University Planning and Architecture

The search for perfection

Jonathan Coulson, Paul Roberts and Isabelle Taylor
CHAPTER ONE

University Planning and Architecture 1088–2010: A Chronology

University design is a civic art form. This is a lofty claim, yet the following sweep through its rich history from its medieval beginnings to the landmark buildings of the present day, will serve to demonstrate how social, philosophical and cultural forces have come to mould academic design of each era. The university buildings and campuses encountered in this discussion are often not the clear and consistent realisations of their idealistic founders or designers, but are illuminating reflections of their cultural moment. From the medieval universities, whose proliferation and physical form was much shaped by the burgeoning of the city, to the colonial colleges of the fledgling United States, envisaged as expressions of the utopian social ideals of the American imagination, to the modernist visions of post-war institutions, products of the push to democratize higher education, university architecture is an architecture of ideology. This chapter will chronicle the history of campus architecture as a condensed narrative of the most energetic and innovative phases of university design over the last 900 years. This methodology omits many countries and institutions, focusing predominantly on the United Kingdom, continental Europe and the United States, the centres of the most stimulating achievements in this field.

EARLY BEGINNINGS

The medieval university was largely a European phenomenon, inaugurated by the University of Bologna, allegedly founded in 1088 (Figure 1.1). Bologna, together with Paris and Oxford, form the triumvirate of European university prototypes, from which all universities descend. Medieval universities were essentially the products of the twelfth-century Renaissance, the rediscovery of classical learning that flourished in the 1100s. In centres of learning across Europe, renowned masters drew increasing numbers of students around them. Eager to safeguard and promote their mutual interests, they collected into scholastic guilds, akin to the guilds of merchants and artisans. Gradually these guilds were officially sanctioned by popes, prelates and princes, attracting an increasing number of students and thus evolving into the forerunners of the modern university. In Italy, the model of Bologna was copied at Modena,
Reggio nell’Emilia, Vicenza, Arezzo, Padua and Naples. Spain saw the founding of great schools at Salamanca, Valladolid, Palencia, and Seville. Universities in Cambridge, Coimbra, Prague, Cracow, Vienna, Heidelberg, Cologne, Louvain, Leipzig, St Andrews, and others ensued in quick succession (Table 1.1). Over the course of two centuries, the university had established itself as the prime sponsor of learning within the major towns and cities.2

Over the period, universities took root in thriving cities supported by prosperous agricultural regions that allowed for relatively inexpensive living costs, gradually ingraining themselves within the urban centres and shaping the characters of their host cities. Yet despite this union, the university had no tangible presence within the city. Lectures took place in houses rented by the masters, while examinations and assemblies were typically held in churches and convents. The early medieval universities possessed no buildings; they were as yet an indistinct community of masters and students drawn from throughout Europe. The members of Paris’s university, for example, largely originated from outside the Île-de-France region and so as ‘foreigners’ the students and masters bore little fidelity to their host city, and, when scholarly privileges were called into question, they felt no compunction in moving to another centre. University migrations were a common phenomenon, and frequently the force which stimulated new universities, as evinced by the migration from Bologna to Vicenza in 1205 and Oxford to Cambridge in 1209. These episodes stimulated the acquisition of many of the earliest university buildings. Following the last major exodus of Bolognese professors to the University of Sienna in 1321, the municipality purposed to bind the university to the city by building a chapel exclusively for the city’s scholars in 1322; it was the university’s first edifice.3

As the Middle Ages progressed, as student populations increased and ceased to migrate, universities began to acquire property. In the fifteenth century, the University of Paris procured lecture halls, colleges, lodgings and churches on the left bank of the Seine, giving the university a distinctive presence in the area that became known as the Quartier Latin. In the same century, Salamanca erected a quadrangle to house teaching facilities, Las Escuelas (Figure 1.2) and the University of Orléans built its Salle des Thèses, the only secular medieval university building to survive in France. As the Italian Renaissance gathered pace, the universities of Italy also increasingly felt the desire for the prestige that accompanied owning purpose-built academic facilities. By 1530, the scholars of Padua were taught in the university building (Figure 1.3), and, spurred on

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<tr>
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<tr>
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<td>University of Paris, France</td>
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<td>University of Pisa, Italy</td>
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<td>University of Pavia, Italy</td>
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<td>1365</td>
<td>University of Vienna, Austria</td>
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<td>1385</td>
<td>Ruprecht Karl University of Heidelberg, Germany</td>
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Table 1.1: The oldest extant universities in the West

Photo: ©Stooephoto.com/0597
by rivalry, Bologna soon followed suit. The University of Bologna obtained permanent quarters in the Palazzo dell'Archiginnasio in the city centre in 1563. Entered through a magnificent portico, and sited around a courtyard, the complex housed seven lecture halls for law, six for arts and medicine, and two large halls. Over 6,000 heraldic shields, immortalizing the university's professors and students, and an incredible array of art work throughout the staircases, halls, teaching rooms and arches offer a glimpse of the rich history this building holds.4

The Palazzo dell'Archiginnasio typifies Spanish and Italian universities of the Renaissance in its four-sided courtyard format surrounded by arcaded cloisters and an impressive main façade. The model was transported to South America when its colonists founded its first universities, the University of San Carlos in Guatemala (main building circa 1763) being one such example (Figure 1.4).

As the Renaissance progressed, universities old and new acquired befitting academic quarters, comprising lecture theatres, assembly rooms, chapels, libraries, and lodgings. These structures, often incredibly lavish, were physical manifestations of the omnipresence of the European university, a visible sign that the university had evolved from a loose association of scholars and masters into an
institution. The distinctive architecture and central urban locations of the late-medieval university indicate that its place in the life of the city was firmly established; the university towns became stamped with a personality of their own. The most iconic expression of this is, undoubtedly, the universities of Oxford and Cambridge.

The two universities of England distinguished themselves from their fellow institutions through their adherence to the collegiate system. The college first came into being, in fact, in twelfth-century Paris. Students as young as 14 were drawn from throughout Europe, and so halls or dormitories known as hospita catered for their housing needs. The Collège des Dix-huit was founded in 1180 by a wealthy English merchant, Jocius of London, to shelter 18 poor clerics while they attended lectures. Only a small amount of supervision took place in these foundations, usually by a master or cleric, and instruction remained external. A small number of residence colleges existed in Italy, but they failed to achieve the same popularity of those within Paris and England, probably because the supervision of scholars was not such a priority. Italian universities, unlike Paris, Oxford and Cambridge, did not enrol very young students. The colleges housed only a fraction of students, and, since Italian communes forbade teaching outside what they deemed the ‘public university’, teaching colleges did not evolve.

It was only in England, at Oxford and Cambridge, that teaching colleges, comprising a body of scholars living under the teaching and guidance of masters of arts, gathered real momentum. Yet, the colleges were not present from the outset. In both centres, it was at first the norm for students to lodge with townspeople. Quickly, though, ‘halls’ or ‘hostels’ became popular, in which groups of students lived communally in a rented building presided over by a master. Beam Hall was one such establishment in Oxford; surviving intact in Merton Street, it illustrates their inherently domestic character that made little imprint on the architecture of the town. These transient establishments came and went; some 200 names have been recorded in Oxford. The colleges, however, achieved a permanent presence. With precise stipulations regarding discipline, study and the attendance of religious services, the colleges quickly assumed the residence functions of the halls, and in time took on teaching responsibilities. They differed from the early academic halls
in that the colleges received endowments of lands, rents and church revenues, and furthermore, wielded a tremendous architectural impact upon Oxford.  

The colleges erected the university’s first impressive buildings. Their financial independence meant that the colleges could build liberally and lavishly. The longevity of their architecture stands as testimony to this patronage, which still dominates the identity of the two cities to the present day. The first colleges were founded in quick succession in the thirteenth century at Oxford: University College (1249), Balliol (1263) and Merton (1264), which possesses the earliest surviving collegiate buildings. When Merton was founded, no model existed as to the form an Oxford college should take. The buildings took shape in a piecemeal fashion from 1266, irregularly placed around a courtyard, reproducing an arrangement found in contemporary bishops’ palaces and some nobles’ houses. The first buildings to be constructed were the dining hall (much rebuilt 1872–1874) forming the south side of the quadrangle, the Warden’s house on the opposite side, and a chapel on the third side, where work commenced in 1290. A rough, tawny-coloured limestone was employed throughout. A local material found in abundance, limestone remained the material of choice for collegiate and University buildings until the middle of the last century. Residential accommodation for fellows occurred with the construction of Mob Quad, to the south of the chapel, begun in 1287–1289. Consisting of four ranges of roughly equal length and height, this was Oxford’s first collegiate quadrangle (Figures 1.5 and 1.6).  

