spaces.

This seemingly simple task required training students to observe small details—elements that are often overlooked in everyday life. It also re-

quired patience to establish contact with residents. Following Georges Perec's approach in *"L'infra-ordinaire"*, this process enabled surprising discoveries: lush magnolias in the courtyard of the first Montessori kindergarten on Via dei Marsi, orange trees among marble warehouses on Via dei Volsci, ancient plane trees along Via dello Scalo di San Lorenzo, century-old pines and cedars in Villa Mercede, and walls covered in fragrant jasmine or unexpected vine tendrils.

Good Practice Guidelines and Design Exemplifications

Field surveys necessary for the open space inventory generated multiple forms of knowledge: documenting the current state, interacting with residents, developing dialogue skills, enhancing graphic and verbal communication abilities, and fostering collaborative decision-making. Resident attitudes varied—some engaged in greening initiatives, like flowered walkways in Via dei Latini, while others displayed neglect, particularly in public spaces along streets.

Figure 2 -
The dialogue between residents and students: during an event held in 2018, university students illustrated to the inhabitants how the lack of green spaces affected the daily life and sociality of the San Lorenzo neighborhood, despite it being in the immediate vicinity of the university city



To manage the complexity of acquired information and the diversity of analyzed spaces, a shared language was established to outline fundamental strategies: increasing local green space networks to connect and enhance both landmark sites and currently abandoned areas.

An investigation into successful European case studies, such as London's Pocket Parks and Paris's Parisculteurs project, led to the development of a catalogue of design solutions tailored to local conditions and resident needs.

Two graphic tables were produced: one documenting existing conditions and the other proposing redevelopment solutions. The first included:

A photographic survey to document the state, use, and conservation levels of mineral and vegetated open spaces, including unconventional ones.

Quantitative data on the proportion of open versus built spaces.

The second table proposed spatial transformations, ranging from large-scale interventions (de-impermeabilization of asphalted areas like Scalo San Lorenzo or tramway zones) to minimal actions (green wall coverings or trompe-l'oeil techniques on blind facades).

The Benefits of Greening: From Climate Change Mitigation to Urban Well-being

A subsequent phase of the project is evaluating the economic, environmental, and social benefits of greening initiatives, both at the building and urban scales. Benefits include:

- Increased property value and profitability
- Reduced energy and air-conditioning costs
- Extended lifespan of structural materials
- Noise pollution reduction
- Climate change mitigation (CO₂ absorption, reduced heat island effect, improved air quality, and stormwater management)
- Biodiversity conservation via ecological connectivity

Green Infrastructures are widely recognised to be a successfully tested tool for providing ecological, economic and social benefits through natural solutions.

Studies from the Netherlands and the University of Genoa have quantified these benefits, emphasizing that while some costs are not directly recovered by individuals, the public sphere gains significantly. Thus, policy interventions, incentives, and regulations are necessary to facilitate widespread adoption.

Examples from cities like Hamburg, Paris, Linz, and Copenhagen demonstrate the effectiveness of targeted policies, including green roof mandates, tax reductions, and subsidies. Paris's "Végétalisons la ville" program has engaged citizens in various greening initiatives, reinforcing the shift towards collaborative urban management. The implementation of Green Infrastructure features in urban areas creates a greater sense of community and helps combat social exclusion and isolation.

An Integrated Vision for Greening Policies and Interventions

The social impact of greening initiatives is crucial in fostering urban care, belonging, and inclusion. Many benefits extend beyond individual gains, requiring an integrated approach with policies, incentives, and shared regulations to enhance urban sustainability.

The social impact is of primary importance in the assessment of cost-effectiveness, due to its positive effects on space management, the sense of belonging, and social inclusion. A significant portion of the benefits derived from greening initiatives extends to the public sphere, thereby necessitating an integrated approach that can implement appropriate policies and incentives alongside a system of shared regulations. While numerous initiatives have already been implemented abroad, questions arise regarding feasible approaches in our country, where only between 2020 and 2024 has it been possible to apply modest tax incentives for the creation of green roofs.

The university, for its part, could concretely establish pedestrian connection routes between the University City and the surrounding neighborhood, while maintaining the necessary control over the institution's perimeter. Certain barriers that hinder interactions with the surrounding environment, such as permanently closed gates and impassable boundary walls, could be removed.

It is essential to develop a shared vision at various levels (university, municipal administration, and residents) to promote integrated measures aimed at increasing and protecting vegetated open spaces at different scales, ensuring widespread accessibility and diverse uses. New projects for green and pedestrian connections must be implemented with a commitment to their management and maintenance, fostering an active dialogue between institutions, residents, designers, and economic and social operators.

In this perspective, the diagrams resulting from our open-space census provide an overview of the existing conditions, highlight potentialities, and outline possible design scenarios, proving to be a useful decision-making support tool. Local administrations can utilize these diagrams to identify small-scale intervention opportunities, thus having a practical and easily updatable instrument to promote and facilitate the participatory process. Due to their straightforward communicative language, residents can use these diagrams to advocate for incentives and initiate small self-managed transformations within shared residential spaces.

Starting from those shared reflections San Lorenzo green networks could deliver tangible innovative solutions for better addressing the biodiversity, pollution, resource and climate challenges, including synergy development with other key policy areas.

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Public Space as a Nexus / Meeting Place Between University and City. A Politecnico and Milanese Narrative

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The University Campus Space as a Metaphor for the City

Universities are increasingly called upon to engage with rapid processes of economic and societal renewal, necessitating the adoption of initiatives aimed at scientific and cultural re-foundation. This includes new educational models, novel challenges in research, and fresh relationships among research, innovation, business, and, ultimately, society itself.

One significant need expressed by users of the Politecnico is the creation of new common spaces that foster both physical and social connections, extending beyond the realms of research and teaching. Alongside the recognition that educational activities require adjustments in spaces, educational models, and learning approaches, there is a growing acknowledgment that research demands facilities and services capable of supporting increasingly complex technological and production activities. Spaces dedicated to daily living, hospitality, and communal life are

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essential for fostering conviviality, inclusion, and interaction among diverse individuals – students, faculty, technicians, professionals, external educators, and citizens – each of whom calls for reconsideration and new visions in today's context.

Designing in contemporary settings signifies acknowledging the interconnectedness of time's dimensions, creating a link between the past and the evolving urban and architectural realities. As the architect E. N. Rogers eloquently put it, «Architecture is, conceptually, synonymous with life; it reflects not just our individual experiences, but also serves as a testament to our existence among those living now and in the future: to create architecture is to 'presentify' the past and 'future' the present»¹.

For contemporary architecture to fulfill this role, it must consciously embody elements of the past while maintaining a perspective oriented towards the future².

The value of contemporary design, contextualizing Ignazio Gardella's insights, is closely tied to its ability to integrate seamlessly with the historical fabric, while also presenting new dynamic and physical scenarios that respond to our society's evolving demands. The University functions as a social incubator and a catalyst for change, representing a fragment of the city that is not isolated but infused with its own rhythms, flows, and internal regulations.

Since 2015, and with even greater intensity since 2017, the Politecnico has heightened its focus on enhancing, morphologically and functionally adjusting, and modernizing its architectural heritage across its campuses³. In the context of Milan, the aim is to establish a distinct identity for the existing campuses in the Città Studi and Bovisa areas by initiating ad-

¹ Rogers, E. N. (1961) *Architettura assurda*, in *Casabella-Continuità*, 257, p.1.

² Gardella, I. (2002) *Gli ultimi cinquant'anni dell'architettura italiana. Riflessi nell'occhio di un architetto*, in Guidarini, S., *Ignazio Gardella nell'architettura italiana. Opere 1929-1999*. Skira, Milan, pp.223-230.

³ Since 2015, following a meeting between then- Rector Giovanni Azzone, Vice Rectors Sandro Balducci and Manuela Grecchi, and architect Renzo Piano, the Politecnico has initiated a phase of enhancement of its study and research facilities. This trend has been reaffirmed by the program developed by the governing bodies of the Rectorate that succeeded it (2017-2022) and took office in 2017. Through the strategic plan and ideas of Rector Ferruccio Resta, Vice Rector Donatella Sciuto, and Delegated Vice Rector Emilio Faroldi, along with the technical and political support of the Academic Senate and the Board of Directors, the Politecnico has launched a investment policy regarding the modernization and adjustment of its structures, aimed at pursuing high international quality standards, in order to adapt and align with the renewed demands of society and the university community.

justments that align with the renewed demands of an increasingly global educational marketplace. The *Leonardo* Campus seeks to harmonize new structures and contemporary projects with a sense of memory and history, while the *Bovisa* Campus aims to introduce connective and social spaces that are currently lacking.

This has led the university to a substantial reflection regarding its spaces and their transformation, deepening and promoting strategies and projects that place students, faculty, technical staff, and citizens at the center of the system, along with the integration of university spaces with the city and the paradigms of environmental sustainability and new ways of living and delivering education.

After years of targeted interventions, the infrastructural system again serves as the foundational structure of the Politecnico's spatiality, a core element in the processes of external integration and the qualification of internal functioning. «The streets and sidewalks are woven into the fabric of the Campus. This is not like the campuses of previous centuries. All buildings are transparent, open to the public, and equipped with services for the local community at street level, including plazas and green spaces shared by everyone. (...) We think of these buildings as machines: new types of machines for conducting scientific research, for presenting the arts, and now, with the forum, for bringing people together and communicating»⁴.

Milan as a Paradigm of Polytechnic Culture

In the Italian context, the metropolitan city of Milan stands out as the leading city in the country for higher education offerings, comparable to the most renowned European cities in terms of educational infrastructure.

The university system in the Milan area comprises 39 university centers with 44 faculties⁵, now referred to as Schools. Statistics indicate that there are approximately 183,000 students and over 36,000 staff members involved in teaching, research, and technical-administrative roles. This dynamic represents a significant growth trend, reflecting the increasing appeal that Lombardy holds for both national and international contexts⁶.

⁴ Discorso Inaugurale Campus Manhattanville Renzo Piano, 24 ottobre 2016.

⁵ Balducci, A., Cognetti, F., Fedeli, V. (2011) *Università come nodo dello sviluppo urbano. Riflessioni a partire dal caso milanese*, AIM, Associazione interessi metropolitani, XXXII Conferenza italiana di scienze regionali, Torino.

⁶ Milan is the destination for most students in Italy, with a growing percentage of about

This phenomenon goes beyond quantitative factors, with Milan's numerous university centers representing a "metropolis within a metropolis". These urban systems reshape contexts, attracting students and international investments while fostering competitiveness⁷ at institutional and territorial levels, aiming for higher excellence standards in education and research. There is notable attention to job market needs and the "third mission,"⁸ facilitated by a collaborative model involving businesses, government institutions, and universities. The organization of university campuses in Milan has become central to discussions on the city's growth; rather than a traditional university town, «Milan can be interpreted as a city of universities»⁹.

Established in the late nineteenth century, Milan's universities grew primarily through two models: the transformation of monumental city center buildings and the construction of new facilities in peripheral areas, following a pavilion-style design. This transition from an exclusive to a more inclusive university model has led to significant enrollment increases and stimulated the reuse of abandoned industrial sites, allowing for a layering of memory. Milan's paradigm elevates universities as key players in urban regeneration and innovation, addressing central areas and long-standing unresolved territorial sectors, effectively replacing the industrial city with a focus on higher education, such as happened in Bovis, Bicocca and IULM¹⁰.

13% of the national total, compared to 11% over the past ten years. On the international stage, it is the second most popular destination in Europe for Erasmus students, after Barcelona. There are currently 12,301 foreign university students, representing approximately 6.7% of enrollments, having tripled since the data from 2004. In *Espresso*. *repubblica.it*, *Milan as the Capital of Studies: it now holds the record for enrollments*, December 10, 2015.

