

The University-City Interface: Plazas and Boulevards

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Abstract

It has become an increased challenge for designers to define the boundaries between the university and its surrounding city. The amount of space serving as a nexus between universities and urban areas is gradually increasing. This study defines such intermediate spaces as “the university-city interface”—areas that influence the university’s physical and functional connection to the surrounding city. The research presents comparative case studies of three universities in urban contexts—Harvard University, University of Pennsylvania, and Université Catholique de Louvain—by analyzing plazas and boulevards. These representative open spaces provide interfaces for both the university campuses and their surrounding cities. This paper analyzes design elements from the perspective of campus spatial structure, as well as locations and functions, to develop a comparative checklist for plazas and boulevards. The results offer a set of urban design principles for university plazas and boulevards that could significantly improve the quality of the university-city relationship. While these checklists and principles may vary depending on circumstances, they can be useful starting points for initializing design processes.

Keywords

University Campus, Open Space, Urban Design Guideline, Plaza, Boulevard

1. Introduction

In modern society, the research capacity of universities couples with a region’s technological progress to determine the wealth of a city. Since the 1990s, public policy has emphasized the evolution of local economies, the

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rehabilitation of communities, and the qualitative improvement of living conditions. Consequently, implementation strategies have been reestablished with a focus on the involvement of universities. Thus, the expectations for universities have grown ever higher, and it is undeniable that they have become a key variable affecting the economy, innovation, and general prestige of a city.

The use of open space as a connector between a university and urban public areas is gradually increasing. The role of campus open spaces as cultural and recreational infrastructures also continues to expand; thus, many university campuses have been built or planned to serve as “dispersal clusters”. These cluster-type campuses enable space plans that focus on the college with an emphasis on quadrangles. Since the integration and accessibility of universities are generally low, they have strong characteristics of subordinate open spaces. Therefore, identity serves as an important design concept rather than a form of publicity. The role of public open spaces in universities becomes weakened unless events are planned or specific areas are allocated for public use.

A number of inner-city universities are currently being constructed in Asia. Universities located in metropolitan areas are planning to build or complete large-scale open spaces on their campuses near the entry points or boundaries where they meet with the city. These open spaces attempt to strengthen connectivity between the university and the city and forge campus identity: a new multi-complex building with underground facilities creates a linear plaza as a central open space on the ground level; a sunken plaza using topographic differences hosts welfare and commercial facilities on the first basement level and a parking lot on the lower level; an underground parking lot turns the access road into a pedestrian-only street lined with cultural facilities; and finally, a complex in the form of transit-oriented development reinforces the center of the campus.

This study focuses on plazas and boulevards located in close proximity to a university campus and an urban core. It explores issues related to the university’s physical and functional connection with surrounding neighborhoods. Defined as the “university-city interface”, the plazas and boulevards of three universities are examined in terms of their interaction with the surrounding cities. The three universities are Harvard University (Harvard) in Cambridge, Massachusetts; University of Pennsylvania (Penn) in Philadelphia, Pennsylvania; and Université Catholique de Louvain (Louvain) in Louvain-la-Neuve, Belgium. Design elements are analyzed from the perspective of campus spatial structure, as well as locations and functions, to develop a comparative checklist for plazas and boulevards. Ultimately, this research aims to propose design principles for open-space planning that strengthen the function of the campus in the urban infrastructure.

2. Issues and Debates

Design studies of college and university campuses have been ongoing in the fields of architecture, landscape architecture, and urban design. This is because universities have sufficient physical scale and characteristics to function as communities and are self-sufficient, independent design environments. Moreover, universities are the subject of an environment that is highly able to express and continuously develop ideal design concepts. For that reason, most designers have focused on the internal aspects of university campuses rather than their relationship with the surrounding environment.

