~~Typologies of Knowledge~~Universities and the City: from Islands of Knowledge to Districts of Innovation

Katharina Borsi* and Chris Schulte

[a]*Department of Architecture and Built Environment, University of Nottingham, Nottingham, UK;* [b]*Department of Architecture and Built Environment, University of Nottingham, Nottingham, UK*

Dr Katharina Borsi

Department of Architecture and Built Environment

University Park

Nottingham

NG7 2RD

UK

Telephone: 0115 95 13172

Email: katharina.borsi@nottingham.ac.uk

ORCID ID: orcid.org/0000-0001-6745-3547

~~Typologies of Knowledge~~Universities and the City: from Islands of Knowledge to Districts of Innovation

We are witnessing a new trend in the design of university buildings and other 'knowledge typologies', that is, buildings in which knowledge is produced or disseminated, such as ~~university buildings,~~ research laboratories or libraries. Increasingly, their design inverts the image of the closed 'ivory tower' through a layered intersection of inside and outside spaces, seeking to draw the life of the city and the life of the institution closely together.

Using London's 'Knowledge Quarter' centred in Bloomsbury, Euston and King's Cross as a focus, this paper traces a trajectory of typological evolution of university buildings which includes Adams, Holden and Pearson's 'ivory tower' project for a new headquarter of the University of London (1932), of which only Senate House was built; Leslie Martin's and Trevor Dannatt's radical restructuring of the Georgian urban structure through the Development Plan of the University of London (1959); Denys Lasdun's evolution and typological reworking of this plan through the Institute of Education (1970–1976) ~~and the library of SOAS (1970-1973); Colin St John's Wilson's British Library (1982 - 1999);~~ and Stanton Williams' Central St Martins (2008- 2011).

In this trajectory, we see Martin's and Dannatt's Development plan for the University of London as an important pivot in the shift from the Ivory tower of academia to the current urban landscape of learning and innovation. This paper argues that the contribution of typology to this urban transformation exceeds the representation of institutional missions and the generic descriptors of place. ~~way contribute to the physical and social transformation of cities. This paper argues that the contribution of typology exceeds explicit policies to democratise education, broaden access, and promote innovation and knowledge sharing.~~ Instead, it argues that the typological development contributes to a broader urban ecology of change and transformation, one in which the respective urban agency of each project reimagines how urban vitalities, synergies and intensities might be instigated and maintained.

Keywords: Typologye; Innovation; Denys Lasdun, Leslie Martin, Charles Stanton Williams, ~~Colin St John Wilson, British Library,~~ University, Central

Formatted: Paragraph

Formatted: Font: Times New Roman

Introduction

London's Bloomsbury district, the biomedical cluster along Euston Road, and the on-going development of King's Cross as creative cluster perform jointly as one of the world's leading 'innovation districts'. While Bloomsbury has long been known for its embedded institutions and universities, since the turn of the 21st century Euston Road has seen a visible transformation into a biomedical cluster through, among other projects, the tower of Queen Elizabeth Hospital, the expansion of the Wellcome Trust, and the Francis Crick Institute which opened recently behind the British Library. Meanwhile, the relocation of Central St Martin's arts and design college (part of University of the Arts London) has spearheaded the development of King's Cross as creative cluster, augmenting the pre-existing galleries and concert hall at King's Place and the range of other cultural institutions and creative industries located in the immediate area.

The extensive body of research into the geography of innovation districts has begun to acknowledge the significance of place and the role of knowledge institutions in the process of urban innovation. As knowledge producers, ~~institutions~~ universities are increasingly believed to make a significant contribution to the economic growth, social 'buzz', and creativity of the urban life of contemporary cities. Successful cities are frequently described as having developed an 'institutional thickness', a broad range of knowledge industries and a diversity of actors that help support innovation. [i]

If aspects of urban life itself are now recognized as an essential resource for economic development and innovation, this is perhaps long overdue. That cities provide an ideal environment for innovation – by offering proximity, density and variety – and, contrary to the predictions that developments in technology will disconnect people and firms from places, it has become clear that the knowledge economy has a very strong intrinsic spatial dimension. It has been acknowledged that cities are thriving in the knowledge economy because they offer trade and productivity benefits, they attract human capital and they facilitate the exchange of tacit knowledge.[ii] Big, specialized labour pools, transport infrastructure and density of activity are seen as key urban assets underpinning innovative activity and competitive performance within these emerging districts. Urban proximity and connectivity also help business and knowledge networks to form, increasing the flow of innovative ideas and bringing products to market.[iii]

The flurry of new architectural projects in Bloomsbury, Euston and King's Cross, augment the area's concentration of institutions and partake of a new trend in which typological articulation is itself at the service of innovation. The Francis Crick Institute, the Wellcome Trust headquarters and Central St Martins exemplify this new trend in the design of 'knowledge typologies'. They share an emphasis on a physical 'presence' in the city, a layered intersection between inside and outside, public and private, which draws urban life into the interior of the institution. In these projects, permeability and connectivity tend to be further actualised through a high degree of visual or spatial porosity, at least at ground level, and supported by a fluidly evolving groundscape that interconnects external and internal spaces, blurs the boundaries between public and the private, even if the spaces within are privately owned and managed [Figure 1].

Internally, these new ‘knowledge typologies’ tend to be structured around a key void, or atrium, that is lined with studios or workspaces and activated by large and often visually dramatic circulation spaces. The Francis Crick Institute, the Wellcome Trust headquarters and Central St Martins have similar plan diagrams with long, full height atria flanked by work or studio spaces. These atria act as foyers and provide the primary organising principle for their interiors, often pushing more traditional spaces of learning or working to the peripheries of the site and, in so doing, creating an explicit ‘heart’ of the institution, a quasi-civic space designed to promote social interaction, informal learning, knowledge exchange and dialogue between different users, and across disciplines. The designers of these places declare that this arrangement helps to break down barriers between disciplines, and to promote knowledge transfer or serendipitous encounters. Openness, connectivity and permeability between the interior and the established public realm is expressed in almost all new projects within the knowledge quarter, whether through a materially transparent façade, visual permeability at ground level and general spatial and programmatic fluidity. Put simply, the design trends of the new knowledge typologies are intended to render ‘knowledge’ itself transparent, to make it visible and accessible not only to those who are actively engaged in its pursuit, but also, to varying degrees, to the general public as well.

Despite the explicit connection between institutions, place, and networks of innovation, the contribution of architecture to the urbanism of innovation districts has received scant attention beyond its capacity for iconicity and semantic representation. The comparatively small body of research on the urban and spatial dimension of innovation focuses on urban morphology, permeability, high quality public spaces and the mix of land use.[iv] Architecture is seen to be ‘attractive’, ‘iconic’ and contributing to ‘a distinct offer of place’. [v] The recent proliferation of urban interiors has only very

recently begun to become an objective of research as to its efficacy as a social learning space. [vi]

This paper traces the genealogy of the recent design trends in knowledge typologies, exemplified by university buildings, by describing a trajectory of typological evolution from Adams, Holden and Pearson's headquarter of the University of London in 1932; to Leslie Martin's and Trevor Dannatt's radical restructuring of the Georgian urban structure through the Development plan of the University of London in 1959; to Denys Lasdun's evolution and typological reworking of this plan through the Institute of Education (1970–1976) ~~and the library of SOAS (1970-1973); to Colin St John's Wilson British Library (1982 - 1999); and, finally,~~ to Stanton Williams' Central St Martins (CSM) (2008- 2011) as exemplifying the present.

The objective of this narrative is twofold. First, it explores the evolution, variation and transformation of ~~knowledge~~ university typologies and the increasing complication with the adjacent urban spaces, thereby providing a genealogy of the current trends of knowledge typologies and what will be described as a continuous urban ground level of intensities and associations. This trajectory will attribute high value to the specificity of typological operations of each project. Secondly, it argues that the contributions of type to an urbanism of learning and innovation lies not so much in the direct transposition of institutional objectives as claimed by its authors, but instead in a broader contribution to urban change and transformation.