⁷ In the QS World University Rankings 2020, an international university evaluation system where *employer reputation* and *academic reputation* are two indicators used to assess universities, the Politecnico di Milano ranks 137th in the world and first in Italy.

⁸ Scholar Henry Etzkowitz identifies three moments in the evolution of universities: the defining of the teaching function during the medieval-industrial period; the focus on research from the first academic revolution of the 19th century; and the awareness of the role of knowledge in social development following World War II. These three aspects constitute the "triple helix" of the university's mission.

⁹ Etzkowitz, H. (2008) *The triple Helix: University-Industry-Government in Action*, Routledge, London.

¹⁰ Baglione, C., Dulio, R. (2016) Five case studies in Baglione, C., Dulio, R., *Campuscontrocampus. Architetture per architetture per studiare e ricercare 2*, Maggioli, Santarcangelo di Romagna, p.18.

The reality of Città Studi, with its layered structure, represents, over a century after its founding, a neural network of the Milanese urban system, both for the educational urban hub it embodies and for the role it assumes in the parallel development of the metropolitan city.

In line with these ideas, the *New Campus of Architecture* has emerged, aimed at expressing and reinforcing several dominant principles: the value of green spaces; the relationship between the project and historical buildings; the edge and boundary as design tools; accessible terraces as an extension of public space; the lowered distribution plan as a new hub for distribution and socialization; and the integration and connection of historic buildings.

These are the main concepts underlying an urban insertion project that also envisions the integration of new structures that are volumetrically more contained than the existing ones, in order to respect and enhance them. This includes a new headquarters for architectural education, serving as a tool for concentration, density, and reduction of land consumption, aimed at increasing greenery as a connecting element with the surrounding fabric.

The interpretation of the underground level as the true *zero level* of the entire system arises from an understanding of how students experience the reality of the Campus. Starting from the *Patio* of the central metallic building designed by Vittoriano Viganò, this space serves as a hub for distribution, aggregation, and at the same time, as a study and event area that is also open to the city. This concept extends to the new open spaces that are accessible and connected between the existing buildings and the new constructions.

The design idea – emerging from Renzo Piano's overarching vision – sees the quality of the semi-public open space as the essential foundation of a system aimed at reorganizing the Architecture Campus situated between Via Bonardi and Via Ampère. This will involve an approximately 9,000 square meter tree-lined outdoor space that is open to the community, serving as a gathering place and a relational fabric among the campus's constituent elements, enhancing them architecturally and integrating their functional offerings.

It will be an actual lowered *Giardino dell'Architettura* that includes about one hundred and thirty new trees of various species, aimed at ensuring landscape and environmental quality in the spaces nestled between the buildings constructed from the 1950s to the present day.

The qualitative essence of this proposal lies in its ability to regenerate outdoor spaces, creating a new system of relationships among the buildings that confirms that «the spaces between things are just as important as the things themselves, and that ideas of position and relationship constitute fundamental elements of the city's design»¹¹.

The need to connect open spaces and voids has led the designers to develop a theory of possible interventions for urban mending, taking on the responsibility of introducing three new works that reflect the architecture of our time, integrated within the existing system: two building blocks designated as classrooms for teaching, and one designed to become a center of excellence for modeling, both in physical and digital/virtual dimensions.

The intervention for the new Architecture Campus, conceived in 2015, marked the *incipit* of an ambitious *Masterplan* that, since 2017, has been catalyzing a series of comprehensive and targeted interventions aimed at providing morphological and functional continuity to a system that has arrived in a syncopated state. The green system serves as the perceptual and relational connective tissue of the entire volumetric planning project, composed of surgical episodes connected by a criterion of continuity and contiguity. It combines new designs and buildings with initiatives that valorize the existing structures, both those of established architectural historical value and those of ordinary quality.

Reaffirming the presence of excellence in Città Studi associated with the world of research is one of the strengths and objectives outlined in the current rectorate's action strategy. This aims to assert, in continuity with its history, the Politecnico's commitment to being an entity capable of contributing to urban life.

Returning to the new lowered *Giardino dell'Architettura*, the two buildings characterized by modern architecture, designed by Gio Ponti and familiarly referred to as the *Trifoglio* and the *Nave*, overlook this space, that has been restored in facades and interiors.

The main design operations included in the program, located in the Città Studi area, involve a wide network of project activities and implementations that are interconnected: from the establishment of a new *Agorà degli studenti* within the building designed by Giordano Forti, Gio Ponti,

¹¹ Balducci, A. (2017) Lontano o dentro la città / Far Away from or Inside the City, in *Lotus International*, Politics of the Campus, 165, pp.88-95.

and Piero Portaluppi, completed between 1953 and 1961, to the *Giardino di Leonardo*, which entails the revitalization of the naturalized space at the center of the historic Politecnico Campus.

Regarding the *Giardino di Leonardo*, the intervention aimed to recover and enhance the historical significance of the site, bestowing formal order and architectural and environmental quality, particularly in reference to the central green space facing the buildings/pavilions constructed since the 1920s and its tree-lined avenues. The project aimed to design open spaces to accommodate daily users, focusing on continuous green areas and accessible equipped zones. It sought to enhance the university's symbolic location by improving livability through relocating cars, redesigning pedestrian pathways, increasing green spaces, repaving historic avenues, and adding new covered study areas.

Overlooking the *Giardino* are the oldest buildings in the entire system, particularly the Rectorate building, which at the beginning of the twentieth century saw its construction initially slowed and then halted during the war. Construction resumed at the end of 1919, and on December 22, 1927, the new headquarters of the Politecnico di Milano was inaugurated. Approximately ninety years after the building's construction, the Politecnico has decided to initiate its restoration project, restoring the extraordinary expressive strength of its early twentieth-century architecture, both in its daytime and nighttime versions.

Adjacent to the *Giardino di Leonardo*, a preliminary design of the *Domus for professors* was developed by one of the most prestigious faculty designers at the Politecnico di Milano, Eduardo Souto de Moura. Conceived as an addition to a current study room, the Pavilion addresses a space that is currently underutilized and not perfectly integrated with the new flows suggested by the *Giardino di Leonardo*.

Alongside the described works, further interventions aligned in intent are included, pertaining to the categories of reuse, architectural redevelopment of existing structures, and the meaningful enhancement of open space achieved through artistic and sculptural gestures.

Perspectives and Urban Values of Places and Spaces for Research and Training

In Milan, the need to rethink existing campuses and the opportunity to design new ones could help identify the nodes of a network of public spaces aimed at fostering reflection on an urban scale.

Current processes reveal positive perspectives and trends that make the notion of a society identifying places for education and culture as a solid urban growth system increasingly credible. New gathering places for neighborhood communities and the growing student population, inhabited spaces where thoughts are developed, and the consciousness and reflections of young, developing minds are stimulated.

This unique dialogue and system constituted by the city and educational realms affirms the role that the university embodies as a beacon of significant social and urban transformations affecting urban realities that engage in this essential and increasingly important public social function.

Their reciprocal relationship would enhance the opportunity for the university to position itself within the city as a veritable system of teaching and research, no longer solely at the local level but belonging to a global network of other education and research institutions. This planetary infrastructure comprises a significant network of public spaces integrated into cities.

The campus embodies, through its hybridizations and contaminations, the ongoing transformation in the way spaces for study and research are conceived, representing one of the most important strategic nodes of the territory, through which the city can open and expand its boundaries in support of and in favor of the dissemination of cultural variables.

The presence of the university within urban contexts encourages the establishment of a creative field as a primary factor for increasing cultural value in a specific setting, fostering the anticipation of intellectual needs on which to invest, also through proactive synergy with local entrepreneurial entities.

Moreover, universities play an undeniable role in the essential action of preserving the artistic and cultural heritage of their locations. It is undeniable: a city that incorporates an academic reality is, by reflection, endowed with a substantial pool of faculty and researchers experienced

in multiple disciplines, as well as benefiting from the solid presence of qualified youth.

The university and its campuses, therefore, represent an evolving and transformative system with young people from all over the globe as the main protagonists. Within university spaces, they find the opportunity to access the world of work and life. Economically and culturally investing in their spaces means, for the Politecnico di Milano, solidifying the foundations laid in 1863 by the pioneers of our community to educate engineers, architects, and now also designers, but above all individuals – intellectuals and professionals – who have made indelible contributions to the progress, innovation, and livability of our environment over the decades.

The cultural re-examination of polytechnic spaces, activated in the last six years, is driven by this scenario, with the primary objective of best configuring the stage on which the training of our future is enacted every day¹². The open, public, and semi-public spaces within university campuses represent the connecting and socializing element among students, faculty, technical-administrative staff, and all members of the broader academic community as they engage with the city. Open spaces facilitate learning, becoming the bridge between a world that was entirely closed until a few years ago and one that now requires a continuous and fruitful relationship with reality.

In conclusion, the relational space of the Politecnico di Milano *Leonardo* Campus, in harmony with the other spatial domains of the university present in the city and the decentralized Territorial Poles, becomes a teaching and experimentation tool, “in the real”, both within the behavioral sphere of its inhabitants and in the refinement and cultivation of a culture sensitive to the environment. The synergistic dialogue between the qualities of work, study, and relational spaces, and those of research and teaching, is fundamental.

Based on these premises, the new projects involving the Politecnico di Milano are founded: significant urban reorganization events serve as a natural effect of the reorganization processes of the economy and academic culture.

¹² Gregotti, V. (2002) Progetto Bicocca, in Leotta, N. (eds), *La nascita di una Università nuova: Milano-Bicocca*, Skira, Milan, p.87.

In this sense, the sites of knowledge production are contaminated through new functions, new actors, and new processes. The disciplinary unity of “architecture-urban planning”, theorized by Alberto Samonà¹³, serves as the key to a dialogical project: the university’s new design horizons stem from the imperative of regenerating, reorganizing, and reshaping spaces in the light of new educational models and renewed instrumental support.

Renzo Piano’s project for the Bovisa area, initiated by the Politecnico di Milano in 2017 and now under construction, opens a new chapter: a story yet to be written that will constitute the new future of a Politecnico di Milano capable of embodying the role of an urban actor within the context of the city of Milan.

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¹³ Some concepts, passages, and themes are freely adapted from the following articles: Faroldi, E. (2019) Università è città. Milano paradigma della cultura politecnica, in *Modulo*, 421, pp.58-65; Faroldi E. (2020) Università e città. *Univercity: l’università come infrastruttura per la rigenerazione urbana*, in *The Plan*, 122, pp.58-61; Faroldi, E., *L’architettura del Campus al Politecnico di Milano. Storia, sviluppo territoriale e nuovi innesti urbani*, pubblicazione degli atti del Convegno Le città universitarie del XX secolo e la Sapienza di Roma: Alta cultura, Innovazione e Internazionalizzazione, Ottantesimo della città universitaria di Roma, 23-24 novembre 2017, Roma (in the process of publication).

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Vegetable gardens to “feed” the bond between city and university. A case study from Murcia, Spain

*Giulia Luciani**

Introduction

University campuses can be described as microcosms that, while having their own spatial and social boundaries similar to those of an “urban organism”, are part of a larger macrocosm, that of the urban system. University open spaces serve multiple functions simultaneously and, in the case of public universities, belong both to the academic community and to the city. One of these functions is to foster socialization among students and other members of the university community. Additionally, university spaces play a key role in promoting the psychological and physical well-being of those who use them (Hongrui et al, 2024), not only students, but also workers and family members. These spaces can also serve as environments for educational activities that cannot take place within traditional university classrooms.

A specific type of space found in many university campuses is the university vegetable garden, often created through the initiative of professors and students interested in agroecology, a subject not always included in the academic curriculum. Examples of vegetable gardens activated with

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this scope include the University of Veracruz in Mexico (de la Cruz-Elizondo et al., 2024), the Complutense University of Madrid (Universidad Complutense de Madrid, n.d.), Yale University in the United States (LaCharite, 2016), and others.