The enclosed quadrangle, first seen in Merton, has proved the enduring language of collegiate architecture at Oxford and Cambridge to the present day, and indeed yielded considerable worldwide influence. The medieval universities of Scotland (St Andrews, founded 1413; Glasgow, founded 1451; and Aberdeen, founded 1495) appropriated much the same pattern. Reminiscent of monastic cloisters, it recalled the tradition of monastic learning that the universities inherited. Indeed, several colleges were actually founded in, or later took over, monastic structures, such as Jesus and Emmanuel at Cambridge. The enclosed courtyard format also served a defensive role, both keeping townsfolk out and keeping students in. Town–gown tensions were notorious, not only in England but
1.7 Sheldonian Theatre, University of Oxford

Photo: Bruce Ashton/Oxford
throughout European university towns, leading to fighting, pillage and even murder. That colleges could close themselves off from the outside, and thus exert heightened control over students, was one of their chief advantages over the academic halls.²

Initially developing gradually, piece by piece, the earlier colleges were often modest in appearance. But as more colleges were established and their status correspondingly grew, their founders soon became possessed of a competitiveness that led to increasingly impressive college buildings. As channels of patronage for the richest, most powerful men of the day, the colleges of Oxford and Cambridge contain some of the finest examples of Gothic architecture in England. Patronized by the leading political figures of public life, the prelates and monarchy, they epitomized the most fashionable trends pioneered by the most celebrated architects and exhibit a unity of design paralleled in few other places.

Indeed, the stylistic unity of the two universities remained conspicuous long after Gothic architecture had lost its cachet elsewhere in Europe. In the second half of the seventeenth century, however, Oxford and Cambridge underwent an architectural transformation, pioneered by the young trailblazer Christopher Wren. Recognized in the early 1660s as one of Europe's most distinguished scientific thinkers, he represented a new breed of architect in Oxbridge, with a theoretical as opposed to practical mastery of architecture. His first architectural commission came from his uncle, Bishop Matthew Wren, to erect a chapel at Pembroke College, Cambridge. The 1663 design introduced to the medieval town fully-fledged classicism. Cast in the form of a classical temple, this elegantly unassuming structure was the first example of pure classical architecture found in either Oxford or Cambridge. Contemporaneously, Wren embarked upon his first architectural enterprise at Oxford, the Sheldonian Theatre, completed in 1669 (Figure 1.7).

Wren's popularity amongst the Oxbridge colleges soared. At Cambridge, Emmanuel's chapel and Trinity's library (Figure 1.8) were erected to Wren's designs; at Oxford, he designed buildings for Trinity and Christ Church, and chapel screens for All Souls, St John's and Merton. Lauded as Oxbridge's conqueror of Gothic,² Wren can be thought of as the precursor of the star architects of the modern age, Eero Saarinen, Frank Gehry, Norman Foster amongst others, those critically acclaimed designers of headline-grabbing, prestige-generating structures hankered after by present-day university presidents and vice-chancellors. Wren's influence on the physical fabric of Oxford and Cambridge was unparalleled; through his works, the
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<td>Harvard College</td>
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<tr>
<td>1693</td>
<td>The College of William &amp; Mary</td>
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<tr>
<td>1701</td>
<td>Yale College</td>
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<tr>
<td>1746</td>
<td>College of New Jersey (Princeton University)</td>
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<td>1754</td>
<td>King’s College (Columbia University)</td>
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<td>1755</td>
<td>College of Philadelphia (University of Pennsylvania)</td>
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<td>1765</td>
<td>College of Rhode Island (Brown University)</td>
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<td>1766</td>
<td>Queen’s College (Rutgers, The State University of New Jersey)</td>
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<td>1769</td>
<td>Dartmouth College</td>
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Table 1.2: Colonial colleges and date of foundation

two universities became versed in an authentic classical vocabulary that formed the paradigm for nearly 200 years, propelled by the likes of Nicholas Hawksmoor, James Gibbs and James Wyatt. Wren inaugurated a new philosophy of collegiate architecture that rejected the medieval enclosed quadrangle in favour of openness, vistas with focal points, and hierarchical arrangements that characterized the Baroque style. College architecture had previously been dominated by ranges, uniform along their length with little or no central emphasis or axiality. A key development of Wren's Oxbridge designs were focal points positioned on strong axes. Directionality and central emphasis were introduced into the academic architectural vocabulary, an innovation that was to shape not only the English universities but also the thinking behind America’s first colleges.

THE NEW WORLD: AMERICA’S FIRST COLLEGES

As Wren and his followers were transforming Oxford and Cambridge into new Romes, so the influx of English settlers to North America were busy creating their own new England on the opposite side of the Atlantic. The Puritan settlers conceived the colonies as a blank canvas, onto which they could project their ideal world, a pure world of the highest morals, in which every man strove to serve God and one another. Such ideals necessitated a society of capable rulers, learned clergy and cultured citizens; such a society, they realized, could only be achieved through education. Memories of Oxbridge remained vivid amongst the new settlers. By 1646, approximately 100 Cambridge men and a third as many Oxonians had settled in New England. Throughout seventeenth-century England, the value of education was widely promoted. In the early decades of the century, large numbers entered higher education in proportions not again known until the twentieth century. In 1636, a mere six years after the Massachusetts Bay was colonized, its General Court determined to found a college; the following year, Newtowne was decided upon as its location, a village six kilometres from Boston, soon renamed Cambridge after its high number of Cantabrigian inhabitants. Thus, the university institution made its first appearance in North America, and Harvard College was born. Eight further colonial colleges followed (Table 1.2).

From the outset, the governing influence on these new degree-granting institutions was the English collegiate system, fully developed by the sixteenth century. Rejecting the pattern typical in continental Europe, in which universities assumed responsibilities only for teaching and paid little heed to students’ social and housing arrangements, early American colleges were keen to pursue the English ideal of tightly regulated colleges encompassing living, social and academic pursuits. Harvard’s Governing Board declared in 1671 that,

It is well known...what advantage to Learning accrues by the multitude of persons cohabiting for scholasticall communion, whereby to acuate the minds of one another, and other waies to promote the ends of a Colledge-Society.

However, from the start, American colleges distanced themselves from the monastic-like planning traditions of the medieval English foundations; it was not the notion of a cloistered setting that held the appeal for the colonial settlers, but rather the principle of a scholarly community moulded, even nourished, by the character of its surroundings.

To realize this, American institutions opted for distinctive spatial patterns. Beginning with Harvard, American schools rejected the enclosed quadrangle traditional in England. They favoured separate buildings sited in open landscape, approachable and accessible to the community. In 1642 Harvard saw the completion of a large, multi-purpose building, on a long, thin one-acre plot. It took the form of an E-shape plan, a plan apparently unknown in Oxbridge,
with short flanking wings and a central staircase tower projecting from the main block reminiscent of Elizabethan manor houses. Old College, as the building was later named, contained nearly all the college's activities under one roof, including a commodious hall, acting as lecture hall, dining room and communal living area, plus a kitchen, library and student rooms. Since lectures were, at this time, only a modest aspect of the curriculum, no additional classrooms were built. A central school-house of this type, frequently termed the Old Main and sheltering virtually all college functions, came to be a mainstay of American college architecture. Examples exist at the University of Colorado, Princeton University, Vassar College, and Swarthmore College. Harvard extended its premises in 1650 and 1655 with two further buildings neighbouring Old College, named Goffe College and Indian College. This layout of a series of separate structures set an enduring precedent for American colleges. It has been speculated that this type of spatial arrangement may have been conditioned by a variety of factors. Paul Turner proposed that the sense of boundless space may have engendered a comparably expansive layout, or that the use of wood as a building material suggested separate buildings to minimize fire risk. Ideologically, the new spatial layout may have been perceived by the Puritan colonialists as a means of establishing a distance from the Catholic associations of the monastic-style linked complexes of England and from their impression of cloistered isolation. For their colleges, the new settlers aspired to a cohesive relationship with the outside community, an ideology which would not be expressed by inward-turning buildings. Almost always, the American colonial college faced outwards to its community (Figure 1.9).

Yet by no means did this spatial pattern always assume the same guise; the nine colonial colleges exhibit an impressive degree of experimentation in their planning and architecture (Figure 1.10). Virginia's first college, William and Mary, executed a plan in the 1720s in which a large building was neighboured symmetrically by two smaller structures, in an arrangement reminiscent of the sixteenth-century villas of Palladio. Its domestic character may have been a response to the college's educational ambitions, for it espoused a pragmatic syllabus, more attuned to the community than the traditional New England college. It was a layout often adopted in the early nineteenth century, at Ohio University (Figure 1.11) and Antioch College for example. An alternative organisation was laid out at Princeton, where the single academic building, Nassau Hall (Figure 1.12), was set back imposingly from the road behind a large green, a precedent repeated at Brown (1770) and Dartmouth (1784–1791) (Figure 1.13). Yale's early buildings, beginning with the long and narrow edifice erected in 1717, took on the form of an elongated façade to the town's Green (Figure 1.14), creating a
linear plan later reworked at institutions including Dartmouth, Brown, Amherst, Bowdoin and Wesleyan. These diverse plans demonstrate the colonialists' immediate recognition that their distinct social and educational ideology necessitated a revised approach to campus planning distinguished clearly from their English roots.  