Typologies for an Urban University Precinct

Charles Holden's University Precinct: An Academic Island

While “London University” was founded in 1826 as a secular alternative to the religious universities of Oxford and Cambridge, it was only in 1900 that it emerged as a teaching university and a federal institution with responsibility for monitoring course content and academic standards within the many institutions under its umbrella.[vii] This entailed a growth of student numbers and spurred the foundation and incorporations of new Colleges or Schools: University College simply merged with the University of London; Imperial College was founded in 1907; the School of Oriental and African Studies in 1916; Goldsmiths College joined in 1904; Queen Mary College joined in 1915; and Birkbeck College joined in 1920. By 1932, it had aggregated 32 schools. A headquarters was sought for ‘reasons of merchandise’, as well as to centrally accommodate the governing body and its increasingly extensive administration, a library, as well as teaching spaces for a number of affiliated institutions a new site and location was sought.[viii] The brief of the building was set up accordingly, focussing on the administrative headquarters, the library, and teaching spaces responding to probable needs of the future.

William Beveridge, the vice chancellor and a key driver behind the project, articulated the architectural vision as follows:

> The central symbol of the University on the Bloomsbury site can not fittingly look like an imitation of any other University, it must not be a replica from the Middle Ages. It should be something that could not have been built by any earlier generation than this, and can only be at home in London ... [the building] means a chance to enrich London – to give London at its heart not just more streets and shops ... but a great architectural feature ... an academic island in swirling tides of traffic, a world of learning in a world of affairs. [ix]

The design of ‘an academic island’ became the key objective of Adams, Holden and Pearson’s ambitious original plans for the university buildings, which only came to be realized partially in the form of Senate House. The building was meant to collate a broad range of departments, colleges and other university functions. In a lecture to the RIBA, Holden describes the negotiation during the design process, the various stages of the design development and elaborates in much detail their architectural and urban qualities.

Following initial instructions for a quadrangle and a tower, Figure 2 exemplifies an early iteration of the plan for a building designed as a single structure stretching from Montague Place to Torrington Street [Figure 2]; a spine linked by a series of wings to the perimeter buildings and enclosing courtyards. The scheme was to be topped by two towers, the taller Senate House and a smaller one to the north.

An iteration with a large open court at the southern end of the site was ‘abandoned on account of the rigidity of the planning into arbitrary outlines ill-suited for the degree of flexibility which was felt to be desirable in a building with such a long future before it.’[x] The need for the potential for extension evolved into the generating principle of the plan. Accordingly, the ‘spinal plan’ was developed; first taking up the north part of the site, in the third iteration taking up its whole length.

The spine plan, its central axis aligned with that of the British Museum, occupies the center of the site and afforded larger open spaces on its sides, which, according to Holden, had the advantage for further isolating the university from the city. The spine was understood to provide a structure of growth, the spine and the ribs to the east to be built first, the addition of ribs to the west allowing the possibility of extension. Circulation and Service cores would be housed in the intersection of the spine with the

ribs, leaving the remainder of the spaces to be sub-divided at will. The principle of this organization in plan - a spine that can potentially extend and that provides generic and flexibly sub-dividable spaces, with ribs or wings as modes of extension will reappear in the plans of Martin and Dannatt and underlies the organization of Lasdun's' Institute of Education.

However, while Holden praises the simplicity and directness of his plan, the majority of his lecture is taken up to describe 'the impression of the masses', the composition balancing the scale of the tower in relation to the base structure; the spacing, rhythms and 'syncopation' of the fenestration and the visual presence of the building. Also the collection of drawings held in the RIBA drawing archive is testimony to Holden's primary objective to realize Beveridge's vision of the university as an urban symbol; it contains a plethora of hand sketches that experiment with proportion, massing and their spatial effects from a distance [Figure 3]. Due to a lack of funds, the full design was gradually cut back, and only Senate House and Library were completed in 1937, although the external flanking wings of the north-eastern courtyard were not constructed. Nicholas Pevsner encapsulates Senate House's mixed reception in describing it as 'strangely semi-traditional, undecided modernism'.[xi] This description also captures different continuities of concepts: the 'modernist' growing, generic and flexible spine plan reoccurs some decades later in the plans of Martin, Dannatt and Lasdun. However, the urban contribution to their spines is radically different; instead of representing the symbol of the university and seeking to 'isolate' the university and the city, they begin to enfold urban space within the space of the university.

Total University Plans

The transformation of higher education propelled after WW2 can be understood as being part of the post-war consensus decades, during which the political elites, that is, government, senior civil servants, and academic advisors– broadly concurred on the appropriateness of a significant role for planning in social and economic development. One manifestation was the expansion of public services such as housing and education.[xii] University architecture and planning emerged as a tool to forge no longer an elite, but to propel the economic and scientific prowess of the nation. In his study of post-war university architecture in Europe and North America, Stefan Muthesius describes the corresponding architectural 'utopian' vision of the new universities as an ideal and total environment, a concept subscribed to by educators and modernist architects alike.[xiii]

At stake was not only to propel the expansion of university education, but also the very nature of education, its scope and objectives. A number of reports focussed on the shift towards science subjects: The Percy report of 1945 called for a quadrupling of trained engineers, the Barlow report of 1946 called for a doubling of trained scientists, , and the scientific manpower report of 1956 called for a further doubling. [xiv] In parallel the University Grants Committee laid plans for the substantial expansion of higher education and the development of new universities in the 1950s.[xv] The influential Robbins report of 1963 did not simply recommend a greater supply of university places, but argued for an expansion to ensure that all who were qualified and wished to enter should be able do so. Moreover, his recommendations included four main "objectives essential to any properly balanced system: instruction in skills; the promotion of the general powers of the mind so as to produce not mere specialists but rather cultivated men and women; to maintain research in balance with teaching, since teaching should

not be separated from the advancement of learning and the search for truth; and to transmit a common culture and common standards of citizenship.'[xvi]

These principles came to be embedded and were seen to be propelled by university planning. The campus plan and the pedagogic principles it inscribed, was seen to provide a complete environment 'in which the moral influence of residential life and social interaction outside the classroom were as important as formal instruction'.[xvii] The vision of completeness also entailed a balanced curriculum, reacting against what was seen to be a problematic separation between disciplines, particularly between the arts and the sciences. One of the key debates at the time, the push towards the sciences was accompanied by stark warnings that only training across the sciences and humanities would produce thinkers of the future, and the complete man.[xviii] Accordingly, the unity between disciplines, the wholeness of the university experience, and the conception of the university as a collective of individuals came to be translated into a variety of formal solutions in the design of new universities, solutions that nonetheless shared a set of planning principles.[xix]

New university campuses of the late 1950s and 60s, were designed to allow for growth and expansion, often through linear bands as the overarching structure and principle of lateral extension, or as a field or cluster that could grow radially. The pattern of growth, and the pedagogical principles formed the governing principle of the campus plans, often articulated as either a single superstructure, an urban megaform that linked and distributed teaching, residential and social spaces either in a single from, or as a conglomerate of linked forms. The compactness and wholeness of the plan, the efficiency of pedestrian connections – always separate from vehicular traffic – aimed as much towards achieving a spatial and social coherence of the total university environment, as much as stimulate social interaction between students of different

disciplines. ‘The explosion of classical disciplinary boundaries’ find their spatial expression in campus plans whose parts to whole relationships orchestrate cross disciplinary encounters in building segment or in communication spaces between dispersed functions.[xx] In many cases, the built structure consisted of flexibly occupiable teaching spaces, centrally timetabled, realising the concept of the ‘10 min university’ – the maximum time considered acceptable for pedestrian connections across the whole campus.