Previous studies have analyzed the physical forms of campuses from the designer’s perspective to propose building-design standards in consideration of university characteristics [1]-[4]. In particular, a pioneering study by Paul V. Turner categorized university campuses into quadrangles, malls, and parks, explaining the characteristics of each category and its design traditions. However, the campuses Turner used had regional specificity—all of them were located in the United States—and were situated not in cities but in suburban or rural areas. Turner’s study also focused on the internal environs of rural university campuses, which are frequently independent from their surrounding environments. Thus, his interpretation might be limited to an understanding of campuses that are not located in the heart of a city. His work has even less relevance for campuses in European cities, where universities originated.

Meanwhile, several recent studies have focused on the functions and roles of the university in urban development [5] [6]. Wim Wiewel and David C. Perry conducted a series of case studies on the development of university campuses in the United States and other major cities around the world. They explained the kinds of main and collateral functions that can be shared with private companies and local communities by a university functioning as a bridge between the public and private sectors in the process of real estate development and urban planning. In the case of universities that are located in city centers, a series of studies was conducted on conflict resolution with local communities regarding the expansion of university facilities, land ownership, and devel-

opment density [7] [8]. As yet, however, there has been no focus on how university campuses that are expanding in urban areas can function as a part of their communities, or what kinds of physical design strategies can solve the associated problems. In other words, the literature lacks a clear explanation of where the boundary between city and university campus lies, how that boundary changes and grows, how such a boundary is embodied within a city, what general purpose a university serves, and how it exists in relation to its host city. Therefore, specific design methods and improvement strategies that embody the physical and functional interface between university and city are urgently needed.

There are ongoing studies on collaboration, partnership programs, and plan processes intended to enhance the social role and function of universities and improve lagging local community rehabilitation [8]-[13]. Their findings will confirm the role of a university located in the heart of a city as a city planner for underdeveloped areas, and focus on development settings and planning that ensure win-win growth for local communities. Therefore, while the main purpose of this study is to expand the traditional exclusive relationship between university and city—“town and gown”—and to develop collaborative programs, it is difficult to outline a specific, physical design strategy that connects the university with the city and enhances the identity of both.

3. Campuses in Urban Contexts

3.1. Campus Spatial Structures

This study presents comparative case studies of three universities (Harvard, Penn, and Louvain) and their adjacent urban blocks, whose bordering yet intermediate areas are likely to function as physical settings for various on-campus and off-campus activities of the university population. These universities are “urban campuses” or “inner-city universities” that function interactively with urban blocks as opposed to being self-contained campuses in suburban or rural locations. Accordingly, the university boundaries and adjacent blocks are significantly intermingled both visually and functionally, not only through the core educational and research activities of the university but increasingly through the retail/commercial, cultural/recreational, civic, and pedestrian activities of local residents and visitors. Such dynamic activities of the university-city interface are observed in **Table 1** for all three cases. Furthermore, the interface appears to be significantly intensified by including the pedestrian settings of university plazas and boulevards between the universities and their neighboring districts.