This text focuses on a case study from Southern Spain, which connects both to similar international experiences and to the specific character – spatial, cultural, and socio-economic – of its local context. The first two paragraphs introduce the theme by focusing on the role of the vegetable gardens as peculiar educational spaces and on their role of public spaces that establish a relationship between the campus and the city. The third paragraph describes the Eco-Campus vegetable gardens case study, from Murcia, while the fourth delves into the special bond that these gardens have with the Murcian territory. Finally, the last paragraph collects some considerations on the role of the Eco-Campus gardens within the university and the city, emphasising their interconnectedness with multiple spaces, practices and societal groups.

University vegetable gardens as educational spaces: learning agroecology

University vegetable gardens have been spaces for unconventional learning practices, especially related to agroecology, a transdisciplinary science that emerged in Latin America in the Eighties (Méndez et al., 2014; Fontalvo-Buelvas et al., 2024) and is quite under-represented in European curricula (Egea Fernández et al., 2014). Agroecology examines agro-food systems with a particular emphasis on the sustainable management of natural resources involved in food production and the intricate relationship between agriculture and society (Altieri, 1980; Francis et al., 2003). In the context of agroecology teaching, university vegetable gardens serve as a unique form of educational space, which provides opportunities for interactive and practical learning beyond conventional classroom environments. This distinctive learning model highly values interdisciplinarity, integration of theory and practice, and dialogue among various bodies of knowledge and actors, such as students, faculty, and the wider community, a collaborative learning approach that points towards what can be defined as a “learning community” (Kilpatrick et al, 2003). In learning communities, emphasis is put on two aspects: “the human element of communities, and the profits that accrue from building on the synergies of individuals in common locations or with common interests” and “curricular structures (i.e. an inanimate structure) as the means to developing

‘deeper’ learning” (ivi, p. 2). This is especially true for the Latin American experiences (McCune and Sánchez, 2018). Such an approach to teaching and learning can be traced back to the roots of agroecology in social movements, as well as in science and practice (Wezel et al., 2009).

Collaborative learning in these spaces is not limited to human actors but involves interactions with the broader ecological system. It can be interpreted as a form of multi-species learning (Meijer 2023), as vegetable gardens are co-managed by humans, animals (for instance, pollinators such as bees), and plants. Students, therefore, not only learn about sustainable farming practices but also experience the relationships between humans and nature. Awareness of the interconnectedness of human activities within the web of life not only fosters a deeper understanding of the ecological processes involved in food production but also highlights the interdependencies among various life forms.

University vegetable gardens as public spaces: between campus and city

University gardens act as important sites for community engagement, where dialogue can take place among various stakeholders, including academics, local communities, and organizations. These spaces can foster a sense of building and working together in community, recognizing the importance of forming learning and practice communities in which diverse forms of knowledge and practices are acknowledged and discussed. This creates an opportunity for a necessary connection between educational institutions and society at large (Fassi, 2020).

This aspect leads us to better define their role within the socio-spatial structure of campuses and cities. University gardens, in fact, are not just open-air classrooms, but can function as true public spaces. They enhance the liveability of the campus by providing access to green spaces, fulfilling the need for environmental accessibility that is often lacking in urban areas (Cimini et al., 2024). Furthermore, they enhance physical well-being by offering opportunities for open-air, physical activity, which is one of the key roles of public space in contemporary cities and society (Sepe, 2023). Engaging in the physical labor of gardening—whether through planting, weeding, or harvesting—provides individuals with regular opportunities for exercise, promoting better cardiovascular health, strength, and flexibility. Beyond the physical benefits, gardening offers mental health advantages by reducing stress and anxiety, fostering

a sense of accomplishment, and resulting in improved physical, psychological and social health (Soga et al., 2017). University gardens also promote health in another sense, as they help build knowledge and skills for healthier lifestyles and food models, both for individuals and for the environment. Furthermore, these spaces depend on the care of those who use them, and this mutuality fosters a sense of belonging.

Different configurations of garden spaces and management approaches can either enhance or weaken these positive aspects. Additionally, they can impact the level of openness of these spaces towards the “micro-city” of the campus and the broader city.

A case study: Murcia Eco-Campus

The University of Murcia, in southern Spain, launched an initiative called *Huertos Eco-campus* within its Espinardo Campus, as part of the environmental management program “Sustainable and Healthy Campus” (*Campus Sostenible y Saludable*). The program’s main objective is to achieve proper management of natural resources from the social, environmental and economical perspectives. One of the strategic action lines of the program is precisely agroecology.

The initiative features two types of vegetable gardens, the individual parcels (*Parcelas Individuales*) and the community garden (*Huerto Comunitario*). The aims of the first initiative are to learn how to produce healthy food based on agroecological principles, preserve endangered genetic resources, encourage social interaction within the university community, promote learning in areas not covered by academic curricula, such as agroecology, food sovereignty, and ecological economics, through workshops, talks, courses, seminars, and meetings. Additional goals in the case of the community garden are to encourage horizontal engagement among members of the university community (students, faculty, and staff), as well as between them and their families, friends, and the broader Murcia society, promote associationism and forms of civic organization that enable responsible and supportive participation, facilitate the exchange of knowledge and expertise, foster social and personal relationships among users of different ages and cultures (Universidad de Murcia, n.d.).

The individual parcels

The Eco-Campus vegetable gardens were launched in 2010. They included at first 28 slots located in a very visible, accessible place, nearby the main campus access and adjacent to the main square Plaza de la Sostenibilidad, where a public information office and some cafes are also located. Later on, in 2015, new community gardens were added (Egea Sánchez and Egea Fernández, 2017), with 18 new plots in a separate area, next to the ESIUM Integrated Services Building. Today, the community gardens consist of 46 agricultural plots available to the university community (students, administrative staff, and faculty). The plots, each approximately 20 m² in size, are equipped with an irrigation point connected to the campus's main water network. Additionally, an area has been set up near the plots for communal tools and other equipment useful for gardening or maintenance. Two of these plots, one for each community garden area, are reserved for university-related activities, while the rest are distributed through an annual lottery among the campus community members who wish to participate (Universidad de Murcia, n.d.).

To be eligible in the lottery, the only requisite applicants must fulfil is to belong to the university community: students, faculty and staff all have access to the lottery. If they are assigned a plot, they must use ecological management techniques. The rules of the lottery of the two garden areas have some differences. While for the first area no priorities are established for the ranking, except for a priority accorded to applicants who have never been assigned a plot, in the second area priority is given to applications presented by a member (or more) of the university community and an elderly person who has cultivated the traditional vegetable gardens of Murcia throughout their life, in order to promote intergenerational exchange and the transmission of the traditional farming culture of the peri-urban Huerta of Murcia, which is at risk of being lost (Egea Fernández et al., 2014).

While the single plots are managed by the contractors, the whole garden system is managed by the Technical Unit of the university, which is also responsible for monitoring the correct use and management of the shared gardens.

The community vegetable garden

The community garden covers an area of 255 m², bordered by a pathway that provides access to the centre of the plot. The land will not be divided into individual plots, although one area may be designated for the cultivation of species and varieties representative of other culinary cultures, if there is sufficient interest (intercultural garden). The garden is open to all interested members of the university, including students, faculty, and administrative staff, as well as external social collectives that wish to participate. More than a space for production, this garden is a space that fosters social interaction, knowledge exchange, and learning about sustainability and eco-friendly agricultural practices.

The garden is self-managed collectively by the users, with key decisions, such as the types of activities to undertake or which species to cultivate, made through monthly assemblies, with tasks and responsibilities collectively distributed among participants. The planning and decision-making process is democratic, with all participants having a voice in determining what crops to plant, how to organize work, and which educational and social activities to host. This cooperative model ensures that the focus of the garden remains on building a sense of community and learning rather than solely on agricultural production.

A coordinating group, elected by the participants through a voting process, is responsible for managing, planning, and organizing garden activities, in line with the decisions of the assembly, oversees the activities, and ensures smooth communication between users and university authorities. The group's role includes organizing collective workdays, open garden events, and social activities such as communal meals (Universidad de Murcia, n.d.; Egea Fernández et al., 2014; Urban Nature Atlas, 2021).

Huertos and Huerta: campus and campo

The vegetable gardens of the Espinardo Campus at the University of Murcia are not only linked to the academic community but also to the broader territory of Murcia. The peri-urban landscape of Murcia is historically defined by the Huerta, an agricultural region of approximately 11000 ha characterized by a complex irrigation system which dates back to the 9th century, branching from the river Segura, enabling the cultivation of vegetables and fruit trees in an otherwise semi-arid area (Cánovas-Molina et al., 2021). The land structure of the Huerta is composed of small plots of land intersected by a dense network of pathways ("caminos de la huer-

ta”), which are heavily populated and closely connected to the city in a reciprocal relationship (Mata and Fernández, 2010). The Huerta of Murcia is one of the few surviving landscapes of its kind in the Mediterranean. However, this agricultural system has been facing significant threats since the second half of the 20th century, including uncontrolled urbanization, which has already consumed nearly half of the agricultural land, the declining competitiveness of traditional farming, the parallel rise of industrialized agriculture, which is transforming the landscape of Southern Spain with serious consequences for the environment (Arbonès et al., 2024), and a lack of generational renewal. In response, various community-driven movements and initiatives have emerged to protect the Huerta, not only to preserve its cultural values but also to promote its model of local, sustainable agriculture and biodiversity conservation.

The university gardens are an integral part of this active effort to protect the Huerta. The University of Murcia has in fact contributed to this process by supporting several initiatives, such as *Del Campo al Campus*, a responsible consumption program launched in 2010 within the framework of the Sustainable and Healthy Campus program and in collaboration with Biomurcia S.L. This initiative allows small Huerta producers to sell their products directly at the Espinardo campus twice a week. Another key initiative is the *Banco de Semillas Locales*, created in collaboration with the Red de Agroecología y Ecodesarrollo de la Región de Murcia (RAERM). As a result of ecological farming courses, seeds from local varieties at risk of extinction have been multiplied, contributing to a seed bank stored at SEAF. Since 2015, RAERM’s activities have been channeled through the Agroecology Classroom at the University of Murcia as part of the Sustainable Campus program (Egea Sánchez and Egea Fernández, 2017).

From the campus to the city, and back

The vegetable gardens on the University of Murcia’s Espinardo Campus serve as a pivotal point that connects the campus, the city, and the surrounding territory, acting as a *rotula* that articulates relationships across multiple scales. Through agroecological management, these gardens form a bridge between the diverse levels of agricultural space, creating a public, identitarian space for the city of Murcia. The place identity (Sepe, 2013) is related to the campus spatiality and culture but simultaneously links to broader identity and spatiality, that of the city-huerta system, in a context – in space and time – where destructive change is accelerating and long-term identity and meaning are being lost.

If it is true that “by shaping that built environment, urban designers influence patterns of human activity and social life” (Carmona et al., 2010, p.133), university campuses can be key agents in driving transitions, since they can introduce, test and nurture innovations – in this case, retro-innovations (Stuiver, 2006) in agriculture, in food consumption, lifestyles, place values – in protected niches, from where they can then spread to the outer world (Colding and Barthel, 2017).

As a public space, the gardens are strategically placed in a nodal area of the campus — which is significant given the campus's limited access points, due to the highway that isolates it from the city. This placement ensures that the gardens are among the first public spaces people encounter when entering the campus. The gardens are also integrated into a larger signalled network of paths (*rutas de senderismo*) that echo the *caminos de la huerta*, enhancing their visibility and accessibility (Universidad de Murcia, n.d.).