As Stefan Muthesius described, many of these principles, as well as the overarching ambition of correlating spatial and social organisation was utopian.[xxi] However, it is this highly utopian functionalist planning with its belief in shaping its subjects that forms the background for Martin and Dannatt’s plan for the redevelopment of the University of London and Denys Lasdun’s Institute of Education. While the concept of a complete teaching and learning environment described above favoured inward looking campus planning away from the cities, it is the transposition of some of the design principles into an urban context that renders these projects catalytic in terms of an engagement between the university and the city, even if this was not the objective of their authors.

Type and the reworking of a University Precinct

The design principles of Martin and Dannatt’s plan for the redevelopment of the University of London suggest structures even larger than those of Holden, et al [Figure 4]. Designed 30 years later, the ‘Development Plan for the University of London Precinct’ of 1959 articulates a very different conception of the relationship between the university and the city, buildings and urban morphology. Opposed to Holden’s monumental, interiorised ‘academic island’ whose urban strategy foregrounds its visual presence and unified institutional nature within the pre-existing Georgian cityscape; the

development plan proposes a radical transformation of Bloomsbury's urban fabric; a transformation that Lasdun subsequently inherits and comes to rework typologically.

The plan overlays long, slab-like buildings, pedestrian spines and walkways overlaid on the fabric of Bloomsbury, spanning across streets and leaping from one urban block to another. The authors describe it as follows:

> A new line of new buildings is proposed which links together the north and south extremities and encloses the Precinct along its eastern boundary. Broad pedestrian terraces at first floor level will link the buildings together and will span the traffic routes. Internally, Gordon-square, Woburn-square and the open space within the University of London Building group will become a sequence of inter-related gardens so that these are not only retained but developed and extended for pedestrian use and enjoyment.[xxii]

Peter Carolin, a successor of Leslie Martin as Head of the Department of Architecture in Cambridge noted that Martin regarded his work as a series of investigations into generic form and as a body of thought rather than a catalogue of individual buildings.[xxiii] Martin explicitly described his projects as instances within a series, as one amongst other possible solutions within what Adam Sharr and Stephen Thornton summarise as 'the science of architectural form', a science that 'could demonstrate possibilities on an urban scale as well as an architectural scale'[xxiv]

To our knowledge, the plan for the University of London has not received scholarly attention, nor has Martin included it in his writings. However, given the significance this paper assigns to it in the urban evolution of Bloomsbury, here we

extend its reading by drawing upon parallel investigations in Martin's oeuvre. The purpose of this reading is not so much to draw distinctions between the design approaches of Holden et al, and Martin and Lasdun per se, than it is to allow these variations to sharpen the outlines of continuities, variations and transformations in these designers' typological operations, and their effect on urban transformation. In particular, it broadens the focus of architecture's language to elucidate a performative reading of architectural concepts. [xxv]

'Structure and Growth: University Plans', is the title of the chapter on university buildings in the monograph of Martin's practice's work: Buildings and Ideas, 1933–83: from the Studio of Leslie Martin and his Associates (1983).[xxvi]In the book, projects are grouped thematically, on housing, auditoria, education, etc.; and each section explores of ideal organisational patterns and forms.

Martin's objective in the larger development plans was to provide a 'new structure for the layout of a university'.[xxvii] The 'structure' for Bloomsbury bears similarities to those proposed for the University of Hull [Figure 5]. New and existing buildings are 'held together' by pedestrian bridges and linking buildings, in order to 'bring these (buildings) into relationship … to meet the demands of various faculties.'[xxviii] Generally, the buildings tend to define open courts or line urban or green voids, always with the intention to 'provide a sense of coherence'.

In the plan for Hull, two long 'malls' dominate the composition; the one at the edge of the model photograph shows a long dual slab building similar to the long double strip building forming the edge of the Bloomsbury plan. The other mall, linking into the existing building, serves additionally as 'the spine for new development', using

planning and structural ideas similar to the most theoretical of Martin's university projects, the Oxford Science Areas, the Zoology and Psychology Building [Figure 6]. Stepped sections provide generic teaching and research spaces, developed as a system that allows for growth and adaptation.

In the Oxford project, the spine houses libraries, lecture rooms and circulation, with the two departments distributed on each side. The upper level plan [Figure 7] shows a generic space that can be flexibly subdivided. The logic of the spine is one of indeterminate length, the potential for flexible growth being a consistent feature of Martins university plans: 'a system of building designed to meet the general needs of various departments and organised in such a way that uses might change or new departments might be set up within the whole.'[xxix]

While the above projects are indicative of Martin's concepts of an urban order and an internal flexible organisation, his conception of the courtyard is a third important concept that can be seen in his Bloomsbury project. According to Sharr and Thornton, Harvey Court, a student residence for Gonville and Caius College, University of Cambridge (1958 -1962), by Leslie Martin and Colin St John Wilson, embodies Martin's idea of the University [Figure 8].[xxx]

Martin described that:

> '…'the idea of the court is fundamentally built up around the fit between a community and an architectural organisation. We had observed that in Cambridge from the thirteenth century on, the enclosing wall of buildings around a private space has identified the collegiate community. Courts of varying sizes added to each other have

> given a reasonable consistency and order to the buildings for the college society. The form of the court has persisted although the architectural style has changed. The built form embodies a pattern of use. The individual is identified by the room; the clusters of rooms around each staircase; and the community, by the enclosed form of the court itself. Additional courts of varying sizes allow the community to grow and create the generic pattern. [xxxi]

Taken together, the different concepts described above help to provide an informed reading of Martin and Dannatt's Bloomsbury plan. While the courtyard described in the statement quoted above served as the structuring principle for a university residence, it can also be identified as an underlying principle of coherence and structure in his urban plans. In his influential article 'The Grid as Generator', the district adjacent to Bloomsbury, the Foundling Estate, is reworked as a large void bounded by a double line of buildings, with public functions distributed in the central void.[xxxii] Martin sought to demonstrate an alternate geometric layout accommodating the same masses as the existing one. At stake in this drawing is not so much an architectural or urban proposition, then a graphic, spatial argument about typology's capacity of reworking and cohering an urban district. Martin used this example to make a general point about the process of reflecting on urban change. Opposed to historical assumptions, he proposes that typological explorations of urban areas 'establish a better position from which to understand the nature of the complication'[xxxiii] and serve as the starting point for rigorous reflection, discussion and decision-making about urban change:

> What is left is something that can be built upon and needed decisions are brought back to the problem of the built form of an urban area not merely of a building. Here, the

> choice of the built form is critical in a number of ways, not least as a means of securing a new unity of conception.[xxxiv]

The proposed new courtyard at the Foundling estate can be understood as part of a series of graphic operations visible also in his plans for the Universities at Hull and in Bloomsbury. They all exhibit a similar pattern of distributed voids as a generating principle; an urban principle, explored and delivered through typological operations. For Martin, these drawings are the basis for understanding and decision making 'brought back to the problem of build form of an urban area not merely of a building.'[xxxv]

In his quote describing the courtyard form, Martin equated the pattern of use of the courtyard with a pattern of identification: the form of the court embodies the adherence of the individual student to a community of scholars; the multiplication of courts provides the larger collegiate community; and the grouping and distribution of courts provides an overarching order in which the world of learning is nested within a hierarchy of associations.

The primary objective of Martin and Dannatt's development plan is the formal articulation of the planning principles designated in Abercrombie and Forshaw's County of London Plan (1943) which saw Bloomsbury as a distinct 'University Precinct', that is, an area with a primary use, and restructured traffic to render it relatively self-contained and interiorized.