The most pervasive manifestation of the connection between campus planning and the social and pedagogical idealism of the young nation was that of the University of Virginia. Its foundation in 1819 represented the culmination of a campaign begun by the country's third president, Thomas Jefferson, when Governor of Virginia in the late eighteenth century, to reform public education by creating a series of free schools. The campus that resulted is frequently hailed as the United States' most celebrated. Not only did it introduce refined neo-classical design to the American university, but it emphasized physical environment as a pivotal feature of educational vision.

Designed by Jefferson himself, the layout was simple: a wide, tree-lined central space flanked by a series of ten pavilions, each housing an individual subject, opening at one end to a stunning prospect.
over the Virginian plantations, and terminating at the other with the functional and symbolic axis of the campus, the Rotunda Library (Figures 1.15, 1.16). Each pavilion served as a professor's house and classroom, connected at the rear with colonnades onto which student residences opened. The central lawn was envisioned as a space for recreation, campus gossip and scholarly exchange, while the colonnaded pavilions provided numerous front doors, and thus numerous opportunities for social encounters. In its spatial arrangement, Jefferson's University of Virginia stands as one of the most decisive moments in the history of campus design. Its impact was felt as far away as twentieth-century China, for at Tsinghua University in Beijing a grand focal point is provided in the form of a copy of Jefferson's Rotunda, built in 1917. 14

The concept of a spacious, open green surrounded by a succession of structures serving both as professors' residences and classrooms, was unparalleled in campus planning. Jefferson advocated to the trustees that the model institution should be 'an academical village.' This phrase has enjoyed immense currency as the paragon in campus values, and encapsulates Jefferson's ambitions for the institution. The
1.15 University of Virginia, based on Jefferson's 1822 plan

1.16 The Lawn, University of Virginia
Photo: Jane Haley/UIA Public Affairs
effect is one of an intimate, scholastic household. When himself a student, Jefferson had thrived on the personal relationships with his tutors, a practice he contrived in later life as a teacher himself. He valued teaching based upon close personal contact. The proximity of the living and classroom space of the lecturers and the students made physical this ideal.

NINETEENTH-CENTURY AMERICA: PICTURESQUE NATURE

As the nineteenth century progressed, the design of college campuses and buildings became increasingly ambitious, displaying far greater sophistication and a more profound unity of conception than preceding ages. American campus planning underwent a series of transformational phases in this period, namely those of picturesque nature, the Beaux-Arts movement and the Gothic Revival.

Nature was the first of these themes to find expression in the nineteenth-century college. It was a long-held conviction, maintained particularly by the early Puritan colleges, that institutions should be located in the countryside away from the pernicious influences of the city; in the nineteenth century this concern was joined by more aesthetic considerations. Recognized both for its beauty and uplifting potency, nature became one of the most compelling considerations in the location and planning of American colleges. Locations overlooking seas or lakes, or those perched on elevated hilltops were increasingly sought-after amongst new schools, achieving an unparalleled relationship with the natural environment. This affinity with the landscape was unheard of amongst the European universities, and one of the signal features which distinguished the American campus from its European peers.15

The natural environment was popularly held as beneficial to students' wellbeing and moral character. In 1878, commentator Charles Thwing asserted, 'if Yale were located at Williamstown, Harvard at Hanover, and Columbia at Ithaca, the moral character of their students would be elevated in as great degree as the natural scenery...would be increased in beauty.' The edifying capacity of landscape was a central motivation to one of the most prominent figures in nineteenth-century campus development, Frederick Law Olmsted. Amidst the fast-paced industrialization and urbanization of America, Olmsted believed in nature as an antidote to city life and employed its remedial powers in his designs for parks and campuses. He envisaged a new campus ideal, an irregular and picturesque layout of buildings and walkways that followed the contour of the land. His designs (never executed) for the College of California's new site, soon named Berkeley, for instance, placed the school in a park-like setting, permeated with meandering roads (Figure 1.17). Convinced of the impact of physical setting upon behaviour, Olmsted championed the location and design of the campus as a key ingredient of the civilizing mission of higher education. In his recommendations for the Massachusetts Agricultural College he argued,

You must embrace in your ground-plan arrangements for something more than oral instruction and practical demonstration in the science of agriculture...You must include arrangements designed to favourably affect the habits and inclinations of your students, and to qualify them for a wise and beneficent exercise of the rights and duties of citizens and of householders.

The college was to be a 'model rural neighbourhood', of relatively small buildings scattered along a main road and around a village green. Olmsted's plans for Massachusetts were, however, summarily rejected by the college trustees. His subsequent article, 'How Not to Establish an Agricultural College', though, caught the attention of other institutions across the country and, ultimately, his tenets on the benefits of uniting community and nature became widely known amongst educators, resulting in a plethora of campuses built as clusters of structures informally set within park-like grounds.16

1.17 Plan for the College of California by Frederick Law Olmsted, 1866
Photo: Courtesy of The Bancroft Library, University of California, Berkeley
His influence stretched across the country, including the University of Vermont, Smith College, Stanford University, Washington University in St Louis, Gallaudet College, and the agricultural colleges of Iowa (Figure 1.18), Kansas and Michigan. Often termed the first landscape architect, he established the importance of landscape as a component of campus design. His philosophy of place would be a central influence on American campus design far into the next century.

NINETEENTH-CENTURY AMERICA: THE BEAUX-ARTS MOVEMENT

Quickly, however, a new paradigm for campus design gained ground – the Beaux-Arts model. While Olmsted structured his campuses around the natural environment to harness its healthy, civilizing potential, Beaux-Arts planning rejected nature and instead evolved as an urban pattern. The Beaux-Arts approach to planning was based on the ‘City Beautiful’ movement, a movement originating in the 1893 World’s Columbian Exposition in Chicago. The most consummate, impressive case of Beaux-Arts planning to be produced in the United States, the Exposition had a resounding impact upon both city and campus design. The approach prescribed formal axes on a grand scale lined with monumental buildings, which complemented the ethos of the modern American university. The closing years of the nineteenth century witnessed the formation of the modern American university. The number of academic courses mushroomed, as did extra-curricular activities and student numbers; commensurably the organization of the American university became ever more complex. Many universities began to consider themselves as cities. Bywords such as ‘City of Learning’ and ‘Collegiate City’ came into common usage, and, indeed, came to shape the built form of the institutions.17

The new thinking in campus planning was strongly influenced by Jefferson’s design for the University of Virginia. The pattern of a longitudinal axis dominated at one end by a strong focal point and flanked by subsidiary buildings found expression time and again at the hands of Beaux-Arts practitioners, who applied secondary axes and auxiliary buildings to the plan. The first outstanding illustration of this approach was Columbia University in New York, designed by Charles McKim in 1894 (Figure 1.19). Grand structures lined an axial network of streets and public spaces, culminating in a cour d’honneur, which led up to the central building, the library (Figure 1.20). Unlike the traditional American college, the new university required a greater number of teaching buildings, laboratories, libraries, and gymnasium amongst others, and the integration of these facilities within a unified campus became a chief preoccupation of university planners. Columbia, through its application of the Beaux-Arts system, achieved a unity and organizational clarity that provided an influential solution to this problem.

The Beaux-Arts method was adopted by universities across the United States, including the University of California at Berkeley, Rice University, Emory University, the Southern Methodist University, the University of Delaware, the University of Rochester, the University of Southern California and the University of Maryland (Figure 1.21). When the University of Havana moved to a new site in the opening years of the twentieth century, it too embraced a Beaux-Arts layout, creating a grand, neo-classical complex that dominates its urban expanse. Particularly striking is the prime vista leading to the Rectory, culminating in a monumental flight of stairs and double
1.19 Columbia University, McKim Mead and White's bird's eye view of projected campus built to full density
Photo: Collection of the New York Historical Society

2.20 Low Library, Columbia University
Photo: ©Stockphoto.com/Peter Spiro
porch of Corinthian columns (Figure 1.22). American architect Henry Killam Murphy transported Beaux-Arts planning as far as China in the 1920s, designing for Yenching University a campus governed by two perpendicular axes yet integrating traditional Chinese landscaping traditions and architecture. Although each applied the Beaux-Arts axial formula, campuses were shaped in accordance with the individual topographies, structure and ideology of the schools. The classical vocabulary was most widely adopted, but theoretically any architectural style could be assumed. Colonial architecture, for example, was employed on occasions to signal venerability, traditional American values, or to harmonize with extant buildings on campus, as was the case with Johns Hopkins University (Figure 1.23). Henry Hornbostel at Emory University appropriated an Italian Renaissance style as an expression of its geographical setting, the architect perceiving a similarity in flora and terrain between northern Italy and Atlanta. The movement endowed America with campuses of vastly different appearances, yet united by bold plans of organizational clarity that imbued higher education with a grand civic expression befitting its stature in an urbanizing society.¹⁸

NINETEENTH-CENTURY EUROPE

The European university had not been altered by any significant development in the design of its physical fabric since the Renaissance, but in the second half of the nineteenth century, European universities were the subjects of a building boom. The century saw a tremendous expansion in education as new social, economic and intellectual forces gained momentum. New trade had augmented national wealth and prompted a rise in the numbers and influence of the middle-class, which in turn encouraged the progress of higher education. At the beginning of the century, most universities in Europe were quartered in archaic premises. In Paris, the teachers and students of the faculties of sciences and theology were forced to lodge in the dingy rooms of the ‘Old Sorbonne’, built in the mid-seventeenth century. Vienna’s medieval university occupied yet older buildings, dating to the early sixteenth century. It was common practice for universities to take over edifices designed for other purposes, including convents, private residences and mansions. Aix-en-Provence’s law faculty was sited in a fifteenth-century hospice, and numerous Italian universities taught in Renaissance palaces, often in disrepair and unfit for purpose. These
historic buildings were the frequent recipients of criticism from their unhappy inhabitants. In France, the reports of general inspectors made for particularly vitriolic reading, while the first ministerial statistics in 1868 concluded most faculties conducted teaching and research in inadequate, detrimental conditions. In the nineteenth century, university premises were restored or constructed at breakneck speed across the continent. Paris gained palatial settings for the ancient Sorbonne and the new École des Beaux-Arts; the Swedish universities of Lund and Uppsala undertook rebuilding projects in the 1880s; and the German states went to great lengths to ensure their universities possessed impressive buildings, including those at Halle, Heidelberg, Göttingen, Leipzig, Munich and Karlsruhe.