From the social point of view, the Eco-Campus vegetable gardens serve as bridges between various social groups, creating an open environment where perspectives and experiences can be shared. Through their design and communal structure, they help strengthen ties between the campus and the urban and periurban context, encouraging collaboration across various sectors of society. Within the university, they promote an alternative learning and practice relationship between students, faculty, and staff, fostering a sense of community that transcends university roles. Beyond the university, the gardens engage with the wider community, involving multiple generations, local residents and producers, and various associations dedicated to preserving the agroecological, social, and historical values of the *Huerta*. As garden users work together, they form bonds that extend beyond the confines of academic life, reinforcing a sense of belonging both within the university and within the larger urban context. This dynamic highlights the interconnection between the needs of students and the wider city. The gardens illustrate how academic institutions, traditionally seen as isolated from their surrounding environments, can instead become active participants in the life of the city. By meeting the needs of students for spaces to learn, socialize, and relax, while also addressing the health and environmental challenges facing the city, the university gardens function as key instruments in strengthening urban resilience.

In Murcia's Espinardo Campus, the individual garden parcels, which are shared by members of the university community, and the community

garden, open to the wider public, offer distinct yet complementary functions within the broader framework of public space. While the individual parcels are primarily used by students, faculty, and staff — creating a more intimate and localized space for cultivating agricultural knowledge and fostering personal engagement with sustainable farming practices — the community garden serves as a larger, more inclusive venue that extends the benefits of these agroecological practices beyond the campus boundaries. The community garden in a way enhances the social, environmental, and cultural opportunities provided by the individual plots, allowing for a broader spectrum of public interaction, opening the “learning community” to a wider range of actors and networks and thus multiplying the synergies that enrich the learning process.

This interaction reinforces the idea that agricultural practices are integral to the identity of the city and its cultural and social fabric. The community garden’s role as a public, open-access space thus becomes a critical point of intersection which reinforces the symbiotic relationship between the university, the city, and the territory at large. By amplifying the collective experience of agroecology, it also strengthens the sense of belonging and social cohesion, creating a shared space where environmental sustainability, cultural preservation, and community empowerment can thrive in unison.

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Transitions in Land-Use – Lisbon Square and Campus Location

*Isabel Maria Madaleno**

Public Spaces and Friendly Cities

Public spaces for community campuses and universities already exist in the northern part of the capital city of Portugal, where the University of Lisbon possesses an extensive campus (Alameda do Campo Grande). Previous studies have focused mostly on environmental issues, designed to show how urban agriculture could give social, economic, environmental and cultural sustainability to the metropolitan areas (Madaleno, 2022). The most recent case study has focused on the usage of students' mental maps in the beautification and amelioration of cities (Madaleno, 2024). The present paper will lessen the focus on a single square applying urban and regional planning best practices to present solutions for one problem: the relocation of ministries existent there. Our proposal is to place an international university in those abandoned buildings and introduce another land-use for the open historical square existent nearby.

Friendly cities have five pillars: environment, age, socio-economic landscapes, gender and culture. Concerning the first pillar, the best practices

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to cope with climate change and disasters such as floods or droughts, have been the main aim of several of our scientific papers, recommending among other measures the adoption of urban agriculture as a sustainable practice designed to produce oxygen, food, health, biodiversity and to favour the development of sustainable neighbourhoods. Front and backyards are thought of as infiltration spaces necessary to halt excessive rain from storms. Along with them, the green pathways or corridors of greenery conceived for the municipality of Lisbon have also been presented to the academia as good examples of urban landscape options used to promote the reproduction and circulation of flora seeds and of fauna, such as butterflies and birds, in cities and metropolis (Madaleno, 2022).

According to Rodriguez-Rodriguez et al. (2024), the second pillar can be tagged as “The Age-Friendly Cities and Communities (AFCC) paradigm” (p. 683), meaning, spaces where elderly people feel accompanied and can interact better with each other and with not so old citizens. Villanueva and Vallbona added that: “The forced confinement caused by COVID-19 reinforced the notion of proximity and (re)situated the neighborhood scale as a physical space where social interactions are developed, ties are generated, shared loyalties and identities are built and contribute to weaving a network of mutual support” (2024, p. 239). A good example of such localized urban spaces are public squares, where during confinements people could stroll and exercise themselves and their pets and share food and other goods with less wealthy neighbours, landscapes of power which role survived the pandemic virus phase.

Socio-economically friendly cities and neighbourhoods, the third pillar, are those conceived for all social strata, with the focus on the less wealthy spaces, because the poorer are the ones that use public transportation, stroll around streets and mingle in public squares. As to the fourth pillar, gender, there aren't really cities for males and cities for females, but there is the notion that there are different ways to conceive and to use public spaces. In the words of Arianna Scaioli: “This approach allows us to reframe designing for gender equality and the notion of inhabiting from and through a feminist perspective not as an only-women-issue but rather it involves dismantling and reassembling our urban landscapes to interconnect the ‘one’ with the ‘other,’ (Arianna Scaioli, 2024, p. 409). The fifteen-minute city also fits into this notion of gendered city, as it permits shopping, to take children to school, to work and to live within walking distance from housing apartments or detached houses (Madaleno, 2024).



Regarding the fifth pillar, culture is challenging in Europe, as History has left patrimonial heritage evidence in all built-up urban spaces. The historical centres of many cities have undergone notable transformations in recent decades. That's the case of Madrid, the Spanish capital, where Palacios, Hidalgo, Roca and Herrada (2024) detached "changes in commercial dynamics and cultural facilities promoted and linked to global processes such as globalization, tourism, and gentrification" (2024, p. 261). Coincidentally in the most notable Lisbon square, most of the palace buildings were designed by a Portuguese architect, except for the corner towers, devised after a Filipino type of architecture, taken from a Spanish king. The square is the "Palaces' Yard" and today named "Trade Square", a beautiful main entrance for the capital of Portugal, located in the waterfront of Tagus River (see Fig.1).

Figure 1 -
*Palaces' Yard
or Square of
Trade, the most
world recognized
image of
Lisbon.*
*Source: Google
Image*

The palaces have been housing national ministries for a long time, and some restaurants with high prestige. However, the year 2024 marked a process of eviction of all public services accommodated in the palaces, towards a public building-only concentration, located northwards in the city of Lisbon (Avenidas Novas). The action gave way to new possibili-

ties of development and ample discussions about the new functionality of the square and its monumental buildings. One of the proposals has been part of an academic exercise with the Urban Geography students at the Institute of Geography and Spatial Planning (IGOT), in the University of Lisbon. It consists of a gentrification discussion that also includes the transformation of Fig. 1. Palaces Yard into a private square. In this contribution our proposal will be to ameliorate cultural land-uses in the capital of Portugal, turning this central area into more than a touristic and administrative location.

Methodology and techniques used were fieldwork for direct observation of the urban landscape together with comprehensive bibliographic review. This is a qualitative study, and the research question is used to perform a problem-based methodology: Can one accept the privatisation of public squares? Discussion and proposals to solve the problem presented here were first discussed with our peers in an Urban and Regional Change and Policies (ZOE) meeting, at the University of Lisbon.

The project of public square gentrification persists from 2018, and it consists of transforming a good part of the elder ministries into a six-star hotel, expected to be revitalized and presented to international investors (Lisbon Resort Hotel). A gate and walled area would turn the Trade Square, the historical place where the before-last king of Portugal was assassinated, (back in the 1st of February 1908), into a private garden for the very rich locals and tourists, instead of a meeting point for all Portuguese residents and our visitors. Locus of festivals, Christmas and New Year celebrations, the historical square could be turned into a place of exclusion for most Lisbon and all Portuguese citizens. The research question is applicable here: Is it acceptable to privatise public squares?

The History of Squares

Squares are one of the city's first achievements. The "Forum" of Roman urban agglomerations were the equivalent to the Greek "Agora". The square was central and contained governmental buildings. It was in "one of the angles formed by the intersection of the two principal streets" (Pacione, 2005, p. 56-57). Lisbon, like most of the contemporary European centres was influenced by Romans. Palaces' Yard under study was designed in the mid Eighteenth century, following a massively destructive 1755 earthquake. The King's government was steered by Pombal, a man strongly educated under western cultural values (Illuminism). This was the period of "new urbanization", a process of growth of the cities that became admin-

istrative and trade carrefours all over the European continent (1750-1800). The movement led to the rise of monumental public buildings and cultural institutions in the Nineteenth century, when a new bourgeoisie or the industrially based capitalists had power and money to beautify the cities.

According to Zucker (1959) cited by Alves (2003) there are 5 types of squares, in terms of design: 1) The closed square (such as Piazza Navona, in Rome or the Trade Square, in Lisbon); 2) The dominated square, also contained by buildings and functions (St. Marcus, in Venice); 3) The Nuclear Square, located around an urban centre (the St. Peter Square, in the Vatican); 4) The grouping of squares inside the core of a city; 5) The amorphous square, with unlimited space. The Palace's Yard or Trade Square is contemporary of the Place Royale of Paris, and it has the same function, such as the Plaza Mayor of Madrid, also, meaning, to give the king his own place of glory. That's why the statue of King Jose I, at the time of reconstruction of the Baixa (or C.B.D.), in Lisbon, was placed at the centre of this public space. It was designed by the Portuguese architect Eugénio dos Santos, and "following the fashion of Pombal's Illuminism, it constitutes an (...) admirable stage open to the Tagus River" (França, cited by Alves, 2003, p. 97).

This central and historic Lisbon neighbourhood (Baixa) was rebuilt by public and traders' money, under the royal power, just because it was necessary to "give a grave to the dead and feed the living peoples", after the 1755 earthquake, in the words of Pombal (Barata-Salgueiro, 2001). Being a planned space, it had the gridiron plan, with the purpose of dividing up the plots equally, in a layout like that of ancient Roman Empire military camps. Except for the main square: instead of being drawn in the core of the Baixa, it was placed next to the River Tagus, from where a tsunami had flooded all the neighbourhood during the earthquake. This way, the empty space would be used to halt any future catastrophic event.

The square had arcade buildings, all aligned and equal and designed to host governmental buildings and military headquarters. At the entrance of the 36.000 m² square (180 X 200 metres) is the most impressive of the 79 arches, a sort of triumphal open gate, signalling the importance of this main Palaces' Yard, a gate to the city's Central Business District (Baixa). That's exactly this arch that the new 21st century proposal wants to close, with a physical gate, to isolate the square from the remainder city area. The statue of King Jose I is proposed to be displaced, and the whole layout and the History of Portugal will be evicted all together with the lower income people that stroll over there in festive days, as well as the less wealthy tourists. The arguments are that Baixa is no longer the C.B.D. of

Lisbon, moved to the northern New Avenues area (Avenidas Novas), and Portugal is now a Republic, no longer a monarchy.

It is known that the richest stratus of the urban population doesn't mingle with the poor peoples and tourists in public squares. These are frequented by the elderly people; they are a meeting point for the culturally and ethnically discriminated (political manifestations are still taking place there); the square is a strolling landscape for the bare-foot tourists that sleep in hostels and are fed in taverns (*tascas*). This main square is also a crossing point for the less wealthy residents that cannot afford to live in Lisbon and thus take the boat across the river towards the Southern margin, where apartments are cheaper. That's why some intelligentia and expertise from the local and national governance feels that this magnificent open space will become a waste, after all ministries located under the arcades will be displaced to inner city neighbourhoods.

Research Question Answers

Anastasia Loukaitou-Sideris, from the University of California argued that "urban design can and must play an important and constructive role in the development of cities as a public good" (2024, p. 3). The privatisation of a public square turns the space into an exclusion site and therefore, by definition, excludes it from public land-use. Marichela Sepe, from Sapienza University of Rome, has been focusing her work on "intangible aspects linked to the identity of the places" (2024, p. 6). This square is a heritage site for Lisbon residents and Portuguese nationals, ravaged by past seismic events, and with an uncertain future due to the displacement of current functionalities into other city areas. In her view "flexible planning makes possible to use local peculiarities as a starting point for the redevelopment project" (2024, p. 6). That flexibility is only possible via wide participatory planning options, available to the residents.