Martin and Dannatt argued that the 'precinct should be thought of architecturally as a single entity'. [xxxvi]In their view, Abercrombie's and Forshaw's precinct envisaged not only a programmatic focus, but 'it implies also a certain segregation of and seclusion within the area itself. The university precinct might be thought of as an area

from which through traffic is isolated.[xxxvii] As a consequence, the authors suggest the reduction of traffic ways (and even press for its elimination), as well as extend the possible areas of green spaces. The first floor terraces are seen 'to add to pedestrian convenience and facilities'.[xxxviii] Similarly to the planning principles of the Robbins era described above, Martin's and Dannatt's plan pursues internal coherence, differentiation, and interiorisation from the outside as the formal vehicle to create a community if learning. Both the graphic and the written documents foreground an ideal seclusion of Bloomsbury as an academic precinct. However, the model and the drawings show a relative acceptance of the need to integrate with the urban infrastructure and negotiate the definition of a university precinct with the pattern of urban life [Figures 9&10].

In what follows, we propose a reading of the project that runs counter to Martin's and Dannatt's aspirations. Given that the project was not realised, we can only speculate about its potential spatial performance. Instead of the complete, whole environment of academic learning projected by its authors, the spacious and serene distribution of solids and voids in pursuit of a collegiate serenity, we propose a reading that argues for the superimposition of Martin's and Dannatt's plan and pattern of urban life as propelling synergies. It is a logic of interpretation as to the plan's potential as an instance of graphic reasoning about the city opposed to it expressiveness of the author's intention.

Martin and Dannatt deploy the pattern of solids and voids to articulate one of Abercrombie's so called 'urban rooms'; the long building provides a clearly-defined edge, emphasizing the precinct's relative differentiation from the urban fabric to the East. The staggered pattern of voids, stretching from the British Museum to Euston Road, strengthens the interiorisation of the precinct at the same time as opening it up to

multiple pedestrian flows. This can be read as the specifically differentiated but coherent world of learning, with its defined courtyard-like spaces intended to promote the sense of an academic community set within the wider urban topography of Bloomsbury. The second key move of the urban plan is to open up the gardens for public use, and as such, his patterns of voids allow the intersection of the world of learning with urban life. Similar to Harvey Court in Cambridge, the urban form provides a series of nested relationships of association, but association in which the community of scholars and members of the public are invited to interact. Here, type articulates the intersection between a community of learning and the public, transposed across scales.

Similar to the malls and spines in Oxford and Hull, the long building provides flexible, generic spaces for different departments, and its pedestrian connection might have been thought of as offering efficient communication as much as a space of encounter and interaction across disciplines.

It bears similarities to Holden et al's 'ladder' plan: a spine with wings added according to need; a simple plan whose generic outlines can accommodate different departments. However, for Holden, the objective of the building appears to focus on the needs of the university itself, as something of distinction to be admired from a distance and also to be kept separate from the life of the city. In Martin's case, the new spatial order is performative in the sense that the built form seeks to organize spatial relationships engendered by a pure architectural object, but also in the complex spaces created between it and other buildings, a series of spaces that encourage associations within and beyond the academic community, and that to draw pedestrian movement into and across them by radically recasting the urban structure of this part of Bloomsbury.

While the proposed buildings are of a similar height to the pre-existing urban fabric, the plan represents a substantial reordering of familiar Georgian hierarchies: as opposed to the regular grid of street-based, closed urban blocks and defined, closed gardens, the new arrangement proposed a purposefully irregular pattern consisting of linked and dispersed solids and voids, its new urban permeability multiplying potential patterns of movement across the district and, from todays perspective, the potential for new modes of engagement through the intentionally ambiguous integration of new institutional buildings and functions with spaces accessible to the public. It is these design objectives that Lasdun takes up first in his 'redevelopment plans' and subsequently reworks typologically in his architectural proposals for the University of London.

Lasdun's Urban Landscape

A series of drawings held at the RIBA archive at the V&A reveal Lasdun's reworking of Martin's and Dannatt's urban plan [xxxix] Lasdun begins by expanding one segment of Martin and Dannatt's double spine, pulling the two flanks apart [Figure 11]. Each slab is assigned one department, the Institute of Law and the Institute of Education. Martin and Dannatt's bridges have here grown into connecting buildings annotated as 'additional university accommodation'. Otherwise, the organization continues to follow the logic of Martin's Oxford science area plans, as described above.

The long staggered building lining the edge of the Precinct is raised off the ground, to allow green space to flow beneath the building as well as to orchestrate the separation of the raised pedestrian walkway that connects to Gordon Square from the service road and vehicular access to the car park at ground level. Other key elements of his composition are the hollow square of the School of Oriental and African Studies (SOAS)(whose geometry in plan and section is similar to that employed by Leslie

Martin in his library buildings), and, to complete the 'line of protection' facing east, a long slab housing further undefined UoL accommodation.

The 'full' scheme by Lasdun [Figure 12] describes how the edge protection of the precinct has shifted from the strong figure of the double spine in plan towards a complex dual articulation of a single spine in section. The urban composition is a careful balance between the spine, its wings and the hollow square of the SOAS library .

The form of the library, an important architectural 'solid' within this composition, also helps to articulate and distribute adjacent void and green spaces. By contrast, the spine building exhibits a 'mute' and a 'dynamic' side: it's mute side defines and protects the precinct along Bedford Way with a continuous wall of teaching accommodation, structured by towers acting as service cores, whereas the more dynamic terraced wings, the raised plazas and intimate courts seemingly embrace and integrate with the garden and void space on the other side [Figure 13]. One of the courtyards lies on the axis with SOAS and provides a forecourt to the main entrance of the Institute of Education. This axis is reinforced through the placement of the Great Hall underneath the forecourt and by the symmetrically-distributed flanking wings. In other words, the model epitomises how Lasdun reworked the urban concept of Martin and Dannatt and addressed it through his design concept of an 'urban landscape'.[xl] In the end, pressure from the conservationist movement to list the remaining terraces on Woburn Square, and a lack of ready building funds, resulted in the implementation of only the first phase of the scheme: as built this comprises the long wall to Bloomsbury Way, and one academic wing lining the academic piazza facing the library of SOAS [Figure 14].

Lasdun's project for Bloomsbury has received comparatively little attention in the literature on Lasdun. It is considered inferior to the composition of the National

Theatre and, in its partial realisation, is less complex than the formal articulation Lasdun achieved in his work for the University of East Anglia. The project is probably best known for the battle around the conservation of the remaining terraces on Woburn Square, a campaign which that signalled a shift in mood against the autocratic modernist planning of universities. The dispute was centred specifically on criticism of the scale and materiality of Lasdun's architectural treatment along Bedford Way – the same elevations were cited as evidence both by his critics and his proponents. William Curtis attacked its 'megastructural, elephantine quality'.[xli] Sherban Cantacuzino, on the other hand, while noting the building's 'brutal honesty', which he sees as a 'factor in the public's alienation from modern architecture', also argues that Lasdun's wall represents direct continuity with Cubitt's terraces on Tavistock Square. 'The large scale rhythm effected by the projection in the terraces as continued in the rhythm set by projecting lecture theatres and service towers, … [the latter] recalling the chimneys of the terraces.'[xlii] Moreover, Cantacuzino argued that Lasdun 'gives us back the ground level': with its sunken courtyards and public exhibition space at entrance level, in relative terms Lasdun's wall attempts to activate the space of the street directly, as opposed, he argues, to the raised ground floors and the railings of Georgian terraces which prevent interaction with the pavement.

The spine building houses the bulk of the teaching accommodation, with standardised offices for academic staff located in the wings. In the plans, the offices are labelled with the rank and field of its occupant [Figure 15]. The corridor is off-centre distributing larger, flexibly adaptable lecture and seminar rooms to the street side and small tutorial and academic rooms toward the university precinct side. A modular structural grid and window rhythms allow flexibility in the layout of teaching accommodation. Auditoria and specialised functions were placed at ground and lower-

ground levels. Martin and Dannatt's theme of bridging walkways was developed as an upper walkway threaded between the wings and the spine, and was intended to extend over time to link Russell Square to Gordon Square.