Although the nineteenth-century American campus housed an eclectic mix of historical styles, it was a nineteenth-century Europe that explored to the maximum the associative power of historical style in giving form and meaning to educational institutions. The nineteenth-century explosion of university construction was not merely a utilitarian or perfunctory business. The grandiose buildings that resulted were highly potent, highly expressive structures communicative of the sociopolitical climate, of modern conceptions of education and of a youthful spirit of exuberance. In 1889, the Danish literary critic, Georg Morris Cohen Brander, wrote of Uppsala University’s new main building that “the whole is suited to propose to youth a spirit of progress. Everything here says to the young: Grow and go higher and become a professor.” The new university structures were not corralled behind walls as the medieval colleges of Oxbridge, or isolated amidst rolling countryside as many of the American colonial colleges, but rather were large, imposing city-centre structures, loaded with symbolic capital. Huge single structures typified the new university buildings. The synergy of the university and city brought with it significant cultural advantages, though it restricted the ability to minister to specific academic functions. Invariably, all university functions were housed within a single, dominating building, except residences which continental institutions did not provide. Gottfried Semper’s neo-classical edifice for the Swiss Federal Institute of Technology in Zurich (completed 1864), the University of Graz’s new main building (opened 1895) (Figure 1.24), and Helgo Zettervall’s Renaissance palazzo for Lund University (completed 1882) (Figure 1.25) exemplify this trend. Academic construction was set against a background of social, economic and political tumult, which exerted a tangible influence upon the architectural experiments of the nineteenth century. The outcome was a collection of assertive buildings that sought to define learning in the modern age.

In an increasingly secular society, the new university buildings were the cathedrals or temples of learning. This is exhibited no more manifestly than in the Greek temple-inspired embodiment of London’s newly founded university college. London’s first university was established by a group of social reformers in a bid to create an enlightened alternative to the traditionalist and churchy Oxbridge colleges. Today known as University College London, in 1826, architect, classical scholar and archaeologist, William Wilkins was selected to design its building. A star in the ascendant, Wilkins had made his name through his neo-Grecian creations for Downing College, Cambridge (designed 1805) and the East India Company College (1809), riding on a crest of popularity for the Greek Revival. Lofty classical models were employed by the architect at University College London, openly declaring the founding college’s grand aspirations and the cultural acclaim for Antiquity. With little heed to functional requirements, lecture halls, common rooms and corridors were condensed into a single harmonious unit of neo-classical symmetry. Charged with overtones of Athenian openness, purity, wisdom and independence, the architecture bespoke of the establishment’s institutional opposition to the ecclesiastical, esoteric and privileged Oxford and Cambridge, embodied in its Gothic physique (Figure 1.26).

Consolidating as it did, the ideal of the classical curriculum and its nobility, the Greek Revival was embraced by universities. Johann Carl Ludwig Engel’s classically-inspired University of Helsinki stands symbolically beside the Cathedral and Senate, the triumvirate dominating the city’s Senate Square. Designed in 1833, the university was one of a series of major public and private buildings designed by Engels as part of an extensive development of the city after becoming a Russian duchy in 1809. Thus it stands as a physical symbol of new nationhood. Likewise, the grand new university complex in Berlin, the Humboldt, pronounced national recovery after gruelling defeats at the hands of Napoleon, while Ghent University’s founding in 1817 was symbolic of the United Netherlands and then of the new Belgium.

Neither was Paris lacking in grandiose new schemes. Its academic district, the Latin Quarter, evoked the resonant capacity of architecture
1.24 University of Graz
Photo: University of Graz

1.25 Lund University
Photo: Mikael Rasedal
symbolize the doctrines of higher education. The neo-classical fabric of the Collège de France was expanded in the 1830s by architect Paul Letarouilly. Letarouilly spent many years in Rome, where he became steeped in the communicative, propagandizing potential of architecture. Contemporaneously, architect Felix Duban was creating a complex of buildings to house the École des Beaux-Arts. He sought to create a building which evoked a summary of France's architectural history, germane for a school of art and architecture.

Such stylistic plurality was evident in much nineteenth-century European architecture, none more so than the development of Vienna's Ringstrasse. This splendid new site became the home of a grand series of public buildings in the second half of the century, the physical embodiment of the revived city. Alongside the Grecian Parliament and the Gothic City Hall, stood the university (completed 1884), a Renaissance palace of learning designed by architect Heinrich von Ferstel. Ferstel had studied the university palazzi of Bologna, Padua, Genoa and Rome, and his design epitomizes the forms of Renaissance Italy combined with a Baroque monumentality. The building, together with the adjacent town halls and parliament, was conceived as a striking monument to the growing power of the Austro-Hungarian Empire and Vienna as its capital.

In its Renaissance guise, Vienna University was commensurate with many of its peers. The nineteenth-century academic architectural vernacular was monumental and symmetrical, and dominated by neoclassical Renaissance styles. The trend spread throughout Europe, except for the new academic institutions of England, the so-called Redbricks. First coined by a professor at the University of Liverpool (under the pseudonym Bruce Truscot in his text, Redbrick University,
1.28 University of Manchester
Photo: Courtesy of the University of Manchester

1.29 University of Sydney
Photo: Eric Siers

expansion until the outbreak of the First World War. Much of this building was conducted under Alfred Waterhouse. From 1869, he designed the university’s initial neo-Gothic buildings that make up Waterhouse Quadrangle (Figure 1.28). Ministering to home-based students, the designs did not include residential quarters, but large rooms and science laboratories. Although a quadrangle format, the composition thus digressed from the collegiate Oxbridge model, while stylistically it was radically different from its continental compereers.21 Waterhouse Quadrangle illustrates the passion for Gothic that swept England at the height of the Victorian age. Gothic architecture, associated with the social and cultural ideals of the Middle Ages, was seen as a means of remaking the modern world and thus was seen as appropriate for the civic universities. At Manchester, Waterhouse designed a series of buildings embracing this style in its plethora of buttresses, gables and a dramatic tower. His architecture did much to characterize High Victorian collegiate building; he went on to design the initial buildings for the universities of Liverpool and Leeds, as well as Girton College, Cambridge.22

THE GOTHIC REVIVAL

The Gothic Revival was of British genesis but its characteristics were variously adopted elsewhere. It made its appearance at the Australian universities of Melbourne, Sydney (Figure 1.29) and Adelaide (Figure 1.30), in New Zealand at Otago, and in Canada at McGill, Toronto and McMaster. Neo-Gothicism made its way even to South Korea, in the Main Building of Bo-Sung Special University complete with crenellated tower and pointed windows. But it was championed most thoroughly in America, and it was the college campus that supplied the most consummate evidence of the style there. Although preceded by a scattering of Gothic academic buildings, the first wave of Gothic Revival swept over America in the 1830s. The architectural style was allied to the planning principles of both picturesque nature and Beaux-Arts, producing in the United States a complexity of campus design unsurpassed anywhere else in the world. In 1838, the style made its first appearance at Harvard (Figure 1.31). Gore Hall, a library, was modelled roughly on King’s College Chapel in

published 1943), the expression was inspired by the red brick and terracotta Victoria Building at the University of Liverpool (1892) (Figure 1.27). It was one of six new civic institutions in England’s most populous cities, the hubs of the industrial revolution, Birmingham, Bristol, Leeds, Liverpool, Manchester and Sheffield. These universities sought to open up education with a marked departure from the grandeur and social privilege of Oxford and Cambridge. Non-collegiate, aimed at local students, and often financed by wealthy industrialists, these universities grew up contemporaneously with their host cities, becoming entwined within the urban fabric and often undistinguishable from public buildings that accompanied the Victorian surge of the middle classes.