The right to the city has long been discussed by geographers, particularly in Brazil. According to Jacintho and Carvalho (2022) the construction of a more human urban reality depends on our own struggles, from the land use to knowledge diffusion about urban spaces, because they are places that should be used to the satisfaction of our needs. However, the alienation of public spaces has already been done in touristic cities, like Barcelona, in Spain. Parks, for instance, are conceived as commodity of local governments for the usufruct of a few. That's the case with Gaudi's Parque Guell. The excuse to charge for an entrance is that the maintenance of the public spaces is very expensive. Aren't they all?



If residents pay taxes they should be charged so as to be able to cover all expenses, including cleaning services. In Lisbon, a previous example of commodification of a historical complex was the Castle of the city, located up hill, an open space used to stroll and to look into the city and Tagus River views, as the castle itself is not really open to visitors (see Fig. 2). There, the municipality gave Lisbon residents the privilege of coming up for free, under presentation of an official document, at the entrance. But any other open space was always open to tourists and nationals, until this Palaces' Yard alienation proposal. And there are several very good viewpoints to the city elsewhere in Lisbon that can be used for the same purpose, as the Castle of St. George. Yet there is only one main square in Lisbon, at Tagus waterfront...

Figure 2 -
The Viewpoint of St. George Castle, in Lisbon, with Baixa neighbourhood as focus.
Source: Google Image

The increase in the real estate market has led to the gentrification of many central Lisbon neighbourhoods, Mouraria and Alfama having become authentically alien to Portuguese culture, as former fado and Portuguese guitar festivities were reduced to St. Anthony's day (13th June). Riverine areas such as Braço de Prata (Matinha) and Oriente, located to the East are becoming modern contemporary neighbourhoods, with high rise commercial and services buildings, and expensive apartments (Baumgartner, 2024). Waterfront areas regenerated and revitalized to the West of Lisbon – Alcantara and Belem – were the target of touristification

after the 2007/08 crisis, when the troika (International Monetary Fund and the European Commission) sanitized the Portuguese economy and finances, together with the Portuguese.

In 1991, Thornley listed the main goals of planning under British Prime Minister Margaret Thatcher (Pacione, 2005, p. 225). The fourth target is particularly appealing as this was a conservative way of conceiving land-use. It says: "To ensure that short-term advantage doesn't jeopardise long-term community interest" (Pacione, 2005, p. 225). This goal should be translated into the rejection of the gentrification proposal, as short-term rental and development earnings for the municipality and other public powers should not uncover the long-term problems Lisbon residents would have to endure.

The ninth goal dictated: "to ensure that the views of all groups are included in the decision-making processes regarding land and development" (Pacione, 2005, p. 225). This is participatory urban planning that even neo-liberal principles oblige us to respect, and so, Lisbon residents are expected to have a say, soon. Participatory urban planning is expected to cover the issue of Lisbon main square privatization, though, following the bargain wholesale of the Historical Portuguese ground, as no municipal nor national government are mandated to sell off public spaces.

Suggestions for the Future of The Trade Square

The touristification of European cities has been done from the last sovereign debt crisis onwards (Krugmann, 2013). That's because governments lacked resources to pay the excessive bill, but also for giving Portuguese investors jobs and investment options; so, all over Europe new legislation was drawn, permitting the local touristic hotels to operate in apartment buildings. The problem stems from having been foreign institutions and investors the ones to take advantage of the system, giving path to gentrification inside historical areas of the cities, and expelling the ancient residents to more peripheral neighbourhoods.

It would be impossible now to use the former ministry buildings to regenerate the Palace's Yard arcades into a residential land-use, as the middle-class Portuguese families cannot afford the property prices, at present. In the 2010 master plan, the residential function was intended to be one of the purposes of ministries displacement, to their now northern neighbourhood, yet the inflationary process turned it unviable. Maybe it's not unwise to keep the touristification of the Trade Square under four resolutions:

- 1) To keep the restaurants and the traditional Portuguese trade existent in the arcades and neighbour Baixa areas, in order to give the square authenticity (Guimarães, 2022).
- 2) To develop a Congress or Convention Centre in some of these soon abandoned buildings.
- 3) To authorize a hotel to prosper in one of the buildings, or a student's affordable residence as the users of these categories of allowances can more easily mingle with other people, in the square, than six-star hotel occupants.
- 4) To develop another culturally friendly land-use, meaning, to locate an international university campus there, giving educational opportunities for European and non-European students interested in studying in Lisbon. Architecture, History and Geography would be possible degrees to impart there.

These solutions will permit a perfect relationship and connection with the capital city of Portugal, providing an open public square where the students, both Portuguese and foreigners might contact residents' realities, national festivities and events, as well as to observe evidence of urban planning, North and South of Tagus River, meticulously designed following a catastrophic earthquake and tsunami. There would be, nowhere else in Lisbon, a better location to intertwine university activities with urban functions.

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Urban Campus and Mobility: Designing Safe and Inclusive Pathways for Cyclists and Pedestrians Between Universities and the City

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Introduction

Universities play a key role in contemporary society. On the one hand, they train new generations through specific educational programs and, on the other, they conduct research activities to promote social progress and community development. In addition, physical campuses can be seen as true pedagogical laboratories where ways to build a generative and inclusive society are experimented with. Over time, university organizations evolved, creating increasingly complex and structured campuses, where these spaces offer an integrated environment that fosters learning and social and cultural life. Consequently, the urban context where they arise is decisive for the achievement of these objectives and for enhancing the university's prestige, making a dynamic and evolving relationship with the city from a spatial and functional point of view.

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Various scholars investigated how the spread of innovation is closely linked to the development of technology campuses within the city (Beaudry et al. 2009). In particular, they show how university districts help stimulate the economy and the development direction (Baltzopoulos et al., 2013). Also, the role of universities in the urban context is not limited to education but extends its influence on the economic and social spheres. One of the main universities' strengths is their ability to attract expertise and talents, a phenomenon often determined by the location of the campus within the city (Den Heijer, 2011), particularly in an increasingly multicultural and globalized context.

We can identify three macro-trends in the relationship between cities and university hubs: greenfield, which is located outside the city, gated, which means fenced-in inside the city, and integrated which means fully within the urban fabric (Den Heijer et al., 2018). The dynamic nature of the city-university relationship led in many cases to the transformation of greenfield campuses into city suburbs as a result of urban developments. In addition, many university developments became urban regeneration engines, changing the functionality of surrounding neighborhoods. University development strategies increasingly consider nonacademic functions of university spaces, with examples that include student residences, sports centers, and leisure venues such as pubs and bars (Den Heijer, 2011). These spaces allow universities to benefit from city services, creating synergies for sustainable and comprehensive integration. Although the location of universities brings significant benefits to cities, it also brings significant social and environmental challenges (Mohammed 2022).

One important aspect is the management of public spaces, both on campuses and in surrounding neighborhoods. Creating wide open-air socializing areas, accessible to the entire citizens, becomes crucial to harmonize the relationships between residents and the university population, who enjoy the spaces at different times of the day. Integrating green spaces, study areas, and recreational spaces improves the quality of urban environments and promotes biodiversity, which is valuable for maintaining urban habitats (Den Heijer, 2011) (Nyborg, 2024).

Urban mobility is an additional challenge. The university hubs' attractive nature generates intense movement flows, with hourly and seasonal variations. Ensuring the sustainability of both the campus and the city requires investment in context-specific studies and resources. The promotion of pedestrian and bicycle accessibility must be at the center of mobility strategies, both within campuses and in connections to the city.

Coordination with local public transportation planning is critical to ensure easy access to higher education centers.

Aligned with these issues, the content of this research focused on analyzing some major case studies where universities are involved in improving pedestrian and cycling accessibility in order to connect better campuses with the cities. The research aims to apply our studies in Milan context. This allows us to evaluate the state of pedestrian and bicycle infrastructure along specific routes from the university to the major public transportation hubs, such as subway and train stations, and develop an operational and replicable evaluation tool.

International Case Study

Numerous European universities recently started promoting sustainable mobility, implementing different strategic actions. These initiatives aim at implementing pedestrian and cycling spaces inside the campus while improving coordination with external stakeholders, including public administrations and transportation providers. The primary focus was to give alternatives to car usage, thereby fostering greater awareness and engagement within the university community (Wilson et al.). Our study examines best practices and presents case studies from the European U-MOB project –European Network for Sustainable Mobility at Universities (U-mob, 2019), which aims to establish a network for sustainable mobility among universities. Additionally, other American case studies were analysed, including initiatives promoted by the League of American Bicyclists.

The Universitat Autònoma de Barcelona (UAB) develops and implements a more efficient mobility model (UAB, 2024). This initiative included educational actions to change the transportation university community habits, as well as the expansion and strategic repositioning of bicycle racks. Since 2008, the UAB mobility plan has served as a standard reference for the university's mobility planning and management unit, in order to ensure sustainable and safe mobility across university campuses. The installation of a bicycle rack system within the framework of the "Bici UAB" project was one of the most significant actions. This initiative is part of the "UAB Campus Integral Bicycle Project," which seeks to enhance campus accessibility and sustainability by promoting cycling as a primary mode of transport. Additionally, the project involved a redesign of outdoor campus spaces to encourage walking and cycling, prioritizing non-motorized transportation and fostering a more sustainable and liveable environment for the users.

In the Netherlands, Erasmus University in Rotterdam introduced action devoted to changing home-work commuting behaviour for employees and students and increasing sustainable mobility (Erasmus UPT, 2025). In this case, the measures applied were multiple: an employee parking system rethinking, and a paid system introduction, aimed at discouraging the use of cars, were introduced. This measure as it helped to reduce the percentage of people who used their vehicle for commuting, going from 36% to about 31%. In parallel, a public transport program was implemented to offer a more accessible way of daily travel and to encourage sustainable micromobility commuting, a partial economic contribution was provided for electric bicycles and scooter purchases. The results were significant: there was a 7.7% reduction in the total number of kilometres travelled by employees commuting by car, leading to an estimated reduction of 42.4 tons of CO₂ emissions. Simultaneously, with the financial help of the City of Rotterdam, the use of public transport and electrically powered vehicles increased. From an economic perspective, the project was entirely funded by EU grants, while revenues from paid parking spaces helped partially offset the additional costs of public transportation subsidies. This initiative also led to a parking space reduction (Mingardo, 2024). It provided two major benefits: a decrease in parking land compunction and a cost saving in design and management expenses. Moreover, the project facilitated a redesign of outdoor spaces, incorporating new green areas and dedicated parking spaces for slow mobility, further enhancing the campus's sustainability and livability.

At the Gdańsk University of Technology, the U-MOB project facilitated the development of a new campus masterplan to enhance sustainable mobility. This plan included designated spaces for pedestrians and cyclists, supported by significant financial investments in square modernization, pedestrian pathways, and bicycle parking facilities (Politechnika Gdańska, 2010). Public spaces were redesigned to prioritize non-motorized transportation, ensuring greater accessibility for cyclists and pedestrians. Measures were implemented to limit car access to the campus, including gate installations and parking space redistribution, while maintaining a maximum walking distance of a few minutes from parking areas to academic buildings. Numerous bicycle parking facilities were introduced to support cycling infrastructure, including covered parking spaces strategically located near faculty buildings. A key intervention was a large covered bicycle parking area construction, placed adjacent to the main building. This facility, selected for its accessibility, visibility, and adequate lighting, added over 200 bicycle parking spaces. The university has also

actively promoted cycling which encourages daily bicycle commuting. Overall, the interventions improved campus safety, reduced vehicular congestion, and upgraded environmental conditions, aligning with the broader goals of sustainable urban mobility.