It is in the sectional articulation of the precinct side, particularity in the 'full scheme', where Lasdun explores most clearly his concept of architecture as urban landscape [Figures 16&17]. Due to the fragmentary execution of Lasdun's plan, it is necessary to the argument to speculate about how the full scheme might have performed within its urban context. The object of this speculation is not so much to identify Lasdun's original intention as to read the potential of its formal and spatial relations, and its potential typological reworking of Martin and Dannatt's proposals for urban transformation.

The architecture on the precinct side is defined by platforms, or 'strata' as Lasdun called them, the primary formal and social element of most of his work in the 1960s, articulated most famously in the National Theatre, but also in Christ College Cambridge and UEA. Lasdun understood platforms as 'gathering places', mediating between the architecture and the city:

> Most activities take place on 'platforms'- floors, paths, terraces, bridges etc. (see lc pronouncement of 1915- 'the actual ground of the town is a sort of (raised) floor, the streets and pavements as it were buildings. Beneath the floor and directly accessible are places for the main service) A building can be looked at in the same way as a matter of platforms and connection and interlocking spaces. Sensitive gradations of levels and connections and interlocking spaces can be made to respond to site and function, creating an endless array of rhythms and scales, satisfactory in themselves and adaptable to any existing urban situation including the architecture of the past.[xliii]

Accordingly, the cascading terraces of the wings, the walkways and projecting terraces raised off the ground, the academic piazza connecting to SOAS, and the ground level itself as one datum amongst others, serve as social stages that mediate between the building and the city [Figure 18]. The wings themselves carve out precincts of congregation, interlocking with the adjunct gardens. Here the architecture can be read as 'an extension of the city…which indeed seeks to promote and extend human relationships.'[xliv]

Describing the language of strata, terraces and towers at UEA, Curtis argues that Lasdun's typological articulation of these universities fundamentally challenged critical conceptions about the nature of institutions of higher education. He suggests that Lasdun's open forms are a direct critique of the emblematic 'closed' court of Oxbridge institutions, both physically and metaphorically. In Lasdun's university architecture he sees a:

> …lateral non-authoritarian order where casual exchanges would be encouraged. It meant something open-ended and not too determined where the boundaries of one activity melted into another. It means an equal footing for all, as the walls of privilege began to break down. Instead of closed courts there would be an image of availability, movement and interchange. What this amounted to was a map of social relationships describing a geography of human inquiry and freedom. [xlv]

This metaphorical reading can also be applied to the winged spine of Bloomsbury: its section suggests and 'opening-up' of the institution; its appearance signalling greater equality and inclusion; its platforms acting as social stages for informal 'human inquiry and freedom'. Holden's inward looking, monumental spine here has been partly

inverted, the emphasis on composition and massing in perspectival view has been replaced by the sectional activation of the interior of an urban block; the representational function of Holden has been replaced with visual synergy and dynamism.

And yet Lasdun's university precinct is serene. It seeks to balance the qualities associated with interiorised study and the potentially more dynamic 'extension of human relationships' into the precinct. For example, the section across the IOE and the SOAS library traces the public movement vector through the IOE, across the piazza with its auditorium underneath, and then along the public footpath, but is stopped by Lasdun's 'moat' surrounding the library. Here academic study is explicitly 'protected' from public life, opposed to today's trends which often seek to interconnect inside and outside of such buildings in a visually fluid spatial continuum.[xlvi]

Lasdun's articulation of the spine with terraced wings has clear affinities with the functionally driven organization of Martin's Zoology and Experimental Psychology building in Oxford. However, he has rendered the stepped section into a visual and perceptual device to activate the urban realm, in distinction to Martin's objective to optimize the flexible planning of research and laboratory spaces. Lasdun 'opens' the building up through his terraces, in order to achieve visual and spatial synergies between the building and the adjacent public realm. He does not seek spatial synergies and programmatic activation between the building's interiors and the public realm beyond academic functions. The staggered sections, platforms and interlocking void spaces in his drawings of the 'Full Scheme' could be said to deliver 'sensitive gradations of levels and connections… rhythms and scales, satisfactory in themselves' as they do 'gathering places', designed to 'promote and extend human relationships'. In other words, Lasdun does not seek to attract a wider set of stakeholders or the public

inside his buildings; here the type articulates a university precinct, not a contemporary innovation environment. However, read as an instance of typological reasoning addressing an urban problem, the buildings' sectional articulation and integration of the adjacent public realm invites a speculation on a further design move, for example in its transposition into the present. As a design concept, Lasdun's project could be reinterpreted with an expanded opening at ground level, and reprogrammed to actually allow permeability, connectivity and flow to a wider spectrum of the public. Similarly, we might also trace the conceptual seeds of the unfolding spatiality of the British Library foyer, or indeed in the street of Central Saint Martin's, by transposing Lasdun's staggered and terraced urban landscape with its potential to afford multiple types of occupation. The next section explores this transposition.

From the precinct to the knowledge quarter

The decades between the University of London Development Plan, the Institute of Education and the rise of the 'Knowledge Quarter' centred in Bloomsbury, Euston and King's Cross in the 1990s saw huge transformations of the economy, corresponding changes to the nature of higher education and its built manifestation. The rise of increasingly urbanized form of knowledge economies, aligned with globalization and neoliberalization, has reaffirmed of universities as privileged places where knowledge is produced and curated.[xlvii]This has entailed am economic, institutional and spatial intermeshing of universities and other typologies of knowledge with the city.

The legacy of the Robbins report ended in the 1980s, a decade in which the conservative government pursued a policy of expansion and underfunding, bringing the HE sector almost to a collapse in the 1990s.[xlviii] The Dearing report of 1997 addressed this economic crisis, and its proposed introduction of fees and a greater emphasis on

vocational training and the economic purposes of higher education opposed to the previous focus on the advancement of knowledge and on the transmission of learning for its own sake. The Browne report of 2010, with its removal of the cap of fees, and its emphasis on higher education as a marketplace and the student as consumer, is seen by many as the culmination of a trajectory of marketization. Opposed to the post-war consensus about higher education's role in society, the current period juxtaposes those that argue for higher education's vocational, entrepreneurial or role as the driver fro innovation one the one hand, versus those that critique the university as becoming corporate and a form of academic capitalism. [xlix]

The development of strategic institutional, economic and spatial links between universities, industry and business partakes of the shifts in the economy as well as the changes in the nature of higher education described above. Claire Melhuish has described the recent trends of the role universities play in urban regeneration, and she argues that the development of King Cross, with Central Saint Martins as one of its cultural anchors epitomises this trend.[l] Physical and programmatic connections with the wider city and the local community are their physical manifestation, with corresponding design strategies focussing on connectivity, permeability and accessibility.

The shift towards a knowledge-driven economy is also understood to be the context for a driving demand for a more qualified, highly skilled, creative and flexible workforce and corresponding changes in pedagogies. There is less emphasis on factual knowledge, and more on the ability to think critically and solve complex problems.[li] The impact of information technology, and the size and composition of the student population further propelled new learning methods – social learning, blended and group learning has gained much stronger emphasis, resulting in a new definition of social learning spaces.[lii]

The learning commons emerged in the 1990s as a technology rich flexible social

learning space, but since then the concept of a flexible learning landscape has extended its principle and permeated almost the entirety of campus space bar dedicated and specialized teaching spaces.[liii] Its premise as a space for collaboration, inquiry, imagination has been transposed into workspaces and other institutions of knowledge alike.[liv] Social learning spaces, office landscapes, atria and foyers now serve the emphasis on multi-disciplinary, cross-disciplinary and collaborative teaching, learning, research and work pattern. These key voids also play a part in the university's brand, addressing the increasing competition - for students, staff and resources. Melhuish also notes an economic context, in that social informal learning spaces with their emphasis on self-directed learning counterbalance staff-student contact time, tend to be developed at the expense of teaching spaces, but also respond to social needs of students in the face of increasing size and anonymity of universities.[lv]

Central St Martins' Layers

The scale and physical presence of Lewis Cubitt's 1851 Granary Building occupied by Central St. Martins (CSM) gives it a clear identity and presence in the city, helping to define the character of Granary Square and providing a visual destination along the pedestrian promenade that connects it to the transport hub at Kings Cross-St Pancras Station [Figure 19]. Stanton William's remodelling of the Granary Building, the transit shed and a 200 metre-long extension to the rear provides a spatially complex interplay between the engagement of the institution and the city.