Manchester University is an archetypal example of the pattern these civic institutions followed. Beginning life as Owens College in 1851 under the will of John Owens, a prosperous merchant, and reorganized on several subsequent occasions, it enjoyed a burst of
Cambridge, but although its architectural details were Gothic in style, its relationship with its neighbouring buildings was far from medieval. Typical of nineteenth-century neo-Gothic collegiate architecture in the United States, Gore Hall maintained the traditional 'open' quality of American plans, consisting of unconnected units implanted within a large, essentially open space.²³

By the middle of the century, Gothic Revival structures were becoming an increasingly common sight on college campuses. At the heart of its old campus, Yale erected a King's College Chapel-inspired library, now Dwight Chapel, in 1842, designed by Henry Austin. The Gothic Revival was perceived increasingly as more than an architectural fashion, and to college presidents, it became a highly potent tool; to a still relatively young nation, it proffered the immediate appearance of age and venerability, qualities fiercely coveted amongst the American colleges. From the mid to late nineteenth century, the desire to invest university architecture with historic connotations and the impression of
permanence and nobility became more pronounced. In 1896, Princeton President Woodrow Wilson declared, by ‘building our new buildings in the Tudor Gothic Style we seem to have added to Princeton the age of Oxford and Cambridge.’ After a fire razed its original buildings in 1857, Bethany College in West Virginia employed the architectural firm of Walter and Wilson, who set out a long, meandering Gothic range that immediately suggested having been built over time. An instant heritage was thus created, compensating for its lost buildings. Although any historic style could, in theory, serve this purpose, it was Gothic that was popularly conceived as the most appropriate. In the 1880s, Harvard’s president, Abbot Lawrence Lowell, bemoaned the college’s Colonial Georgian structures, complaining.

We have none, or next to none, of those coigns of vantage for the tendrils of memory or affection. Not any of our older buildings is venerable, or will ever become so. Time refuses to console them. They look as if they meant business and nothing more.
The original buildings of the colonial colleges, despite their age, were felt to be inadequate symbols of venerability because of their plainness. It was medieval architecture alone that was perceived to hold the key to evoking memory. In 1910, after Princeton had begun its period of 'Gothicization', Andrew West, dean of the Graduate School, sketched the campus as

quadrangles shadowing sunny lawns, towers and gateways opening into quiet retreats, ivy-grown walls looking on sheltered gardens...these are the places where the affections linger and where memories cling like the ivies themselves, and these are the answers in architecture and scenic setting to the immemorial longings of Academic generations. 26

In the 1880s a new phase in Gothic Revival college architecture was inaugurated, Collegiate Gothic. It was based upon the late-medieval architecture of the Oxbridge colleges. In 1886 Bryn Mawr College employed two young Philadelphia architects, Walter Cope and John Stewardson. Influenced by a trip to Oxford and Cambridge, the architects set about capturing the picturesque qualities of Tudor Gothic Oxbridge on Pennsylvania soil. The college asserts that its Cope and Stewardson-designed Radnor Building, dating to 1887, was the country's first essay in Collegiate Gothic. 27 The towered, crenellated silhouette of Pembroke Hall, 1894 (Figure 1.32), and Rockefeller Hall, 1897, formed a long, winding border to the southern edge of the campus, marked by two towered entrance gateways. Using a meandering linear series of structures to define a boundary was unprecedented in American university planning (Figure 1.33). At the University of Pennsylvania, the pair further challenged American notions of campus planning by housing new residences within an enclosed quadrangle. Running counter to the traditional American ethos of openness to the community, the quadrangle marked a symbolic border between the outside world and the privileged life of academia, revealing the growing introspection of education. 28

The graceful scale, the refined detailing and the iconic skyline of spires and towers of Collegiate Gothic held the imagination for the next 40 years. The careers of its practitioners flourished, most notably Charles Klauder, James Gamble Rogers and Ralph Adams Cram. Klauder scattered Princeton, Wellesley College, the University of Pittsburgh and Cornell University with his own brand of monastic-like building, while it is to Rogers that Yale owes its Collegiate Gothic façade (Figure 1.35).

The vogue for Collegiate Gothic was propelled by ideological motivations. At the turn of the twentieth century, educators progressively despised of the growing complexity of the country's large universities, and turned increasingly to a resurgence of traditional collegiate values. They called for a heightened sense of community, propelled by intimate relationships between students and teachers. And for this, they turned to England. To regain a sense of fellowship between scholars and their professors, Harvard and Princeton both imitated Oxbridge's tutorial system. In 1928 Harvard introduced the
Princeton master plan featured a series of quadrangular, or near quadrangular, halls built in the Gothic idiom. Cram wrote,

"Certain psychological principles were laid down at once... First of all, a university was conceived as a place where the community life and spirit were supreme, ...a citadel of learning and culture, ...containing within itself all necessary influences towards the making of character, repelling all those that work against the same: a walled city against materialism and all its works."

Cram's remark that a university should be 'half college and half monastery' epitomizes the mettle of American collegiate planning in the opening decades of the twentieth century. Campus plans embraced the antiquated vocabulary of English medieval architecture and the ordered, enclosed format of the quadrangle. In Europe, similarly, historicism dominated the vast, single-structure units that housed universities. Yet, across the world, the discourse of university architecture and planning was soon to be shaken by the advent of war.

THE POST-WAR REVOLUTION

In the years after the Second World War, higher education was rocked by a period of change. Student enrolments soared during this time. While it has been estimated that Germany, France and Britain had a combined university population of at most 150,000 at any one time preceding the war, within decades the numbers pursuing a university degree had reached millions. In America, the G.I. Bill of 1944 resulted in a wholly unexpected volume of new students, often non-traditional applicants, flooding into higher education. Across Europe and the United States, university enrolments surged again in the 1960s as the 'baby boom' generation came of age. The nature of universities evolved, as faculties diversified and degree courses multiplied. There arose a consciousness that it was the duty of the modern nation to broaden and strengthen education, attended by a growing dissatisfaction with the elitism that accompanied traditional university education. Inevitably, the enlargement of higher education..."
occasioned a corresponding surge in university building, while the changing patterns of university education meant many of the time-worn aspects of campus design became outmoded. America, the United Kingdom and Germany were the countries in which these changes had the most tangible effects.¹¹

For America, this was amongst the most vibrant periods of university development. Many institutions became, in their scale and complexity, mini-cities. Le Corbusier observed ‘the American university is a world in itself’. Urban issues, such as movement and circulation, came to the fore in typical universities, dictating revised attitudes to university architecture and planning. Modernism rose to prominence, characterized by angular, unfussy forms and a rational approach to organisation, only to be supplanted again by a revival in traditionalism and historic architecture. The post-war period was thus one of heady development for university building, set off by an equally heady time for modern architecture.

The term modern architecture refers not simply to all buildings of the modern age, but more specifically to an architecture conscious of its own modernity and striving for change. In the years leading up to the Second World War, the International Style defined the architecture of the modern era. The style can be viewed as a byword for a cubist mode of architecture with its crisp, muted forms, robust use of concrete, steel and glass, and regularity, it was the realization of the new era of social and technological confidence.¹² In the 1930s, the International Style, and other modern movements, gained a firm footing in worldwide architecture, yet their use at colleges and universities was startlingly seldom and enveloped in controversy. The impassioned traditionalism of higher education institutions, the same traditionalism that half a century earlier had led American campuses to turn to medieval Oxbridge, fiercely suppressed the advent of contemporary design. Only a handful of modern collegiate designs had emerged by the late 1930s in America, including Ludwig Mies van der Rohe’s Illinois Institute of Technology (Figure 1.36), Frank Lloyd Wright’s Florida Southern College (Figure 1.37) and The Architects Collaborative’s design for Black Mountain College in North Carolina (Figure 1.38). A bitter polemic of style was conducted through the architectural press, yet amidst this the larger issues of university planning were usually forgotten in the debates. Hence, as Paul Turner highlights, in the widely-publicized critiques of Illinois Institute of Technology, designed 1938–1940, Mies van der Rohe
was applauded for his uncompromising evocation of modernism while the plan is, in many respects, surprisingly conventional. The buildings are aligned on a symmetrical and axial plan to create a central quadrangle and secondary collection of structures, an arrangement reminiscent of Beaux-Arts organization.33

Progressively, though, the modern idiom gained an increasing hold on university architecture. Illinois Institute of Technology signalled a new direction of campus architecture in the United States, and this momentum was continued by Walter Gropius at Harvard. Gropius's Graduate Centre, completed 1950, consisted of eight plain rectangular blocks grouped around an informally connected series of courtyards. This was a Modernist form, reflective of practical considerations such as permitting maximum light and air. The dormitory blocks are intricately connected by bridges and covered pathways. The Graduate Centre proclaimed an architectural manifesto for the post-war age: institutional heritage and context should not impinge upon campus design, unless in an abstracted manner. The distinct identity and sense of continuity that was so prized on pre-war campuses was renounced. Yet the Graduate Centre still reflected the same socio-educational values of the previous century. Gropius was keen to stress the 'philosophical concept of communal living, of cooperative activity and of interchange of ideas', and pronounced that 'living in this kind of a group of buildings, a young man may unconsciously absorb ideas and principles that would seem abstract and remote in the classroom, but which translated into concrete, glass, light and air assume a convincing reality'.34