In the United States, one of its main initiatives, the Bicycle Friendly America program, evaluates universities, states, communities, and businesses on their support for cycling (Bikeleague, 2025). The Bicycle Friendly University framework assesses institutions based on five criteria: the availability of safe and accessible cycling infrastructure, training programs that promote safe cycling practices, initiatives that foster a cycling-friendly culture, enforcement measures that ensure the safety of cyclists, pedestrians, and motorists, and strategic planning efforts to integrate cycling as a viable transportation option (Wilson et al.). Among the U.S. universities analysed in this research, the University of California, Los Angeles (UCLA) stands out as a leading example. The foundation of UCLA's efforts lies in the UCLA Bicycle Master Plan, implemented in 2006 as a strategic framework to encourage cycling and reduce emissions. As part of this initiative, the university has taken steps to improve both infrastructure and policies that promote active mobility. One of the first and most impactful actions was the creation of the "Getting to UCLA" website, which provides comprehensive information on transportation options, including access routes, internal cycling paths, and designated bicycle parking areas (UCLA (a), 2025).

Additionally, a bike-sharing system has been introduced, allowing students and staff to rent bicycles for on-campus travel. The university has also reduced the number of available parking spaces and introduced a paid permit system for students and staff and further support sustainable transportation, UCLA has enhanced access to public transit by offering financial incentives to those who use buses and trains. Notably, through agreements with local transit authorities, one bus line crossing the campus is free for students, making public transportation a more accessible and attractive option (UCLA (b), 2015). To improve safety, the UCLA Bicycle Master Plan has established a campus-wide speed limit of 20 miles per hour. Additionally, the university has launched the Earn-A-Bike program, which incentivizes graduate students and eligible employees to choose cycling as a sustainable alternative to driving by allowing them to exchange parking permits for bicycles. Through these comprehensive measures, UCLA demonstrates a strong commitment to integrating cycling, providing a model for universities that aim for sustainable mobility and reduced environmental impact.

Case Study Milan Sustainable Campus

Starting from the analysed case studies, we began to study our context to understand what happens on the campus where we work. We examined the Milan case study, specifically in the “Città Studi Campus,” a large integrated university area including the Politecnico di Milano and the Università degli Studi di Milano Statale Campuses, considering the precious lesson of the other proposed case studies. To improve campus accessibility, we also applied a specific work methodology that is later presented. The “Città Studi Campus” area presents several challenges for the surrounding neighbourhood. Originally built outside the city in the 1920s, it was later incorporated into the Lambrate district following Milan’s post-World War II urban expansion. Today, the campus is spread throughout the neighbourhood, with some university areas fenced off and accessible only during daytime hours, while other buildings are connected with the urban fabric. This creates a contrast of pedestrian and vehicular flows, highlighting the struggle to balance residential life with the presence of a major academic hub.

To address these challenges, the two largest institutions in the area, “Politecnico di Milano” and “Università degli Studi di Milano Statale”, launched a project focused on campus sustainability. The neighbourhood faces significant pressure regarding public space management, as multiple stakeholders like residents, business owners, and university users insist on the same area, making conflicts difficult to solve. In response, the campus has initiated a coordinated effort to transform the university district into a model for quality of life and environmental sustainability. This involves creating a dialogue between residents, students, and researchers to develop shared solutions.

One of the main intervention parts is urban sustainable mobility. A dynamic and attractive university neighbourhood must accommodate diverse modes of transportation. Prioritizing sustainable mobility, such as walking, cycling, and public transportation, aligns with the campus’s decarbonization goals and contributes to a more liveable and environmentally responsible urban space.

An overall assessment of the daily travel of the university population is contained in the “Piano Spostamenti Casa-Università” (Politecnico di Milano, 2024). It contains the actions necessary to achieve the goals set by the university administration. This document is structured into several sections, including contextual data on mobility, an analysis of transporta-

tion demand, proposed measures to promote sustainable mobility, and an assessment of the impacts of these strategic actions. The data show that 22% of students and 27% of faculty use slow modes such as biking or walking to get to campus, while 47% of students and 39% of employees use public transportation to get near campus. So, building on this plan, priority was given to specific areas such as improving the liveability and accessibility of campus spaces, promoting active mobility also installing bike racks, enhancing travel safety, and reducing total emissions related to commuting movements as others analysed universities have done. The plan also included the pedestrianization of parts of the campus, particularly internal service roads and neighbourhood access points.

Aligned with these objectives, our research focused on evaluating the state of pedestrian and bicycle infrastructure along specific access routes to the university from major public transportation hubs, such as subway and train stations, developing an operational and replicable evaluation tool. The goal was to improve the quality of these routes for the university community. To propose effective design solutions that address the challenges faced by pedestrians and cyclists during their daily commute, it is first necessary to analyse the urban context and establish a precise, scientific methodology to support decision-making.

On one hand, our study focuses on the need to scientifically and objectively assess pedestrian and bicycle routes in urban environments, identifying the significant factors that degrade everyday slow mobility. On the other, it creates a practical, intuitive, and easy-to-apply methodological tool for use by technical professionals and public administrators. This evaluation serves as a solid pillar for future design interventions aimed at improving mobility infrastructure.

As part of this study, we conducted a comprehensive mapping, analysis, and evaluation of pedestrian and bicycle routes in urban areas used for daily commuting to work or study. The methodology was refined for this study to ensure ease of use for a broad audience, replicability in similar urban contexts, integration into educational and training activities for students, and community participation through participatory mapping. The working method is structured into two desk-based phases followed by a fieldwork phase. In the desk-based preparatory phase, the first step involved selecting the strategic points to be connected, which in this study were the “Politecnico di Milano Leonardo campus” and the Lambrate and Centrale railway stations. The next step was identifying the route to be analysed, chosen based on criteria such as usability, directness, linearity,

and overall pleasantness factors that strongly influence the likelihood of slow mobility users adopting a particular path for their daily commute.

Once this initial phase was completed, the fieldwork phase involved thematic surveys to assess the feasibility and practicality of the identified routes and to explore potential modifications or alternative paths. Several surveys were conducted to collect quantitative and measurable data such as photographic and road section ones, intersection and junction study, obstacles assessment, and surface condition analysis. After the data collection phase, the final step consisted of data processing and spatial analysis using GIS software. This analysis produced an index for evaluating pedestrian and bicycle comfort, known as the Slowness Quality Index (Bianchi et al.). This index consolidates multiple variables into a single parameter, calculated as a weighted sum of the scores assigned to the various elements observed along the route.

Data collection of our work involved the students from the Master's and Bachelor's Degree university courses held by Professor P. Pileri, with the assistance of F. Bianchi and L. Pirolo, called "Festina Lente: planning and design of slow cycling and walking lines". The course is designed for students of Landscape Architecture, Urban Planning, Interior, and Spatial Design during the Academic Year 2023/2024. Students were divided into small groups, and a case study was assigned to them.

The routes analysed in this study are known paths used daily by hundreds of pedestrians and cyclists. They connect the Politecnico di Milano, which counts over 33,000 people each day (Politecnico di Milano, 2024), to two of Milan's busiest railway stations, Lambrate and Centrale. For the pedestrian connection between the Politecnico di Milano and Lambrate station, the shortest and most direct route was selected, spanning 1.2 km. Two routes were considered for cyclists, linking Piazza Leonardo da Vinci, a square adjacent to the university, with Centrale station. Each of these routes is approximately 2 km long and can be comfortably navigated by bicycle in about 10 minutes.

The analysis revealed, along these paths, a significant number of slow mobility barriers, as summarized in Table 1. By normalizing the collected data and applying geospatial analysis through GIS software, we derived the Slowness Quality Index (SQI), the indicator that compares the different route segments assessment divided into 100-meter sections (Figure 1). This approach highlights the most critical areas, where targeted studies on the interaction between pedestrians, cyclists, and motorized traffic can further investigate. Stakeholders can quickly identify priority areas for interven-

tion thanks to a comprehensive visual representation of the slow mobility routes, facilitating more informed decision-making to enhance slow mobility conditions. Additionally, comparing the SQL scores of the two cycling routes provides insights into the safer and more efficient option, guiding users toward the preferred path based on the identified criticalities.

Table 1 - Results from the case study

Interference detected	Path		
	Polimi – Lambrate	Polimi – Centrale north	Polimi – Centrale south
Pedestrian crossing	16	-	-
Business activities	46	-	-
Hurdles	693	1157	1341
Hindrance	448	-	-
Trees	228	235	72
Bike parking areas	-	13	14
Bike sharing areas	-	4	5

Conclusions

The presented study aims to provide an overview of the initiatives undertaken in recent years, and currently being implemented, by European and American universities to promote sustainable mobility cycling, walking, or using public transportation, to improve the connection between university campuses and the cities in which they are located. In particular, we have outlined the path followed by our research group within the Milanese context, highlighting some specific features related to the uniqueness of the Leonardo campus of the Politecnico di Milano, situated in the Lambrate district. The European and American case studies, along with the latest literature on the topic, have led us to reflect on various aspects of the proposed theme, emphasizing certain potentials that our work presents for the case study at hand and its generalization to different urban contexts. However, the work also carries some typical challenges associated with this developed tool, such as the difficulty of translating reality into an objective and replicable model while considering the complexity of the urban environment. Nonetheless, as we have noted, for an initial phase of context framing and analysis, our methodology can yield promising results, later be supported by specific evaluations. Some possible developments of this tool could be the addition of surveyed elements (such as motor traffic) that allow for improved aggregation of the index.

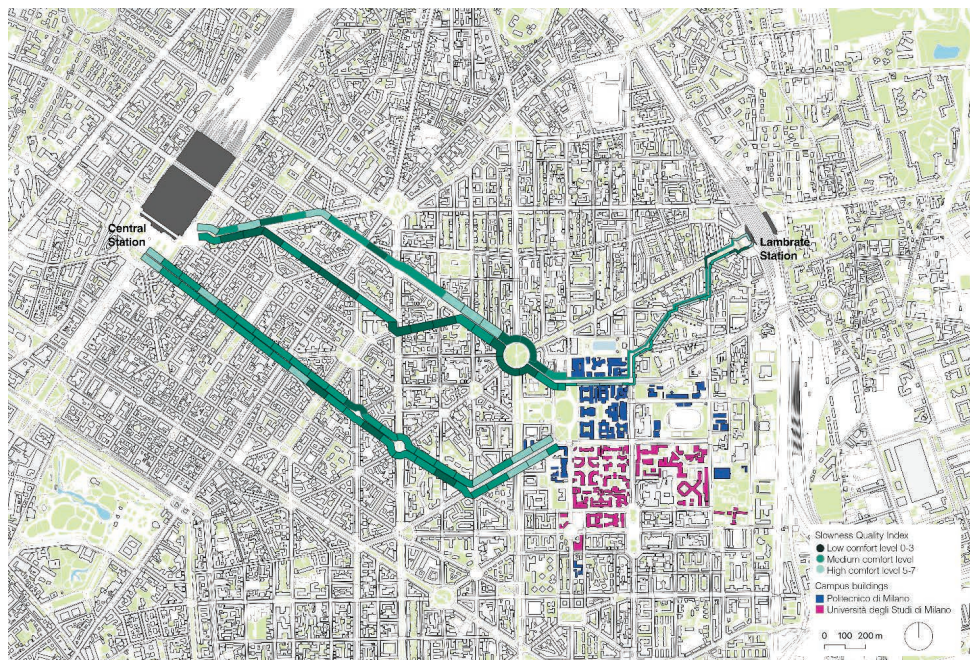


Figure 1 -
Slowness Quality Index on the considered paths

In particular, some future developments to improve the connection between the university campus and the surrounding district could involve the analysis and enhancement of pedestrian accessibility. Through strategic working groups with the municipality, interventions could be designed to reduce traffic, improve street sections to better accommodate cyclists and pedestrians, and redesign crossings and intersections. Another possible course of action could be enhancing pedestrian accessibility by improving equipped rest areas, designing new bike lanes, and expanding bike-sharing stations. Finally, greater integration between the city and the campus could be achieved by considering the implementation of free local public transport lines specifically for students at the “Politecnico di Milano”, thereby fostering the modal shift that is currently far from being realized.