At ground level, the Granary Building, the western transit shed and the northern edge of the new infill building are occupied by service industries, a theatre and an exhibition space, providing a layer of publicly accessible amenities that address and

engage with the adjacent public realm. CSM's deep plan has the institution nested within this active outer layer [Figure 20].

Granary Square's status as a privately owned public space has recently been the subject of criticism. [lvi] While the space is successful in terms of its day to day occupation by a broad range of the population, its visitors are actively monitored and deviant behaviour displaced by the development's private security force. One might see this simply as a more stringent form of the regulation of behaviour in public space, but it does pose questions as to the nature of the urbanity programmed into such spaces, whether associated with innovation or not.

The public entrance sequence is articulated across the forecourt of Granary Square; into the restored Granary Building at ground level, and finally into a large contemporary void/atrium that serves as a quasi-public thoroughfare that cuts across the building east-west. An internal 'street' giving access to all of the institution's functions extends perpendicularly from the quasi-public atrium [Figure 21]. While access to the street is closed to the public by a line of security gates, the Street makes visible the collective life of the institution to anyone who enters the building. Despite efforts of the architect to ensure as much as possible public interaction through the building's typological articulation, it appears that current concerns over security within educational institutions outweighed the designer's impetus to achieve literal public openness.[lvii] In the last decades, security concerns in the light of terrorist attacks and the Virginia Tech mass shooting in 2007 have rendered universities, similarly to other typologies of knowledge, into secured areas with controlled access.[lviii] The tension between the trend to open up the institution, to provide a connected civic realm and security concerns comes increasingly into relief.

The Street is lined with studios, circulation and informal learning spaces and bisected at different levels with a glazed studio and open deck bridges. Here the space is purposefully rough, evoking the classical idea of a street: as well as a circulation corridor, it serves as a space for exhibitions, reviews and other collective events, including as a stage for the degree fashion show [Figure 22].. In its everyday setting, its planar and sectional articulation delivers a multitude of visual and spatial synergies [Figure 23]. The variety of ways in which the street is occupied, suggest a learning landscape conducive to activities associated with n with learning, communication and exhibiting. The decks cutting across the street, and the flexibly occupiable ground level provide different degrees of seclusion and exposure and creates situations suitable for informal meeting, learning and collaboration. The street also acts as the central circulation spaces, and the teaching and workspaces overlooking it additionally help to activate and sectionally integrate this key void.

While the Street purposefully references an urban motif visually, it also seeks to perform like the city itself: dense, vibrant, dynamic, and compressing movement and encounter of different 'populations'. These attributes have the declared objective of eradicating disciplinary boundaries across different disciplines and thereby propelling creativity for all. [lix]

Arguably, the intelligence of the deep plan of the eastern wing suggests how the objective of eradicating the boundaries between the different disciplines might be achieved. The transit shed, a studio wing and a zone of circulation cutting across informal workshops, studio and breakout spaces run in parallel. Here the deep-layered plan compresses different programmes, activities and movement; 'forging' people and activities against each other, a movement vector that continues through and across the Street horizontally and vertically. This spatial 'compression' is juxtaposed with a loose

fit in many of these studio and teaching spaces as well as the Street, allowing for a diversity of occupation.

The layered intersection between the inside and the outside of the building, and the planar and sectional organisation of the street could be said to be a transposition of the design concept inherent in Lasdun's staggered and terraced urban landscape. The IOE's sectional integration with the public void in front of it, and its arguable undelivered promise of its terraces as 'gathering places', designed to 'promote and extend human relationships', finds its actualisation in the Street, as a landscape of learning and communication. While this void is not public, the design principle of integrating and enmeshing institutional and public life is partly delivered through the public's access to the cross street.

Read as a case in an ongoing process of typological reasoning about the integration of institutional and urban life, a next hypothetical iteration of the problem could consist in opening the street as a shared civic realm, drawing urban life into and across the building; multiplying the potential of shared spaces and services and their potential of multiplying connections to business, the surrounding community or a broader set of stakeholders. As its stands, CSM is an exception in allowing public access into at least parts of its building. Most other typologies of knowledge in the vicinity, bar the British Library with its public remit, offer merely visual permeability into their spaces.

Nonetheless, the building's typological articulation supports its catalytic role as urban agent. It's outer layer has amplified much of the surrounding public realm, offering a potential resource for shared services or programmes. CSM's extensive outreach programme and collaborations further supports its civic role. The sheer volume of students and staff help to bring creativity and intensity into the newly developed area

around King's Cross. In conjunction, this has the potential to draw in a range of stakeholders, such as the creative industries, the general public, and the surrounding community.

At the same time, CSM exemplifies some of the key shifts described at the beginning of this section. As much as it seeks to open up the institution to the life of the city, it also embodies shifting values about education and its relationship to the outside world. Opposed to Martin's and Lasdun' highly efficient functional structures and plans, here much emphasis is given on the visual presence of the building and the spectacular space of the street. The internal, serene world of learning of the 1960s has been replaced with the dynamism of cross-collaboration within and without the institution. While today's number of enrolled students exemplify the shift to mass education, CSM and its role as cultural anchor in a knowledge quarter raises affiliated concerns about the effects of gentrification as well as the increasing social polarisation that has been identified as part of the shift towards the knowledge industries.

Conclusion: Type, Universities, Knowledge and Urban Life

This paper has sought to identify a range of contributions that type makes to an urbanism informed by 'learning, knowledge and innovation'. Tracing the evolution of Bloomsbury projects from the 'ivory tower' of Holden et al's University of London scheme, via Martin and Dannatt's 'Precinct', and Lasdun's 'urban landscape', to the present situation has shown an increasing 'complication' in the formal, spatial and programmatic intersection between universities ~~typologies of knowledge~~ and the city. In this trajectory, we identified Martin and Dannatt's Development plan of the University of London as signalling the key transformation through which typology 'reworks' the

city by actively reconfiguring the urban realm by enlisting a latent a synergy between the institution and the city.

Realising aspects of the development plan, we suggested that Lasdun's Institute of Education is indicative of a significant urban restructuring that seeks to draw urban life across the district, even if the public realm amplified by the IOE represents only a first tentative step in the process of re-defining and 'opening up' an urban university precinct. This intersection of public and academic life was not Lasdun's objective. The sectional amplification of the public void space served in his mind the coherence and socialisation for the community of the university opposed to that of the city. Nonetheless, IOE's sectional 'complication' has become one of the key design concepts transposed into today's typologies of knowledge as we argued through the transposition of Lasdun's section into CSM's internal street. Also, Martin's and Dannatts' urban restructuring of Bloomsbury as an urban landscape of dispersed voids, and its partial realisation in the public realm of IOE, are conducive to the performance of current urban landscapes of learning and innovation.

The figure ground plan of the Knowledge Quarter with key internal voids shown in Figure 1 exemplifies both the generalisation of the trend of producing key void spaces and their activation of the public realm, as well as suggesting a wider urban transformation through this means of articulation. Opposed to the closed urban blocks of Georgian Bloomsbury, and the more serene, even mute, facades of 10 years before, an intriguing, 'activated' urban realm now unfolds from the IOE, across the dense urban block of UCL, along Euston Road and, via King's Cross-St Pancras, to CSM, punctuated by visual, spatial and programmatic synergies which thrive in the ambiguous

dialogue which has been created between inside and outside, public and private, observer and participant.