Gropius was just one of many eminent modernist architects working in America in the twentieth century. The list includes Mies van der Rohe, Josep Luis Sert, I. M. Pei, Minoru Yamasaki and Paul Rudolph. Many of their American efforts were driven towards universities and colleges, and they stand as some of the earliest landmark buildings, omens of the infatuation with iconic building that would come to dominate campus development later in the century. Alvar Aalto, for instance, was commissioned to design the Baker House dormitory at Massachusetts Institute of Technology (completed 1949); Le Corbusier's only building on America soil was Harvard's Carpenter Centre for the Visual Arts; Yale Art Centre, completed in 1954, was designed by Louis Kahn. These diverse interpretations of modern design were conceived as objects of art in themselves. They looked markedly different from each other, and paid little heed to neighbouring buildings. These landmark structures represent not only the triumph of the Modernist style, but, moreover, a new approach to planning that took hold on American campuses. Traditionally, campuses were shaped by a master plan, with specified formal, stylistic prescriptions guiding the placement and general appearance of buildings. With the ascendancy of modernism, architects moved away from this tradition. Growth, they argued, could not be catered for within rigid frameworks, and the conventional master plan was progressively renounced in favour of more fluid and informal approaches to planning. New structures assumed individual forms and varying positions in response to the 'here and now'. Spatial composition and visual coherence lost their value.35

Colleges seized upon this convenient concept. As the need for more teaching and living accommodation became pressing, institutions across America constructed new structures, often sizeable and unconventional, upon their open spaces. With this new approach, Yale embarked on a new phase of growth in the 1950s under President A. Whitney Griswold. Griswold's enthusiasm for modern architecture was reflected in the commissioning of several landmark structures from distinguished modernist architects. Kahn's Art Gallery, Saarinen's Hockey Rink and Morse and Stiles colleges, Gordon Bunshaft's Beinecke Rare Book Library, Paul Rudolph's Art and Architecture Building and Philip Johnson's Kline Science Centre all led to the creation of an 'architectural laboratory' of styles. The visual unity of the campus was not a motivating concern, each architect being given a free hand. 'Buildings, like people', Griswold reasoned, 'ought to be different from one another.'36

This approach has conditioned the campus of the Massachusetts Institute of Technology (MIT) since the Second World War. In the 1940s development began on the West Campus, opposite William Bosworth's neo-classical, Beaux-Arts main complex. Since
that time, the site has continually evolved as an experimental
ground of distinctive individual edifices. Eero Saarinen was one
of the first architects to leave his imprint upon the campus, in
his daring 1950s commissions of a chapel and auditorium.
Saarinen’s buildings are indicative of MIT’s planning approach.
The institution classifies this as real-time planning, a strategy that
engenders imaginative yet sensitive responses to emerging needs
and the cultural moment. The campus has been, however, prey
to the pitfalls of forsaking a comprehensive master plan. William
Mitchell, Professor of Architecture and Media Arts and Sciences at
MIT, observes, MIT building has too frequently degenerated into
‘narrowly framed, opportunistic projects that don’t contribute to
the formation of a larger social and architectural whole’.

New approaches to campus design continued to evolve in the
United States. An increasingly influential component was circulation,
campus was pronounced as the prototype of twentieth-century America’s urban university.

Similar concerns increasingly reverberated through the world of campus planning. At the Indian Institute of Technology in Kanpur, constructed 1959–1966, architect Achyut Kanvinde connected buildings with a system of two-tier pedestrian walkways while vehicular circulation was confined to the campus perimeter to protect the coherence of the campus centre. The plaza and sunken garden at its core reflected Kanvinde’s conscious efforts to stimulate cross-disciplinary interaction.

Chicago Circle and the Indian Institute of Technology attest to the importance placed upon fostering community within post-war campuses, particularly in America. In 1957, the State of Californian voted to create three new branches of the state university. The three new campuses at Santa Cruz, San Diego and Irvine were purposed to grow to multi-university proportions of around 27,000 students each. Yet Clark Kerr, president of the state university system, was determined to mitigate the dangers of size by nurturing an atmosphere of collegiate intimacy. ‘The big campus,’ Kerr reflected,

lacks the inestimable virtue which the small liberal arts college counted as its hallmark: the emphasis on the individual which small classes, a residential environment and a strong sense of relationship to others and the campus can and do give. Each of the university’s new campuses is an experiment in combining the advantages of the large and the small.39

The most complete, most sophisticated realization of Kerr’s educational axiom were the plans for the Santa Cruz campus (1961). Santa Cruz represented a new phenomenon in campus planning, that of the ‘whole cloth’ campus. Rather than emerging in piecemeal fashion, demand required that large proportions had to be constructed at once. This sudden appearance of almost entire new campuses characterized by unity and totality was a post-war development that transformed the guise of higher education in the United States, United Kingdom and Germany. Santa Cruz’s objective was that of a bucolic college idyll, with students and their professors living and studying communally, reminiscent of Jefferson’s academical village. Activities were concentrated in a series of colleges, where students were to live, dine and receive some teaching. One of its constituent
colleges, Kresge, was amongst the most renowned campus designs of the decade (Figure 1.40). The idea that the college should be a community was translated into a physical setting by architects William Turnbull and Charles W. Moore, by interpreting the school as a compact Italian hill town. Dormitories, classrooms, and dining halls, opened out onto a snaking street, cultivating the desired sense of intimacy, while plazas created communal spaces for socializing.\(^{39}\)

Kresge College represents the peak of the alignment of educational reform with the new social and architectural momentum of 1960s California. This phenomenon was not isolated to America alone though. In post-war Britain, changes in educational thinking gradually came to surface in the closeted world of higher education, and developing a fitting architectural image for this new thinking came to be one of the chief priorities of late 1950s and 1960s modernism.

While the university system of America was both extensive and convoluted, the English system was small and firmly hierarchical, headed by Oxford and Cambridge, and followed by 'the rest'. After the foundation of Oxford and Cambridge in the twelfth and thirteenth centuries, no new universities were chartered in England until University College London in 1826 followed by the wave of Redbricks later in the century. In post-war Britain, however, change was in the air. The 1960s saw the development of the third generation of English university institutions, the New Universities. The decade saw the greatest growth in the history of university education in Britain. The number of universities doubled from 22 to 46, and the student population rose from 108,000 in 1960 to 228,000 in 1970. The term New University was applied to the universities of Sussex (1961), York (1963), East Anglia (1963), Lancaster (1964), Essex (1964/5), Warwick (1965) and Kent (1965). Their foundations necessitated a construction surge which has been likened to the great period of cathedral building in the twelfth century.\(^{40}\)

University building served a leading role in the advancement of British architecture in these years. Built on greenfield sites, free from the constraints of urban surroundings, the New Universities demanded a different approach to conventional British university design. They generated a spirit of adventure amongst educationalists and architectural circles alike, attracting the interest of the country's leading architects. As instances of 'whole cloth' campuses, they presented architects with unparalleled opportunities to experiment with advanced theories of planning and design, driven by a search for
the best solution to realize the new priorities of higher education. At Sussex, Basil Spence used the principle of the court as its underpinning feature (Figure 1.41). He idealized the ‘interlocking courtyards’ and the ‘colonnades where friends can walk and talk’ of Oxford and Cambridge; nurturing a sense of community was a priority for him from the outset. He contended that the ‘undergraduate is still an adolescent’ who seeks ‘confidence and protection from buildings’. The concept that the university should be the ideal community in microcosm was as relevant in post-war Britain as it was across the Atlantic. At the University of East Anglia, the search for the ideal community afforded a different response. Denys Lasdun, appointed in 1962 as planner and architect of the greenfield campus, conceived the solution to be a large central complex consisting of long, irregular, single teaching blocks, or ‘Teaching Wall’, housing almost all teaching and research functions. It was a dramatic departure from the twentieth-century pattern of individual units planted across the campus. From its spine of teaching accommodation budded wings of stepped residences connected to the Teaching Wall via walkway platforms. The residence blocks, or Ziggurats, borrow the Oxbridge device of a staircase surrounded on each floor by a set of rooms, with communal kitchen at the centre. In so doing, Lasdun and Vice Chancellor Frank Thistlethwaite sought to create small ‘communities’. Lasdun’s aim was a group of university buildings which would grow organically, harmonising ‘buildings and landscape... in a total vision... visually as well as functionally’.21

The same themes evinced in the formation of the New University campuses were also evinced, albeit to a lesser degree, in Germany. The historic universities of continental Europe had for centuries been characterized by their concentrated presence in central urban spaces as a single large and imposing building. Residences were not provided. By the mid-twentieth century, these institutions may have possessed a large, purpose-built centrepiece building but their activities were typically scattered across an assortment of separate sites. They lacked the campus or collegiate environment of the Anglo-American institutions, and their institutional presence was derived more from the scholars and teachers than from their physicality. Yet, in post-war Germany some select examples brought university architecture dramatically to the fore.