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Universities and Their Cities: Interactions Within and Beyond Campus Gates

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Introduction

Conventional perspectives have long treated campuses as passive educational zones, disconnected from the dynamic urban environments they inhabit. However, a university campus is far more than that—it is a dynamic micro-city, one that not only facilitates academic pursuits but also mirrors the complexities of urban environments. As knowledge centers that shape society, universities are becoming increasingly relevant to urbanism, influencing the cities that host them while also evolving in response to their surroundings. This interplay between campus and city has long fostered opportunities for urban renewal, economic expansion, and cultural integration. Universities are more than just sites of education; they are ecosystems that influence mental well-being, creativity, and social interaction. Thoughtful campus design can foster belonging, enhance learning, and reduce stress, while poorly planned environments can lead to inefficiency and isolation. As campuses grow in size and influence, they increasingly resemble cities, shaping public space, mobility patterns, and urban development. This paper examines the role of cam-

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puses as micro-cities and investigates how their physical environments impact learning, well-being, and community engagement.

The Living Laboratory

In 1973, Mark Granovetter introduced the concept of the “**Strength of Weak Ties**,” suggesting that casual acquaintances, or “weak ties,” can be more valuable than closer connections, for accessing new information, opportunities, and diverse perspectives (Granovetter, M., 1973). Nowhere is this principle more evident than on a university campus. A campus is not just a collection of classrooms and dormitories—it is a **living laboratory** where ideas collide, networks form, and individuals from vastly different backgrounds engage in daily interactions that shape their academic and personal growth.

Much like a city, a university campus thrives on **movement, accessibility, and public spaces that enable both formal and informal exchanges**. It is a place where a Nobel laureate might share a lunch table with an undergraduate, where student activists repurpose a plaza for a flash mob, and where a maintenance worker, crossing the same paths every day, unknowingly contributes to the rhythm of campus life. Yet, despite its urban complexity, the campus is often studied in isolation from the cities that host it. This paper invites a different view—one that sees the campus and the city not as separate entities but as co-evolving landscapes. Together, they offer rich possibilities for **urban renewal, mobility, and public space design**.

To comprehensively examine the interplay between campus public spaces and their broader urban context, this discussion is organized around six key themes: The first theme, *What the Brain Wants: A Neuroscience Approach to Campus Public Space Design*, investigates the intersection of spatial design, sensory perception, and mental health within university settings. Drawing from urban neuroscience theories, including those of Nikolaus Salingaros, this section examines how the design of campus public spaces influences cognitive performance, stress reduction, and social interaction.

The second theme, *From Master Plans to Student Plans: How Students Actually Use Campus Public Spaces*, examines how students often reinterpret and repurpose campus spaces in ways that diverge from the formal intentions outlined in the university’s master plans. Stairs become social hubs, green lawns turn into study zones, and quiet corners serve as impromptu venues for protests. This section contrasts official planning with

real-world observations, highlighting the gap between design intentions and lived experiences.

The analysis then turns to *Expansion Beyond University Walls*, highlighting how universities, once regarded primarily as academic enclaves, are increasingly influential in driving economic development, fostering cultural exchange, and contributing to urban infrastructure growth. This section explores the multifaceted relationship between universities and cities through economic investment, housing market shifts, urban safety improvements, and shared infrastructure.

The paper also explores *Designing for All Users: The Indirect Users of Campus Public Spaces*, recognizing that universities serve not only students and faculty but also a broader community that includes custodial staff, maintenance workers, and delivery personnel. By examining movement patterns and the functionality of public spaces on campuses, this section assesses how campuses can be designed for other users. *Enhancing Public University Campuses on a Budget*, explores how non-private institutions can enhance their campuses despite financial constraints, ensuring they remain vibrant and accessible spaces for students and surrounding communities. It highlights approaches prioritizing accessibility, community engagement, and resource efficiency, demonstrating how institutions can create inclusive spaces without relying on extensive funding. Finally, the paper proposes *Metrics for Effective Design* to evaluate campus public spaces. Key indicators such as the ratio of built to open space, the prioritization of pedestrian versus vehicular movement, and the scale and spatial enclosure of key areas provide tangible criteria for assessing the effectiveness of campus environments. These metrics not only offer a tool for design evaluation but also help bridge theory and practice in planning and development.

By synthesizing multiple case studies, observational research, and quantitative analysis, this paper aims to provide a comprehensive understanding of how university campuses function as urban environments.

What the Brain Wants: The Neuroscience of Campus Public Spaces

Designing university campuses that align with the brain's innate preferences can significantly impact students' mental health, cognitive performance, and social interactions. Nikolaus Salingaros' theories on urban

neuroscience provide a framework for understanding how spatial design influences neurological responses, offering insights into creating environments conducive to well-being and learning.

Environments that incorporate natural elements and human-centered design can alleviate the adverse effects of urban stressors. Salingaros emphasizes that architectural designs resonating with human neurobiology can foster a sense of well-being. For instance, integrating **biophilic elements**—design features that evoke natural patterns and forms—has been shown to **reduce stress responses** (Salingaros, N. A., 2019). This approach aligns with findings that exposure to green and historic urban environments positively affects mental well-being, as evidenced by EEG and psychometric measures (Reece, R., Bornioli, A., Bray, I., & Alford, C. (2022). Moreover, architectural features such as curved room designs and views of nature have been linked to immediate **improvements in mood** and reductions in physiological stress markers, including heart rate (Baumann, O., 2023). The brain's interaction with its environment directly influences cognitive functions such as attention, memory, and problem-solving. Salingaros posits that complexity and organized patterns in architectural design can stimulate cognitive engagement. Design elements that reflect fractal patterns—complex geometric shapes found in nature—can enhance visual processing and cognitive function. Studies suggest that exposure to such patterns can improve concentration and reduce mental fatigue (Salingaros, N. A. 2019). Moreover, environments that provide sensory richness without overwhelming stimuli support optimal cognitive arousal, facilitating **better learning outcomes**.

Campus public spaces serve as venues for social interaction, which is vital for community building and emotional support. Salingaros highlights that certain spatial configurations can either encourage or inhibit social behaviors. Designs that include semi-enclosed areas, ample seating, and human-scale proportions create inviting atmospheres that promote spontaneous gatherings and interactions (Salingaros, N. A. 2019). Salingaros emphasizes that **“patterns at human scales (1 cm–1 m)... connect to human beings”**, engaging multiple senses and creating visceral comfort through small, tactile architectural elements. These features align with the brain's preference for environments that balance openness with enclosure, providing a sense of safety while encouraging social engagement. Research indicates that thoughtfully designed public spaces can lead to increased social cohesion and a stronger sense of community among students (Salingaros, N. A. 2019). He shows that campuses built with **over-large separation (“industrial” spacing)** are perceived

as bleak and alienating. Instead, weaving buildings and outdoor spaces into semi-enclosed, pedestrian-oriented networks nurtures everyday social life. Connecting campus paths and open areas to adjacent neighborhoods encourages serendipitous interactions and strengthens campus-city relationships.

From Master Plans to Student Plans: How Students Actually Use Campus Public Spaces

University master plans often imagine quads, plazas, and transitional spaces as structured environments designed to facilitate movement, formal gatherings, or academic pursuits. However, the reality of student life frequently subverts these original intentions, as spaces are appropriated and **repurposed in organic**, unexpected ways. The divergence between design and use highlights the evolving nature of campus spaces, shaped by the everyday behaviors and social dynamics of the student body.

At the University of California, Berkeley, Sproul Plaza was originally designed as a formal entryway, a passage for people to pass through and get to the administrative offices. However, the steps of Sproul Hall have become a nationally recognized site for **student activism**, beginning with the Free Speech Movement of the 1960s (Alison Moore, 2015). What was conceived as a passageway is now a hub for protests, and spontaneous gatherings, demonstrating how transitional spaces can transform into powerful social arenas (Rosen, R., 2004).

Similarly, at Harvard University, the Widener Library steps, intended as a grand academic threshold, have become a primary informal gathering space where students engage in discussions, socialize, and organize peer meetings. Harvard Yard, designed as a formal, historic green space, now functions as an informal recreation area where students participate in activities ranging from frisbee matches to impromptu concerts, illustrating the role of green spaces in fostering student-led interactions (Boyer, E. L., & Mitgang, L. D., 1996).

New York University provides another compelling case study of how students informally integrate public spaces into campus life. Though Washington Square Park (Figure 1) is not officially part of NYU's campus plan, its proximity has transformed it into the university's de facto student commons. Originally designed as a public recreational space, the park is now a key site for **student performances, protests, and social gather-**



Figure 1 -
*Washington
Square Park
and Student
Gathering*

ings, reinforcing the idea that urban campuses inherently dissolve traditional campus boundaries, fostering interactions between students and the city (Brand, S. 1994).

At the Massachusetts Institute of Technology, the Infinite Corridor was intended as a utilitarian passageway connecting academic buildings. However, it has since taken on functions beyond mere circulation. Students repurpose the space for impromptu performances, scientific experiments, and even campus-wide events such as “MIThenge,” an **unplanned but celebrated phenomenon** where the setting sun aligns perfectly with the corridor at certain times of the year. Such adaptations demonstrate how even the most functionally rigid spaces can be imbued with **cultural and communal significance** (Gumprecht, B., 2003).

The University of Miami offers further evidence of student-driven spatial reconfiguration. The roofed courtyard outside Mahoney-Pearson Dining Hall, initially intended as a transient seating area, has evolved into a central venue for food-related student organizations, which hold weekly meetings and events in the space. These instances demonstrate that students actively redefine spatial hierarchies, creating new zones of interaction that extend beyond their intended functions.

The organic repurposing of campus spaces underscores the limitations of static master planning, revealing a dynamic interplay between architectural intent and lived experience. As scholars such as Gehl (Gehl, J. 2011) have noted, human behavior in public spaces often diverges from prescriptive design, necessitating a more flexible and adaptive approach to campus planning. .

Expanding Beyond University Walls

The relationship between university campuses and their host cities manifests in various forms, each influencing urban dynamics, economic development, and community engagement.

Many universities are deeply integrated into the urban fabric, blending seamlessly with their host cities. The University of California, Berkeley, for example, coexists harmoniously with the city of Berkeley, fostering a symbiotic relationship between students and local residents. Boston University stretches along Commonwealth Avenue, directly connected to the city's public transportation system, making it highly accessible for both students and the general public. Similarly, the University of Toronto, located in downtown Toronto, features an **open campus** design that encourages constant interaction between academia and the urban environment. New York University (NYU) exemplifies this integration, with its campus interwoven into the dense streets of Manhattan, promoting a dynamic exchange between academic and urban life. In fact, NYU's presence in Greenwich Village has significantly contributed to rising property values. Between 2000 and 2020, property prices in the neighborhood surrounding NYU increased by over 150%, surpassing Manhattan's overall average of 109%, partly due to growing student demand and university-led investments (Mansion Global, 2020). European universities, particularly those situated within historic urban cores, provide compelling examples of deep campus-city integration. The University of Oxford and the University of Cambridge, for instance, are not isolated institutions but are embedded in the **medieval urban fabric** (Figure 2) of their respective cities. Streets, public squares, and commercial establishments intertwine with academic buildings, creating a citywide learning environment where university life and civic life coexist. The University of Bologna, founded in 1088, remains integral to the city's historic center, with students, professors, and tourists mingling in a shared urban space. The economic impact of these institutions is substantial; a study on the University of Oxford revealed that it contributes



Figure 1 -
*University of
Cambridge
against the
urban Fabric
of the cit*

over £15.7 billion annually to the UK economy, supporting more than **28,000 jobs** (University of Oxford, 2021). Additionally, property values in Oxford have increased by 63% in the past decade, making it one of the most expensive cities in the UK, partly due to the university's influence on demand (Zillow. (n.d.). Oxford home values, 2025).