The trajectory of typological 'complications' between the building's interior and the city, the potential multiplications of its interior and exterior collective realm, exceed the simple activation of the ground level and cannot be reduced to the delivery knowledge transfer or dissemination. Similarly, Martin's and Dannatt's principle of cultivating complex social associations within an institution through the form of the court, or Curtis's supposition that Lasdun's project acts as a 'map of (new) social relationships' are perhaps too instrumental in their faith that a direct transposition of social content and form can be achieved. Instead we might draw upon Lasdun's own statements, wherein formal configurations are supposed to, 'seek to promote and extend human relationships'. His collective spaces can be 'spaces for gathering', but are also 'valuable in themselves' because his new urban ground level provides opportunities for a distributed set of 'intensities' to exist side by side – nodes which at times provide 'only' visual interest, thereby helping to draw movement across the urban realm; at other times spatial or programmatic intensities allow for a deliberate intersection with the general public; at still other times more temporary and casual urban associations of interests are promoted. The complex layering in plan and section as shown in Central St. Martin delivered multiple, layered possibilities of occupation; shared spaces and services; with a potential to multiply connections to industry or shared resources for the surrounding community. While this might not have been Martin and Dannatt's objective, the potential for this dispersal of intensities, activated by type, was already inscribed in their UoL court as generator.

These typological principles, have the capacity to complicate, multiply and engender changing occupations of urban space; helping to forge temporary or more long term communities of association, of learning, of knowledge sharing or other forms of communality and association. In other words, they can help to promote a changing, flexible ecology of urban coexistence.

The current urban landscape of learning, knowledge and innovation is also linked to concerns about increasing polarisation between those who belong to the knowledge economy and those who don't; about the increasing privatisation of public space and the current role of the university and its relation to a liberal market economy. Although outside the scope of this paper, the described typological trajectory gives cause to reflect on both the evolving status of the knowledge economy - its perceived 'good' for society and the city - and, reciprocally, of the status of the 'citizenry' required to substantiate its creative objectives.

While the dynamism between the university and the city is complex, and the corresponding urban development subject to a multitude of different drivers, charting the spatial trajectory from the ivory tower to an urban landscape of learning, knowledge and innovation has shown an immanence to the spatial specificity of typological organisation and typo-morphological transformation. We agree with Martin that reflections on urban areas always already require a problematisation through the built form of an urban area. Here typological reasoning is deployed to probe the potential of an area as the basis for discussion and decision-making. Formulated differently, it asks 'what is the city?

Acknowledgements

With thanks for the support received from the RIBA Drawing Archive, The University of London Archive, and the CSM Press Office.

Figure captions and credits

Formatted: Font color: Text 2

Figure 1 Bloomsbury & Kings Cross Key Voids

Drawing by Author

Figure 2 Charles Holden: University of London as proposed, 1935

RIBA Drawing Collection REF PA1439/AHP(149) 145

Figure 3 Charles Holden: Malet St, 2 Montague Place, ca. 1935 (undated)

RIBA Drawing Collection REF PA1438/1(50)

Figure 4 Leslie Martin & Trevor Dannatt: Outline Plan for the University Precinct. Model

University of London Archive Ref ULC/PC/36/ 1 (v)

Figure 5 The Studio of Leslie Martin and his Associates: University of Hull Development plan (undated) (drawn by the author)

Source: L. Martin, Buildings and Ideas, 1933–83: from (Cambridge, Cambridge University Press, 1983), p128

Figure 6 The Studio of Leslie Martin and his Associates: Zoology/Psychology Building. Axonometric (undated) (drawn by the author)

Source: L. Martin, Buildings and Ideas, 1933–83: from (Cambridge, Cambridge University Press, 1983), p132

Figure 7 The Studio of Leslie Martin and his Associates: Zoology/Psychology Building. Plan Diagram (undated) (drawn by the author)

Source: L. Martin, Buildings and Ideas, 1933–83: from (Cambridge, Cambridge University Press, 1983), p131

Figure 8 Leslie Martin: Gonville &Caius College, Harvey Court, Cambridge (drawn by the author)

Source: AJ 15 January 1964

Figure 9 Leslie Martin & Trevor Dannatt: Outline Plan for the University Precinct. General Diagram.

Source: University of London Archive Ref ULC/PC/36/ 1 (x)

Figure 10 Leslie Martin & Trevor Dannatt: Outline Plan for the University Precinct. Diagram showing ground level

Source: University of London Archive Ref ULC/PC/36/ 1 (Xi-)

Figure 11 Denys Lasdun & Partners, University of London, Site Plan Proposals, 1960

Source: RIBA Drawings Collection Ref: 98845

Figure 12 Denys Lasdun & Partners, University of London, Site Plan Proposals, 1960

Source: RIBA Drawings Collection Ref: 98846

Figure 13 University of London, Bloomsbury. Model for the proposed redevelopment, with the School of African and Oriental Studies (SOAS) and the Institute of Education

Source: RIBA Picture Collection Ref 88087

Figure 14 Denys Lasdun & Partners, University of London, Site Plan Proposals, 1960

Source: RIBA Drawings Collection Ref: 98847

Figure 15 Denys Lasdun & Partners, Institute of Education, Ground Floor, 1966

Source: RIBA Drawings Collection Ref: 98842

Figure 16 Denys Lasdun & Partners, University of London, North West Elevation, 1966

Source: RIBA Drawings Collection Ref: 98843

Figure 17 Denys Lasdun & Partners, University of London, South West Elevation, 1966

Source: RIBA Drawings Collection Ref: 98844

Figure 18 Denys Lasdun & Partners, SOAS, North West Elevation, 1966

Source: RIBA Drawings Collection Ref: 92536

Figure 19 Central Saint Martins

Photograph by the Author

Figure 20 Central Saint Martins. Plan.

Drawing by the Author

Source: www.stantonwilliams.com

Figure 21 The Street Central Saint Martins UAL.

Photo by John Sturrock courtesy of UAL

Figure 22 The Street Central Saint Martins UAL.

Photo by John Sturrock courtesy of UAL

Figure 23 The Street Central Saint Martins UAL.

Drawing by Haya Zabaneh

---

[i] B. Katz, B., & J. Wagner, J., The rise of innovation districts: A new geography of innovation in America (Brookings Institution–Metropolitan Policy Program, 2014*);* K. Hanna, Spaces to Think: Innovation Districts and the Changing Geography of London's Knowledge Economy, (London, Centre for London, 2016)[available at https://www.centreforlondon.org/publication/innovation-districts/], A.C. Pratt and P. Jeffcutt, P. Creativity, innovation and the cultural economy (London: Routledge, 2009)

[ii] NESTA, The Connected University. Driving Recovery and Growth in the UK Economy, London, 2009 (London, NESTA, 2009)

[iii] NESTA, Innovation in the City, NESTA Report (London, NESTA, 2007)

[iv] For an excellent introduction and overview over current university-led urban regeneration see C. Melhuish, University-Led Urban Regeneration. Introduction to the case studies (London: University College London Urban Lab, 2015) Available at: http://www.ucl.ac.uk/urbanlab/research/university-regeneration (accessed 16.09.2017)

[v] S. Wood & K. Dovey, 'Creative Multiplicities: Urban Morphologies of Creative Clustering', Journal of Urban Design 20:1 (2015), pp.52-74.

[vi] See for example K. E., Matthews, V. Andrews & P. Adams, 'Social learning spaces and student engagement', Higher Education Research & Development, 30(2), pp. 105–120.