After the wane of the German universities under the Nationalist Socialist German Workers’ Party in the 1930s, 1945 marked a period of renewal in higher education. Initially, rebuilding was compelled by quantity rather than quality. At many universities, modern campuses for the sciences were built in town outskirts, as in Tübingen and Heidelberg, proffering improved facilities and comfort but uninspiring
design. In the late 1960s, a rather grim standardization evolved, and the stacked block, roughly 120 metres (400ft) long and 12 or so storeys tall, came to dominate. Between 1970 and 1971, 91 of these were erected. Their 'frightening monotony' was quickly lamented in the architectural journals.42

Several high-profile new universities, however, countered this stagnation. One such example was the Ruhr University at Bochum (Figure 1.42). Henrich Petschnig and Partner of Düsseldorf completed plans in 1963, and building commenced early in the following year. The 'whole-cloth' campus derived its plan from the same concerns witnessed in the United Kingdom and United States, namely those of community, totality and harnessing nature to promote well-being. It was placed on a substantial site of over 1,330 acres, on the edge of the picturesque Ruhr valley. This scenic backdrop was, founders asserted, a means of offsetting the downtrodden image of the industrial region. Like Lasdun at East Anglia, planners resolved to cluster the main buildings in a relatively high density area leaving the remaining land open. The design consisted of 13 almost indistinguishable 12-storey towers, set in two parallel rows enclosing the central communal buildings. Containing the library, arts centre, administrative offices and the Auditorium Maximum, surrounded by the agora, the central area was intended as 'the market place where the meeting of magistrorum et scolarum can take place'. Bochum was conceived as the ideal German campus. It possessed a totality of conception and a textbook application of educational philosophy. Yet, Bochum deviated from the Anglo-American model in its decision to locate the residences and many of the recreational facilities away from the campus proper. A compact town complex, today known as the 'Unicenter', was built immediately north of the campus to house shops, a market and cafes. This choice ultimately affected how the campus was used, to a deleterious end. The highlight of the campus, the central forum, was sadly underused. The university came under severe criticism. Berlin's architectural journal, the Bauwelt, castigated its colossal size and monotony as damaging to well-being. Greeted with little but criticism, it has largely been forgotten by architectural histories.43

To shift the scene to contemporary America, fashions in campus planning were again in transition. Although by the 1960s Modernism had prevailed in the battle of architectural style on the American campus, a handful of architects began to look with interest at the traditions of university planning. The forerunner of these was Eero Saarinen, in his design for Morse and Stiles Colleges at Yale (1960–1962) (Figure 1.43). The two undergraduate colleges were organized on an irregular layout that produced a series of semi-courts of rough
stone and concrete walls. Sets of 12 individually-shaped rooms were arranged around staircases, emulating the Oxbridge model. There is nothing explicitly medieval in style about these buildings, yet it is clear that Saarinen took inspiration from the university's Gothic past. Yale president, A. Whitney Griswold, later reminisced,

I urged Eero to go to Oxford and look at the walls, particularly the rubble ones. In my imagination they had a quality that was close to that of surrounding Yale buildings, such as the gym... He felt that he could produce an atmosphere akin to that of the existing colleges using the elements of the building itself – courts, walls, towers, rather than the superficial decoration.44

Saarinen's prominent commission brought the neo-traditional approach to general attention, raising a storm of polemic amidst architectural circles. One critic wrote that its picturesqueness 'disgusted me'.45 Yet despite Morse and Stiles' extensive condemnation, Saarinen's application of historical tradition gradually pervaded academic architecture. Institutions across the country discovered a reawakened desire to harmonize new building with old. Attributes of earlier buildings were applied to new projects. At Stanford University, all new construction was unified by the red-tile roofs of the original quadrangles. The original Collegiate Gothic buildings of Washington University in St Louis were echoed in the silhouette of a new complex, designed in 1966.46 Thus universities entered another phase of development, one conditioned foremost by aesthetics and a revival of the American campus tradition. For the rest of the century, and indeed into the present, the chronology of worldwide university design was defined not by innovations in planning but by fashions in architecture.

POST-MODERNISM AND THE STARCHITECTS

By the 1980s, fashion had turned to the past and historicist roots were firmly embraced within the architectural genre. The restoration of open space, human scale and order once again became concerns of campus architects and planners, and, as the focus of attention remained on historicism, historical stylistic forms were applied to new structures. This idiom was known as postmodernism. The term was applied to a wide spectrum of architecture whose designers rejected the unforgiving starkness and absence of contextual resonance
that had come to characterize modern architecture by the 1970s. More specifically, the label designated a creative manipulation of motifs and references from the past into contemporary architectural vocabulary.

The architect Robert Venturi is often heralded as one of the most influential proponents of postmodernism, both within the university sector and the design world at large. Venturi, Scott Brown & Associates’ 1993 design for Princeton’s George LaVie Schultz Laboratory is a homage to the Collegiate Gothic that characterizes much of the campus (Figure 1.44). The window glass is divided into panes, evocative of leaded mullions. The single, dominating limestone column that is cut into the facade at the doorway recalls the tradition of ceremonial entrances. Amongst the innovators of postmodernism, Venturi was joined by Charles Moore. His predestination for whimsy is well displayed in the 1983 extension to the Williams College Museum of Art building. The extension is noted for its ‘Ironic’ columns, Ionic columns in which the capital is detached from the cylinder by a foot of empty space, thus in fact providing no structural support to the cantilevered offices that they appear to carry (Figure 1.45).47

Postmodernism dominated campus design for nearly two decades. The ‘free-for-all’ of the post-war years was tempered by plans that proposed rational organization of space and human-scale buildings. The movement was exemplified by Michael Dennis’s plan and architectural designs for Carnegie Mellon University (1987). Organizing elements were applied on the northern half of the campus, including an east–west pedestrian street and two quadrangles, giving definition to a loosely arranged area of the site.48

The rise of post-modern architecture engendered the appearance of the star architect and the iconic building. Wren’s Sheldonian Theatre at Oxford, Lloyd Wright’s Florida Southern College and Saarinen’s Kresge Auditorium and Chapel at MIT have all become icons, but were not originally conceived or immediately recognized to function as such. Yet with the proliferation of the mass media, buildings have become celebrities in themselves. Following the opening of Frank Gehry’s Guggenheim Museum in Bilbao in 1997, iconic architecture has swept all before it. The building mesmerized audiences, immediately vaulted the city to prominence and revived its economic fortunes. Consequently, iconic architecture has since been equated with successful branding. Universities have not been immune to the captivating potential of world-famous signature architecture; indeed, the prime trend in campus development in the past two decades is that of the iconic building. Curves, jagged contours, blobs, bulges, hi-tech materials and vivid colours...
campus was pronounced as the prototype of twentieth-century America's urban university.

Similar concerns increasingly reverberated through the world of campus planning. At the Indian Institute of Technology in Kanpur, constructed 1959–1966, architect Achyut Kanvinde connected buildings with a system of two-tier pedestrian walkways while vehicular circulation was confined to the campus perimeter to protect the coherence of the campus centre. The plaza and sunken garden at its core reflected Kanvinde's conscious efforts to stimulate cross-disciplinary interaction.

Chicago Circle and the Indian Institute of Technology attest to the importance placed upon fostering community within post-war campuses, particularly in America. In 1957, the State of Californian voted to create three new branches of the state university. The three new campuses at Santa Cruz, San Diego and Irvine were purposed to grow to multi-university proportions of around 27,000 students each. Yet Clark Kerr, president of the state university system, was determined to mitigate the dangers of size by nurturing an atmosphere of collegiate intimacy. 'The big campus,' Kerr reflected,

lacks the inestimable virtue which the small liberal arts college counted as its hallmark: the emphasis on the individual which small classes, a residential environment and a strong sense of relationship to others and the campus can and do give. Each of the university's new campuses is an experiment in combining the advantages of the large and the small.24

The most complete, most sophisticated realization of Kerr's educational axiom were the plans for the Santa Cruz campus (1961). Santa Cruz represented a new phenomenon in campus planning, that of the 'whole cloth' campus. Rather than emerging in piecemeal fashion, demand required that large proportions had to be constructed at once. This sudden appearance of almost entire new campuses characterized by unity and totality was a post-war development that transformed the guise of higher education in the United States, United Kingdom and Germany. Santa Cruz's objective was that of a bucolic college idyll, with students and their professors living and studying communally, reminiscent of Jefferson's academical village. Activities were concentrated in a series of colleges, where students were to live, dine and receive some teaching. One of its constituent
colleges, Kresge, was amongst the most renowned campus designs of the decade (Figure 1.40). The idea that the college should be a community was translated into a physical setting by architects William Turnbull and Charles W. Moore, by interpreting the school as a compact Italian hill town. Dormitories, classrooms, and dining halls, opened out onto a snaking street, cultivating the desired sense of intimacy, while plazas created communal spaces for socializing.

Kresge College represents the peak of the alignment of educational reform with the new social and architectural momentum of 1960s California. This phenomenon was not isolated to America alone though. In post-war Britain, changes in educational thinking gradually came to surface in the closeted world of higher education, and developing a fitting architectural image for this new thinking came to be one of the chief priorities of late 1950s and 1960s modernism.