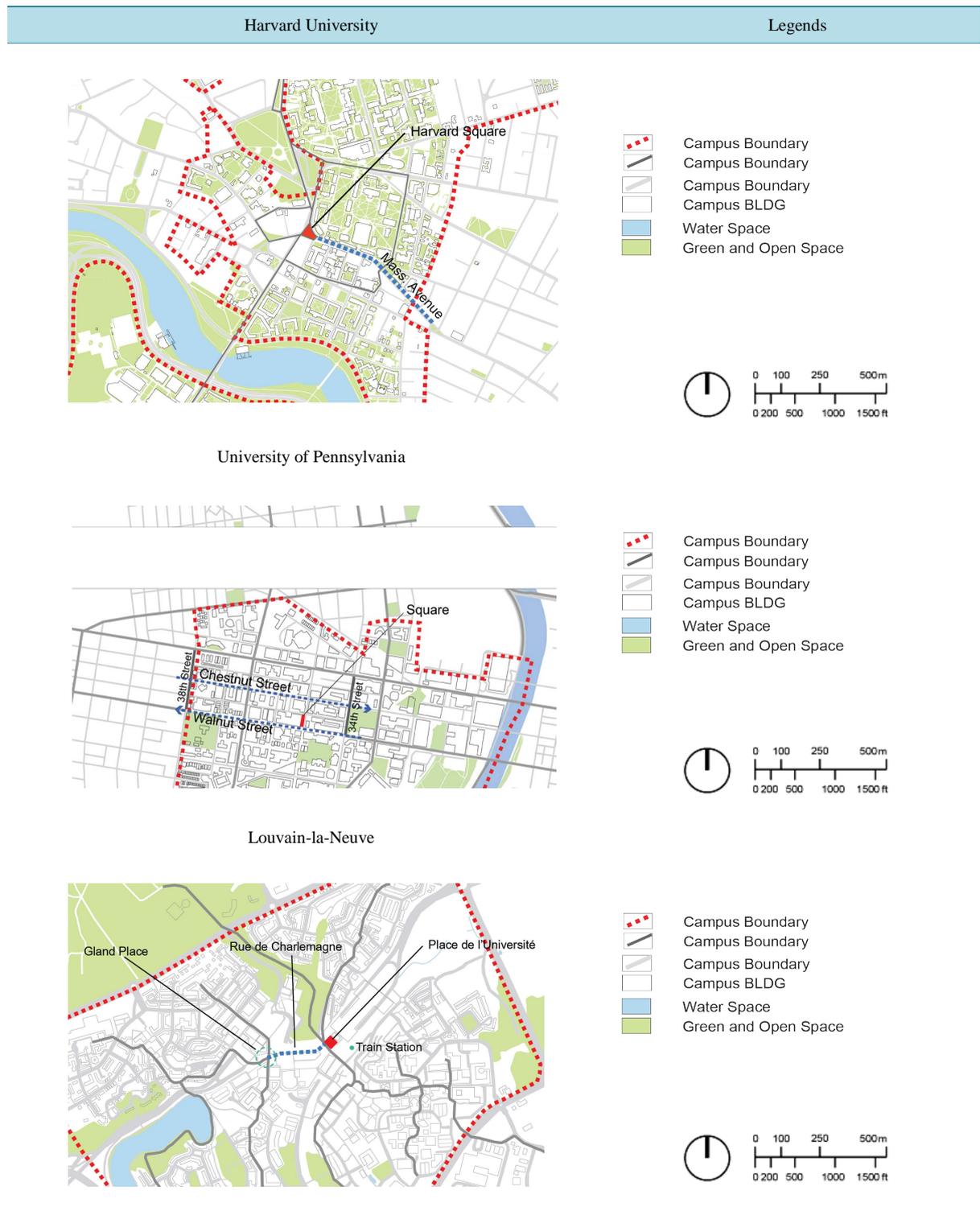
Harvard’s campuses are located in Cambridge and Boston, Massachusetts. The university grounds, which are bounded by the Charles River, include the Main Campus and North Yard to the north; the Allston Campus, which expands out from Harvard Stadium, to the south; and the Longwood Medical Area, located in southern Boston. On the main campus, the graduate schools, undergraduate buildings, dormitories, and the Business School are located within a 1.3-kilometer radius of Harvard Yard, and are connected to the city via Harvard Square, which has a subway station and a bus station. JFK Street, which originates in Harvard Square, is connected to the Allston Campus via Anderson Memorial Bridge on the axis of North Harvard Street to the south.

Penn’s main campus covers 279 acres (1.13 km²) in a contiguous area of West Philadelphia’s University City district, where all of the university buildings and medical facilities are clustered to form a densely pedestrianized urban campus. The surrounding neighborhood includes several retail and commercial buildings as well as civic structures, mostly grouped along Walnut Street on the western edge of the campus. Pursuant to its long-term development plans, Penn recently acquired 35 acres (140,000 m²) between the campus and the Schuylkill River, on the former site of the Philadelphia Civic Center, and a nearby 24-acre (97,000 m²) site owned by the United States Postal Service.

Louvain is located 30 kilometers southeast of Belgium’s capital, Brussels. It is the central feature of two towns, Louvain-la-Neuve and Ottignies. Each town has a different function, yet they share a complementary relationship. While Ottignies serves an administrative function, Louvain-la-Neuve serves a cultural and educational function, in which university administration, education, and research facilities are concentrated. Major public facilities include the large shopping center L’Esplanade, as well as the Musée Aula Magna, Musée Herge, Cinema UGC, media center, and public library.