[vii] University of London, *New Buildings on the Bloomsbury site. (*University of London, London, 1932)

[viii] Ibid., p.10

[ix] W. Beveridge, quoted.in R. Simpson, 'Classicism and Modernity: The University of London's Senate House'. Bulletin of the Institute of Classical Studies ,43 (1999) pp.41-96

[x]C. Holden, 'The University of London: A paper read to the Royal Institute of British Architects on Monday 25 April 1938'. Journal of the Royal Institute of British Architects (9 May 1938), p. 638

[xi] For the reception of the project see N. Harte, University of London: An Illustrated History 1836-1986, (London, Athlone,1986)

[xii] D. King & V. Nash, 'Continuity of Ideas and the Politics of Higher Education Expansion in Britain from Robbins to Dearing' in *Twentieth Century British History*, V.12, Issue 2, 1 January 2001, pp. 185-207, https://doi.org/10.1093/tcbh/12.2.185

[xiii] S. Muthesius, *The Post War University: Utopianist Campus and College* (New Haven and London, Yale University Press, 2000)

[xiv] N. Barr, ed., Shaping higher education 50 years after Robbins (London, London School of Economics, 2014)

[xv] M.Shattock, *Making Policy in British Higher Education 1945-2011* (Maidenhead, Open University Press, 2012).

[xvi] R. Anderson, The 'Idea of a University' today, March 2010, In History & Policy Policy Papers, available at: http://www.historyandpolicy.org/policy-papers/papers/the-idea-of-a-university-today (accessed 21 July 2018)

[xvii] Ibid.

[xviii] see A.OSSA-RICHARDSON, 'The Idea of a University and its Concrete Form' In P. Temple, ed., The Physical University. Contours of space and place in higher education (London, Routledge, 2014) and T.Birks, Building the new Universities (David & Charles, London, 1972)

[xix] S. Muthesius, 2000 and P.Jokusch, *Gesamtplanung Britischer Hochschulen. Bericht über einen Studienaufenthalt in Grossbritannien (Januar 1965 bis April 1966),* Schriften des Zentralarchivs für Hochschulbau No 5 (Düsseldorf, Werner Verlag, 1967).

[xx] Jokusch, 1967, P.85

[xxi] S. Muthesius, 2000

[xxii] L.Martin and T. Dannatt (assumed- no named author), 'The Development of the London University Precinct'. The Builder, March 6 (1959), pp. 442-443

[xxiii] P. Carolin, Sir Leslie Martin (obituary) [Available at https://www.aha.cam.ac.uk/Library/about-the-library/the-leslie-martin-collection]

[xxiv] Sharr and Thornton A.Sharr and S. Thornton, Demolishing Whitehall: Leslie Martin, Harold Wilson and the Architecture of White Heat (Farnham: Ashgate 2013), p173

[xxv] In his role as architect, educator and mentor, Martin not only took up a key position in British architectural culture generally, but, through his patronage of Colin St John Wilson and Denys Lasdun and their respective appointments for developing the University of London and the British Library, exerted a significant influence over the development of Bloomsbury. See, P. Carolin and T.Dannatt (eds.), Architecture, education and research :

the work of Leslie Martin : papers and selected articles (London, Academy Editions, 1996)

[xxvi] Martin thought of the design of university as a 'system rather than an individual building'. See L. Martin, Buildings and Ideas, 1933–83: from the Studio of Leslie Martin and his Associates (Cambridge, Cambridge University Press, 1983), p135

[xxvii] Ibid.

[xxviii] Ibid., p.129

[xxix] Ibid., p.130

[xxx] Sharr and Thornton, Demolishing Whitehall

[xxxi] Martin, Building and Ideas, p.20.

[xxxii] L. Martin 'The Grid as Generator' in S. Tiesdell and M.Carmona, eds., The Urban Design Reader (London, Routledge, 2015)

[xxxiii] Ibid. p.78

[xxxiv] Ibid.

[xxxv] ibid.

[xxxvi] L.Martin and T.Dannatt, Outline Development Plan for The University Precinct 1959, p8

[xxxvii] Ibid.

[xxxviii] Ibid.

[xxxix] Lasdun described the planning principles he took over from Martin and Dannatt: 'to limit through traffic in the area; to reorganise access roads and to provide adequate car parking facilities; to respect the scale of older buildings in the area that are to be preserved; and to add to pedestrian convenience and facilities by raising first floor access route which will link and bridge existing streets' D.Lasdun, (no title) Building 23 June 1967, pp91- 93.

[xl] For Lasdun's view on the relationship between the architectural project and the city see also D.Lasdun, 'An Architect's Approach to Architecture'. RIBA Journal (April 1965), pp.184-196 as well as D.Lasdun, 'The Architecture of Urban Landsca*pe',* in D.Lasdun (ed), Architecture in an age of scepticism: a practitioners' anthology. (New York : Oxford University Press, 1984), pp.134-154

[xli] W. Curtis, Denys Lasdun (London, Phaidon Press, 1994), p.86

[xlii] S. Cantacuzino, 'Lasdun in Bloomsbury: new buildings for London University, Bloomsbury; Architects: Denys Lasdun & Partners' in Architectural review, Vol. 167, no. 997, 1980 pp. 144-154, p.147

[xliii] Quoted in W.Curtis 'Denys Lasdun' in M Emanuel, Contemporary Architects (London and Basingstoke, Macmillan Press, 1980), p. 454-455

[xliv] D. Lasdun, 'University of London Redevelopent', Architectural Digest, 3/4 (1981), pp.4-5

[xlv] Curtis, Denys Lasdun, p.91

[xlvi] In 2016, UCL Estates and the UCL Institute of Education (IOE) embarked on a project to undertake a phased refurbishment and regeneration of 20 Bedford Way, see: https://www.ucl.ac.uk/transforming-ucl/pdfs/bedford-way-development-consultation

[xlvii] A. Madanipour, Ali. 2011. Knowledge Economy and the City: Spaces of Knowledge (London: Routledge, 2011)

[xlviii] D. King & V. Nash, Continuity of Ideas 2001, op.cit.

[xlix] S. Collini, *What Are Universities For?* (Harmondsworth, Penguin, 2012)

[l] C. Melhuish, University-Led Urban Regeneration. 2015, op.cit.

[li] A.Harrison and A. Cairns, The changing academic workplace (London, DEDW UK Ltd, 2008) available at https://ipddirectedstudies.files.wordpress.com/2011/01/the-changing-academic-workplace-degw-27-10-08.pdf, (accessed 25.07.2018)

[lii] J.Boys, Towards Creative Learning Spaces: Re-thinking the Architecture of Post-Compulsory Education (London, Routledge, 2011)

[liii] M. Neary, A. Harrison, G. Crellin, N. Parekh, G.Saunders, F. Duggan, S. Williams and S. Austin (Learning Landscapes in Higher Education (Lincoln, Centre for Educational Research and Development, University of Lincoln, 2010)
[liv] Harrison & Cairns, The changing academic workplace, 2008, op.cit
[lv] C. Melhuish, University-Led Urban Regeneration. 2015, op.cit.
[lvi] A. Pratt, 'The rise of the quasi-public space and its consequences for Cities and Culture', in Palgrave Communications, Vol. 3, Article number: 36 (2017), available at https://www.nature.com/articles/s41599-017-0048-6.pdf (accessed 30.07.2018)
[lvii] The recent decades have seen an increasing concern with the securtiy of cam
[lviii] For example, see M.de Novellis, 'London Terror Attack: UK Business Schools Step Up Campus Security' BusinessBecause, 6 Jun 2017 available at https://www.businessbecause.com/news/making-the-headlines/4604/london-terror-attack-uk-business-schools-campus-security (accessed 1.8.2018)
[lix] Guardian J. Glancey, 'Central Saint Martins: Inside the art factory'. The Guardian, (13 December 2011)