While the university system of America was both extensive and convoluted, the English system was small and firmly hierarchical, headed by Oxford and Cambridge, and followed by 'the rest'. After the foundation of Oxford and Cambridge in the twelfth and thirteenth centuries, no new universities were chartered in England until University College London in 1826 followed by the wave of Redbricks later in the century. In post-war Britain, however, change was in the air. The 1960s saw the development of the third generation of English university institutions, the New Universities. The decade saw the greatest growth in the history of university education in Britain. The number of universities doubled from 22 to 46, and the student population rose from 108,000 in 1960 to 228,000 in 1970. The term New University was applied to the universities of Sussex (1961), York (1963), East Anglia (1963), Lancaster (1964), Essex (1964/5), Warwick (1965) and Kent (1965). Their foundations necessitated a construction surge which has been likened to the great period of cathedral building in the twelfth century.

University building served a leading role in the advancement of British architecture in these years. Built on greenfield sites, free from the constraints of urban surroundings, the New Universities demanded a different approach to conventional British university design. They generated a spirit of adventure amongst educationalists and architectural circles alike, attracting the interest of the country's leading architects. As instances of 'whole cloth' campuses, they presented architects with unparalleled opportunities to experiment with advanced theories of planning and design, driven by a search for
materialized on campuses as higher education institutions the world across entered into an arms race to erect the idols of the architecture world.

MIT is an exaggerated exemplar of this trend, having inaugurated a billion-dollar building programme in the 1990s to transform its campus into an architectural showpiece by hiring a series of adventurously innovative architects. Steven Holl’s Simmons Hall opened in 2002 (Figure 1.46). A radical experiment in dormitory form, the building employs the metaphor of a sponge that interplays with an anodized aluminium grid of windows. Frank Gehry’s laboratory complex, the Stata Center, opened two years later to a sensational reception (Figure 1.47). The eccentric building appears as though it may collapse at any moment as walls stagger and collide at angles and curves, while materials change from brick to steel to brushed aluminium to bright paint to corrugated metal. Norman Foster is another architect active on university campuses whose name is synonymous with landmark buildings. Characterized by straightforward plans, exposed structural frames and crisp mixtures of glass and metal, Foster’s structures appear at the Free University Berlin, University of Cambridge, Imperial College London, Stanford University, University of Toronto and University of Technology Petronas.

The landmark building has become associated with a cachet that appeals to the modern university leader. The iconic landmark has the potential to not only generate headlines but, if successful, to incite awe and reverence. Whether Rem Koolhaas’s Educatorium at Utrecht University (1997) or Pei Cobb Freed & Partners’ SkySong at Arizona State University (in progress) (Figure 1.48) will achieve the same reverence as the Sheldonian Theatre or Nassau Hall, only time will tell. Yet, as headline-grabbing buildings, they court publicity and brand their universities as cutting-edge institutions; as competition for the best students becomes increasingly fierce, this holds much appeal to educationalists. New and less academically renowned universities often turn to contemporary architecture to place themselves on the map, such as the library at the University of the Sunshine Coast, which was founded in 1994 in Queensland, Australia.

Iconic architecture and its celebrity practitioners are, however, currently the victims of something of a backlash. The ‘sugar-rush’ appetite for icons has come under criticism for its commercialism, while the buildings themselves are often bemoaned as vacuous, impractical and perniciously expensive. In such a climate, it will be interesting to see if this trend continues or if a revival of traditional campus design methods supersedes it.
SUMMATION

Over the course of nearly a millennium, university design has rendered form and meaning to the built environment of higher education. Each era has had their own unique interpretation of this task, and today the result is a rich tapestry of architecture, landscape, ambiance and identity. A study of the chronology of university development provides a series of defining moments as institutions have responded to changes in teaching, research, social ideologies and mobility, and fashions. The inauguration of the quadrangle, enclosed on four sides by ranges of buildings, that was first seen at Oxford and quickly assumed at Cambridge, was the first of these pivotal episodes. It spurred a torrent of imitations and mutations the world over from its initial conception to the present day. The second episode was that of the creation of the colonial colleges, which rejected the cloistered English colleges for open arrangements that would exert a tremendous impact upon the American campus tradition. The nineteenth century witnessed a succession of important developments in the appearance and plan of the university. European higher education flourished as vast, monolithic buildings were constructed in a profusion of historical styles. Architects appropriated the language of different countries and past ages, to imbue their new structures with symbolic resonance. In America, in the early years of the century, Thomas Jefferson pioneered a momentous design, advocating an axial arrangement of structures that embodied his academic philosophy. In the mid-century, Frederick Law Olmsted introduced to the American campus a new approach predicated upon loose groupings of buildings in park-like settings. The last years of the century saw the rise of the Beaux-Arts movement, which countered the picturesque informality of Olmsted's philosophy with axial plans dominated by focal points, followed by the rise of the Gothic Revival. The latter saw an adoption of the OXbridge typology of a medieval vocabulary, followed by its spatial patterns of cloistered quadrangles, colleges and introspection.
The next development was the advent of Modernism in the mid-twentieth century, which pioneered new stylistic idioms and the rejection of the master plan. From the 1960s, the field of campus design was transformed by the preponderance of the 'whole-cloth' campuses which afforded greater totality of vision than had been previously possible. Finally, from the 1970s onwards, the overall trend in university development elicited a preoccupation not with experimental planning, but with experimental architectural styles, resulting first in postmodernism and then the iconic building. This chapter has limited its focus to campuses in the countries of origin of these trends, yet these episodes in planning and architecture have been adopted and translated the world across.

Changing fashions are undoubtedly a comprehensive factor in this evolution of university design. As Ludwig Mies van der Rohe declared in the 1920s, 'building art is the spatially apprehended will of the epoch'. Yet, through this trajectory of development, the same themes and concerns reoccur time and again. Notions of community, totality and the ameliorating potential of nature have been potent forces as educationalists and architects sought out the best solutions to meet the demands of higher education. Moreover, universities have consistently harnessed the expressive capacity of architecture as an outward symbol. 'Education,' Martin Pearce suggests, 'is an invisible substance; architecture allows it to become material.' The tenet that academic philosophy can be conveyed through built form is central, and, as this brief survey illustrates, this can manifest itself in multifarious guises. The search for aesthetically inspiring yet practical surroundings for higher education has afforded a wealth of magnificent buildings and, on occasions, extraordinary opportunities for experimentation as visionary practitioners have been drawn to the field of university design by the atmosphere of innovation fostered by academic idealism. Given the freedom to explore new technologies and only the boundaries of the imagination to restrain, the future of campus design is one to behold with anticipation and expectation.
Notes

PREFACE


CHAPTER ONE

UNIVERSITY PLANNING AND ARCHITECTURE 1088–2010: A CHRONOLOGY

1 This discussion features only those institutions recognized in the strict sense of the word as a university, as an institution of higher education and research which issues academic degrees. In view of this definition, the classification of many of the oldest learning institutions as de facto ancient universities in continuous operation can be contentious. Unlike the European universities, non-western institutions of higher learning were not autonomous corporations of scholars and were never known to issue degrees to their graduates and therefore do not meet what many hold to be the technical definition of university. However, there were important centres of learning that can be compared to the European universities, such as Nalanda in India and Nanjing University in China.


8 Turner, op. cit., p. 10.

9 He is referred to as a conqueror of Gothic by Corbet Owen in his *Carmen Pindaricum in Theatrum Sheldonianum in solennibus magnifici operis Encaenis rectitatum Juli die 9 anno 1669*.


11 Quoted in Turner, op. cit., p. 23.


NOTES

21 Marburg and Freiburg Universities did adopt a neo-Gothic style, but this was unusual for mainland Europe.
25 Quoted in Turner, op. cit., p. 117.
27 Thomas Gaines has suggested that the first appearance of Collegiate Gothic was at Trinity College in Hartford, Connecticut in 1878. English architect William Burges designed Seabury and Jarvis Halls in this style, reminiscent of St John’s College, Cambridge. Bryn Mawr’s buildings were, however, most probably far more influential. Gaines, op. cit., p. 86.
33 Turner, op. cit., p. 251.
34 Doordan, op. cit., p. 183.
35 Chapman, op. cit., p. 42.
36 Turner, op. cit., p. 262.
38 Quoted in Muthesius, op. cit., p. 49.
39 Muthesius, op. cit., p. 53; Gaines, op. cit., p. 63.
40 T. Birks, Building the New Universities, Newton Abbot: David and Charles, 1972, p. 9; Muthesius, op. cit., p. 95.
41 Muthesius, op. cit., pp. 114, 142-5.
42 Ibid., p. 222.
43 Ibid., pp. 227, 230-1.
45 Turner, op. cit., p. 97.
46 Turner, p. 297.
48 Chapman, op. cit., p. 49.
50 M. Pearce, University Builders, Chichester: Academy Press, 2001, p. 15.

CHAPTER TWO

CASE STUDIES

4 Lind, op. cit., p. 154.
6 P. Lykke, A Pictorial History of the University of Aarhus, Aarhus: Aarhus Universitetsforlag, 2001, p. 98.
7 A. Dolkart, Morningside Heights: A History of Its Architecture and