As can be seen in **Table 1**, Harvard, Penn, and Louvain have clearly distinguishable spatial structures formed by a pedestrian path system. Harvard has a circular structure that highlights its axis and grid aspects, Penn has a linear structure, and Louvain has a cross-shaped structure with a series of nodes in the center that are located on the main pedestrian path. These structural differences provide important clues for understanding the relationship between the university and the city.

Table 1. Campus spatial structures of Harvard, Penn, and Louvain.



3.2. The University-City Interface

Today, the boundaries between cities and universities in urban contexts are in flux. A university campus is traditionally defined as the physical space for core academic activities that take place within the university property

boundary. Furthermore, boundary issues have recently attracted attention, especially when universities expand or relocate as part of their long-term planning processes (Table 2). Therefore, designers increasingly face the challenge of defining the intermediate spaces between the university and the abutting areas, as opposed to understanding the university as an enclosed community. It is necessary to reconsider this traditional definition and consider how campuses extend beyond their boundaries and provide various university-associated activities as well as retail/commercial and community interaction in neighboring areas [14].

A functional linkage between university boundaries and abutting city blocks is likely to be mutually beneficial and enhance the general quality of the city. The city and the campus interact and influence each other's development when the surroundings provide fertile ground for university-associated businesses and potential university expansion [15]. Such an improved university-city interface could significantly contribute toward building a strong overall identity for the city.

4. Design Checklists

4.1. Plazas as Gathering Places

As representative open spaces, plazas and boulevards should be designed to function as public open spaces heavily used by both citizens and campus users for daily activities. Accordingly, we analyzed plazas and boulevards from the perspective of location and function to provide a comparative checklist of design elements.

A plaza is an open gathering space that performs important, symbolic roles and connects city and campus. A plaza is the most favorable area for core public functions, as major facilities are generally clustered around it. Urban plazas located at the edges of campuses serve both campus users and visitors; university-owned buildings and privately owned structures usually surround such plazas.

Harvard Square has a subway station with an underground transfer system between buses, subways, and trolleys that are linked to the ground. The Harvard campus is adjacent to many residential communities, and the transfer system must be at the heart of the residential areas to be shared between university users and residents. The Sansom Common plaza is located adjacent to a new commercial block on the Penn campus. The commercial building includes a newly built Penn Bookstore, the Inn at Penn Hotel, and other retail shops. The plaza quickly became a popular open gathering space for all users. The Place de l'Université is located in the urban center of the Louvain. The area of the plaza is approximately 2000 m² (0.5 acres) and serves as an entry plaza for both the university and the city's central business area. Surrounding facilities include the university's main building, the railway station, and the Esplanade shopping center. Place de l'Université is one of the main pedestrian nodes connecting adjacent plazas with pedestrian promenades.