Urban-integrated campuses serve as economic engines, attracting businesses, research opportunities, and a skilled workforce. Texas A&M International University (TAMU) reported a \$374 million impact on Webb County's economy in fiscal year 2024, supporting nearly 6,300 jobs (Texas A&M International University, 2024). Similarly, the University of Pennsylvania contributes approximately \$14 billion to Philadelphia's economy annually, directly supporting 90,000 jobs (University of Pennsylvania, 2016). Beyond financial growth, university-led urban development often drives infrastructural improvements, such as transit expansions and public space revitalization. For example, MIT's collaboration with Cambridge on the Kendall Square Initiative resulted in \$1.2 billion in mixed-use developments, **enhancing pedestrian access** and increasing local business revenues by 40% (Boston Magazine, 2015, July 29). Housing markets respond dynamically to the presence of universities, with rental and property values fluctuating based on student population growth. In cities like Austin, the University of Texas' expansion has led to a 38% increase in rental prices over the past decade, with demand from students and faculty significantly outpacing supply (Heidi Aggeler, City of Austin

Neighborhood Housing and Community Development Department, n.d.). Similarly, in Berkeley, student housing demand has resulted in rental price surges of 20% over five years, prompting city officials to introduce rent control measures and new affordable housing policies (Berkeley Rent Stabilization Board, 1998 & Harriman, S., 2023). While these changes stimulate economic growth, they also present challenges such as the displacement of long-term residents and heightened living costs. The presence of a university can also significantly impact public **safety**. A 2019 study by the Urban Institute found that areas within a half-mile radius of major universities experienced a 17% decrease in violent crime rates compared to citywide averages. This trend is attributed to university police forces, **improved street lighting, increased foot traffic**, and surveillance measures. For example, the University of Chicago has a dedicated police department that patrols not only the campus but also surrounding South Side neighborhoods, contributing to a notable decline in property crimes in adjacent areas (University of Chicago Department of Safety & Security, n.d.). Similarly, NYU's expansion has spurred increased safety investments in Greenwich Village, including improved street lighting and a stronger NYPD presence, reducing overall crime rates over a decade (Blattman, C., Green, D., Ortega, D., & Tobón, S., 2019). Public transportation networks are often enhanced by the presence of a university, with campuses collaborating with city transit authorities to improve accessibility. In August 2024, the MBTA updated Route 66, which serves areas near Harvard University. The changes included new routing through the Harvard Bus Tunnel, improved stops, and better connections to the Red Line and other bus routes, aiming to provide a more seamless transit experience (Massachusetts Bay Transportation Authority (MBTA), 2024, August 28). Universities also offer cultural and recreational facilities—museums, theaters, and sports complexes—that serve both students and the public. Columbia University's Manhattanville expansion includes publicly accessible parks and cultural spaces, reinforcing its role as a civic institution (Renzo Piano Building Workshop (RPBW), n.d.).

The boundary between a university and the city can be defined in multiple ways—**physically, economically, or functionally**. Some campuses establish physical boundaries with walls, gates (Tandogan, Z., & Ilgin, H., 2018), or distinct architectural styles that mark a clear transition from city to campus. The University of Chicago, for instance, with its neo-Gothic architecture, visually signals a shift from the surrounding neighborhood into an academic enclave. Economically, differences in property values and business types can define campus edges, with nearby areas often

experiencing increased commercial activity catering to students and faculty. Functionally, the shift from academic buildings to commercial or residential zones marks another form of boundary, though shared facilities such as parks, libraries, and cultural centers serve as intermediaries connecting the two realms.

Designing for all users

Campus design plays a crucial role in fostering an inclusive environment for all users, extending beyond traditional stakeholders such as students and faculty. The design of public spaces on university campuses particularly influences the experiences of indirect users, including custodial staff, maintenance workers, delivery personnel. Research indicates that inclusive campus designs should consider diverse user needs to **facilitate accessibility, safety, and social interaction**, enhancing community engagement and overall well-being (Mansor, S., et al, Ahmad, R., Abdulllah, J., & Gai, A., 2023, Sholihah, A., 2024).

The interactions of non-student individuals—are often dictated by functional necessity rather than academic engagement. These individuals navigate campuses with different priorities, accessing infrastructure in ways that are rarely considered in traditional campus planning discussions. Delivery personnel, especially those in food and parcel delivery services, engage with university campuses as transient users, prioritizing efficiency and accessibility. A report by Georgetown University (2023) highlights the challenges faced by instant food delivery drivers in Washington, D.C., emphasizing safety risks, inconsistent wages, and restricted access to certain campus areas due to security measures and pedestrian-only zones. The study notes that many delivery workers navigate campuses differently from students, often relying on back entrances, designated **drop-off points**, or informal pathways to expedite deliveries (Isabella Stratta, Georgetown University, 2023). Their experiences underscore the importance of **well-defined access routes** and infrastructure that accommodate temporary users without disrupting the broader campus environment. Maintenance staff are essential to campus operations, ensuring the upkeep of facilities, systems, and landscaping. Their use of campus spaces is primarily functional, as they require frequent access to mechanical rooms, service corridors, and restricted areas that are not commonly utilized by students or faculty. A case study on university maintenance efficiency found that outdated manual work order systems often create inefficiencies, leading to delayed repairs and maintenance

backlogs (eWorkOrders, 2022). This suggests that universities must optimize spatial planning and workflow management to facilitate seamless movement for maintenance personnel. Moreover, access to key infrastructure—such as service elevators, underground utility tunnels, and maintenance hubs—needs to be integrated into campus planning rather than treated as secondary to student-centric spaces. Administrative and support staff have their daily routines centered around office environments, meeting rooms, and service facilities, with less engagement in student-oriented recreational spaces. The difference in access patterns is evident in parking allocations, restricted-entry faculty zones, and administrative buildings often located at the **periphery of campuses**. Research suggests that staff movement is dictated more by structured work schedules than by the flexible, informal spatial use patterns observed among students³⁰. Additionally, the location of staff offices relative to transit nodes and parking facilities influences their commuting patterns and overall integration into the campus setting.

Addressing the needs of indirect users is essential, as their roles in maintaining campus functionality are crucial. When campuses adopt features that consider their daily experiences—such as accessible pathways, adequate facilities for maintenance tasks, and areas for social interaction—these users are more likely to feel **valued and included** (Nasreldin, R. and Ibrahim, A., 2024). Moreover, the evaluation of public open spaces using methodologies like Importance-Performance Analysis (IPA) indicates that inclusivity can lead to improved health and well-being outcomes not only for direct users but for all campus and community members as it avoids conflicts between major users (Addas, A., Maghrabi, A., & Goldblatt, R. 2021). **Integrating feedback** from all user groups into the campus planning process enhances the relevance of designs and policies. The involvement of indirect users in the campus planning process can provide insights into their needs and challenges, fostering a more inclusive approach that ultimately contributes to the campus culture and community cohesion (Fatriansyah, J., Abdillah, F., & Alfarizi, F., 2021).

The provision of navigational aids such as mapping systems that assist all users, including those who may not be familiar with the campus layout. Technologies that facilitate ease of movement enhance user satisfaction and accessibility (Özdemir, Ş., 2022 & G, S., P, R., Chanduru, A., Barathkumar, S., P, H., & Mohanapriya, M., 2023).

Enhancing Public University Campuses on a Budget: Strategies for Vibrant and Accessible Spaces

Public universities, often operating under financial constraints, can still enhance their campuses by prioritizing cost-effective, high-impact interventions that improve accessibility, foster community engagement, and elevate the student experience. Unlike private institutions, which can utilize large endowments and donor contributions for extensive campus renovations and exclusive facilities, public universities must rely on innovative partnerships, incremental urban interventions, and efficient resource allocation to achieve similar results (Dober, R. P., 2000).

One strategy is leveraging **tactical urbanism**—low-cost, scalable interventions like pop-up parks, flexible seating, and temporary art installations. These initiatives can quickly transform underutilized spaces into vibrant, multifunctional areas that encourage student interactions and public engagement (Lydon, M., & Garcia, A., 2015). Similarly, incorporating biophilic design elements, such as green walls and shaded outdoor seating, has been shown to reduce stress and improve student well-being while requiring relatively low maintenance costs (Browning, W. D., Ryan, C. O., & Clancy, J. O., 2014). Public universities can also enhance their campuses by strengthening partnerships with local governments and businesses. Joint-use agreements that open university facilities—such as libraries, auditoriums, and athletic centers—to the broader community not only maximize resources but also generate revenue through rentals and events (Mitchell, R., 2018). Additionally, integrating public transit infrastructure within the campus, as seen in institutions like the University of California, Berkeley, reduces transportation barriers and promotes sustainability without significant capital investment (Cervero, R., & Murakami, J., 2010). Platforms like crowdfunding have successfully funded student-driven projects, including the development of affordable outdoor study spaces and solar-powered charging stations (Goddard, J., & Vallance, P., 2013). These decentralized funding models empower students and faculty to directly influence the campus environment while fostering a sense of collective ownership.

Quantifying Campus Public Spaces: Metrics for Effective Design

To move beyond theoretical discourse, this paper will incorporate quantifiable metrics to assess the effectiveness of campus public spaces. The **ratio**

of built space to open space is a crucial factor in defining the balance of a university environment. Studies suggest that campuses with at least **30-40% open space** foster greater social engagement and mental well-being among students (Browning, W. D., Ryan, C. O., & Clancy, J. O., 2014). For example, Stanford University maintains a built-to-open-space ratio of approximately **60:40**, ensuring a mix of dense academic cores and expansive green spaces that support both structured and informal student activities. By contrast, urban campuses like New York University (NYU) have significantly lower open-space availability, relying instead on the surrounding city's public realm to supplement student needs. The **allocation of pedestrian versus vehicular space** also plays a significant role in campus usability. A study by Cervero and Murakami (2010) found that universities prioritizing pedestrian infrastructure over vehicular access report higher rates of student satisfaction and increased physical activity (Cervero, R., & Murakami, J., 2010). Car-free campuses, such as Arizona State University's Tempe campus, dedicate **over 70% of circulation space** to pedestrians and cyclists, improving walkability and fostering a safer, more connected student experience. Comparatively, automobile-dependent campuses, such as the University of Texas at Austin, where **nearly 50% of circulation space** is allocated to roads and parking, face challenges in pedestrian accessibility and congestion. **Scale and spatial enclosure** further influence the effectiveness of public spaces in fostering interaction. Research by Gehl (2011) suggests that public spaces enclosed at a ratio of **1:2 to 1:3 (building height to space width)** create the most comfortable and socially engaging environments (Gehl, J., 2011). At the University of Virginia, the Academical Village—designed by Thomas Jefferson—exemplifies this principle, with colonnades enclosing green spaces in a manner that encourages informal gathering and academic discourse. In contrast, large, unstructured open areas, such as those at the University of California, Davis, have been criticized for lacking spatial definition, reducing their ability to function as effective social hubs.

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di Giovanni Laino

This volume explores the growing significance of open public spaces within university campuses—spaces that go far beyond their functional role to become essential arenas for social interaction, informal learning, well-being, and urban integration. Rooted in the research projects LOVE Sapienza and NARRATES both founded by Sapienza Università di Roma, and enriched by contributions from a 2025 international conference at DICEA-Sapienza University of Rome, this book provides guiding principles for designing open spaces that promote inclusion, health, and sustainability—on campus and beyond. Far from being passive backdrops, these environments shape the daily experiences of students, researchers, faculty, and visitors, offering settings that foster connection, creativity, and community. The book presents a critical reflection on how well-designed open spaces contribute to the quality of campus life and their evolving role as urban microcosms. It also examines how campuses can serve as active agents in urban regeneration and resilience, addressing environmental challenges through sustainable and adaptive design solutions. Structured around three interconnected themes—Campus and Public Spaces, Campus and University Communities, and Campus and the City—the volume gathers international best practices, offering an insightful tool for students, academics, designers, administrators, and urban thinkers.

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in copertina

Copenhagen: detail of the Søndre Campus (photo by Marichela Sepe)

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