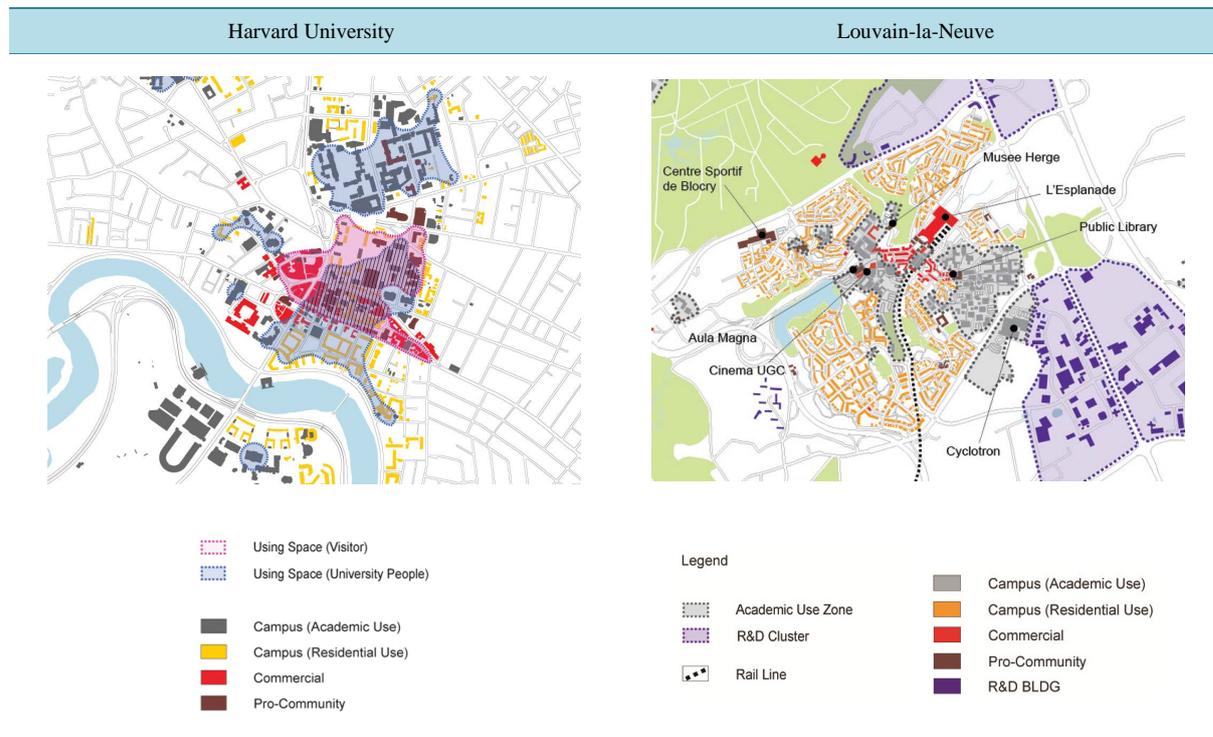
Table 3 shows the spatial structures of Harvard Square, Sansom Common, and Place de l'Université, which serve as entry points to their surrounding cities. The building façades form the backgrounds of the plazas, and each building performs a different function. A façade is symbolic in a government office building, as it plays the role of a backdrop that gives an identity to the location; there are cafés and restaurants at the boundaries of the plazas, and they are always actively in use. The centers of the plazas are used for public events and as weekend marketplaces. These spatial elements form the foundation for a university-city interface checklist in terms of role, shape, size, facilities layout, landscape elements, transportation, accessibility, materials, and construction methods. As summarized in Table 3, we analyzed the spatial and programmatic elements that constitute plaza spaces, which include shape and size, function and accessibility, building façade, location, and height.

4.2. Boulevards as Connectors

A boulevard is a main vehicular/pedestrian passage that physically connects city and campus. A boulevard connects the city and the campus, and is used by citizens for daily activities. Table 4 presents the design elements and attributes of boulevards—Massachusetts Avenue at Harvard, Chestnut and Walnut Streets at Penn, and Rue de Charlemagne at Louvain—as exemplary connectors of city and university facilities. Massachusetts Avenue (Mass. Ave.) connects Harvard Square with commercial blocks in Cambridge and leads people toward the central city area. Chestnut and Walnut Streets at Penn are the main one-way streets connecting Philadelphia's Center City (east) and University City (west). Rue de Charlemagne at Louvain is a pedestrian-only promenade where commercial and business facilities are mixed with university facilities.

Table 4 shows the design principles for boulevards, as well as their function, vehicle and pedestrian lanes,

Table 2. Mixed University-City areas: Harvard and Louvain.



land-use patterns, and placement. Cultural and commercial facilities are starting to appear at the centers of campuses—a strategy intended to increase public use of campuses and encourage citizens to use them. Boulevards, as the main access roads that connect campuses and cities, are populated with commercial facilities that target campus users. Many boulevards have lost the capacity to be connective, pedestrian-friendly spaces due to increases in automotive traffic and parking spaces. The decrease of green space in cities requires boulevards to assume stronger roles as public spaces for exercise and other pedestrian activities.

Based on our analysis of design elements, **Table 3** and **Table 4** suggest design checklists for plazas and boulevards in terms of location, program, and design features. The results offer a set of urban design principles for university plazas and boulevards that would critically improve the quality of the university-city relationship.

Campus planning principles and urban design strategies may be interactive and flexible depending on circumstances and context. These checklists and principles can be useful starting points for architects, landscape architects, and urban designers in building interdependent, connective structures between universities and cities. Ultimately, official university-specific design guidelines with prescribed recommendations should be established to apply these factors to the actual designs.

5. Discussion

To support the construction of integrated university-city interfaces, this study deduced several planning principles and design guidelines intended to optimize the function, location, and design features of new campuses.

A university-city interface needs to be near public transport; thus, it is necessary to establish urban planning in terms of transit-oriented development. Ideally, plazas should be connected directly with boulevards that begin from walking-distance transportation nodes. Plazas should provide open spaces for campus users and the public, and mixed-use buildings with academic characteristics. Boulevards should be planned to function as main pedestrian passages that cut across the entire campus. In particular, it is important to link the boundaries of the community and the campus so that community residents can use the campus for public functions. In addition, the university plaza should serve as a local strategic point for community education, culture, and shopping activities. For this purpose, cultural, religious, and commercial facilities—such as university libraries, galleries, museums, and theaters—must be open to the public.

Table 3. Plaza design checklist.

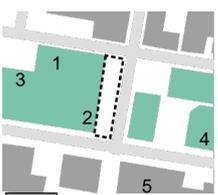
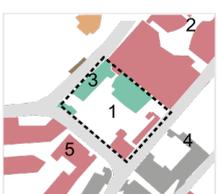
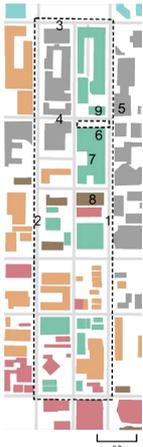
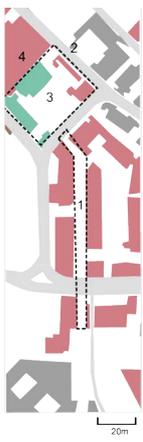
Plans	Views	Design Checklist		
Harvard Square (Harvard)				
 <ul style="list-style-type: none"> Campus (Academic Use) Campus (Residential Use) Commercial Campus related Commercial Pro-Community <p>1) Harvard Square 2) Subway Station 3) Mass. Ave.</p>	  	<p>Location</p> <ul style="list-style-type: none"> -Main public transportation node -Functional/symbolic center of the university -Transfer system for subway, buses, parking, bicycles <p>Program</p> <ul style="list-style-type: none"> -Main pedestrian node/destination/gateway to campus -Commercial facilities related to university life -Ground level utilized for commercial use <p>Design features</p> <ul style="list-style-type: none"> -Integrated façade and building design -Materials/colors/archetypes matched to design guidelines -Commercial sign restrictions for integrated look -Lighting and seating incorporated -Surrounding building height under six stories 		
		Sansom Common Plaza (Penn)		
		 <ul style="list-style-type: none"> Campus (Academic Use) Campus (Residential Use) Commercial Campus related Commercial Pro-Community <p>1) Sansom Common 2) Penn Bookstore 3) The Inn at Penn Hotel 4) Retail stores/banks 5) Library</p>	  	<p>Location</p> <ul style="list-style-type: none"> -Set back on ground level to create open space -Two main streets connected by linear plaza <p>Program</p> <ul style="list-style-type: none"> -Ground level utilized for commercial use -Commercial facilities related to university life (e.g., bookstores and dining halls) -Public anchor institutions <p>Design features</p> <ul style="list-style-type: none"> -Integrated façade and building design -Commercial sign restrictions for integrated look of façade -Lighting for safety and night use -Match to materials/colors/archetypes -Site furnishing for gathering -Large canopy trees planted for shading -Lighting installed for safety
Place de l'Université (Louvain)				
 <ul style="list-style-type: none"> Campus (Academic Use) Campus (Residential Use) Commercial Campus related Commercial Pro-Community <p>1) Place de l'Université 2) L'Esplanade 3) Offices 4) Train station 5) Retail stores</p>	  			<p>Location</p> <ul style="list-style-type: none"> -Functional/symbolic center -Courtyard surrounded by buildings -Breezeway that connects to adjacent street <p>Program</p> <ul style="list-style-type: none"> -Ground level utilized for commercial use -Festival/open-air market to accommodate special events -Underground parking facilities <p>Design features</p> <ul style="list-style-type: none"> -Main pedestrian node/destination -Main public transportation node/gateway to campus -Water feature as focal point/gathering place -Commercial sign restrictions for integrated look of façade -Materials/colors/archetypes matched to design guidelines

Table 4. Boulevard design checklist.

Plans	Views	Design Checklist
Mass. Avenue (Harvard)		
 <p>Legends 1) Mass. Ave. 2) Harvard Square 3) Harvard Yard 4) Subway Station 5) JFK Street</p> <ul style="list-style-type: none"> Campus (Academic Use) Campus (Residential Use) Commercial Campus related Commercial Pro-Community 	 <p style="text-align: center;">Location</p>  <p style="text-align: center;">Program</p>  <p style="text-align: center;">Design</p>	<p>-Public transportation route (subway, bus) -One-way street toward campus (two lanes plus parking) -Transportation nodes as entry points</p> <p>-Ground level: commercial; upper level: offices -Commercial in front row, residential in back row -Facilities related to university life -Public anchor institutions (e.g., library, museum, theater)</p> <p>-Pedestrian path with 1.5 m to 3 m width -Lighting for safety and night use (10 m spacing) -Design elements configured to campus identity</p>
Walnut Street (Penn)		
 <p>Legends 1) Walnut Street 2) Chestnut Street 3) 34th Street 4) 36th Street 5) Library 6) Penn Bookstore 7) Inn at Penn 8) Gym 9) Retail</p> <ul style="list-style-type: none"> Campus (Academic Use) Campus (Residential Use) Commercial Campus related Commercial Pro-Community 	 <p style="text-align: center;">Location</p>  <p style="text-align: center;">Program</p>  <p style="text-align: center;">Design</p>	<p>-Main pedestrian/vehicular access from town to campus core -Campus boundary set by crossing river</p> <p>-Connect ground level with underground or upper level -Integrate façade and building design with materials/colors/styles -New commercial complex under construction</p> <p>-Strong linear axis accentuated with lighting and trees in 8 m to 10 m spacing</p>
Rue de Charlemagne (Louvain)		
 <p>Legends 1) Rue de Charlemagne 2) Train station 3) Place de l' Université 4) L'Esplanade shopping</p> <ul style="list-style-type: none"> Campus (Academic Use) Campus (Residential Use) Commercial Campus related Commercial Pro-Community 	 <p style="text-align: center;">Location</p>  <p style="text-align: center;">Program</p> <p style="text-align: center;">Design</p>	<p>-Main pedestrian access from town to campus core -Limit traffic for safe and pleasant pedestrian walking -Parking facilities located underground</p> <p>-Ground level for commercial or public use -Upper level for office use -Parking facilities located underground</p> <p>-Integrate façade and building design with materials/ colors/styles -Overhang or balcony to accentuate façade designs -Commercial sign restriction for integrated look -Overhang provided for pedestrian use in unfavorable weather -On-structure construction</p>

Campus boulevards should be pedestrian-friendly places that limit automotive traffic. Moreover, campuses should plan for both university and local residents to co-use spaces, which requires pedestrian passageways and bike trails. To create a pleasant walking environment, landscape design should play a prominent role in campus planning. Overall, campuses need to be designed in a manner that maximizes open space—as both a public environment open to the community and a symbolic marker of the university town. This study offers a valuable communication platform from which professionals, scholars, community leaders, and public policy makers can derive a set of urban design implications that will successfully guide their university-city interfaces.

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