The Campus and the City - a Design Revolution Explained

manuscript accepted for publication in Journal of Urban Design 22 August 2018

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The Campus and the City - a Design Revolution Explained

This contribution to design history considers a recent shift in the approach to the architecture and landscape of urban universities. Based on secondary literature and published campus master plans, the paper contrasts the mid-twentieth century concern for separation with a contemporary search for integration. Though it draws primarily on European and American examples, its topic is generic. The campus design revolution is explored and explained at three scales, first viz-à-viz the university's urban context, then its internal layout and landscape, and then its buildings and their use. At each scale we find a design factor to the pursuit of knowledge.

Introduction

The history of universities and their campuses shows two things: on the one hand, the individual variety of these institutions, each having its own unique personality, context and ethos; on the other, the common patterns and typologies whose evolution over time leaves traces in the physical fabric of universities, making them palimpsests of cultural change. This paper addresses a recent and striking shift in thinking about the architecture and landscape of higher education. It's of particular interest to urban designers because it has to do with the relationship between town and gown, the university and the city (Bender 1988; Genestier 1991; Hall 1997).

Historically the two were closely connected. Most universities took their names from their parent cities. In the ancient foundations of Europe colleges and faculties were interspersed through the streets of the town. In the era of the Enlightenment they presented great colonnaded facades and porticoes to the public realm. And in the later nineteenth century, while American colleges experimented with new settings that were suburban or rural, in pastoral landscapes that they called campuses (Turner 1984) Europe's great civic universities and technical high schools stayed put in monumental public edifices on the city-centre intersections of tram-routes.

The history of the past hundred years can be read as a prolonged experiment in decoupling. Anti-urbanism was a pervasive aspect of the Modernist *Zeitgeist*. Art and architecture strove to escape the minerality of pavements and facades, views framed by building frontages, the promiscuity and density of urban life. Twentieth century transport and communications technologies offered escape routes to an idealized natural landscape. Entire programmes of university-building, such as Governor Nelson A. Rockefeller's sixty-three campuses for the State University of New York, were premised on acquisition of extensive green-field sites. The University Grants Commission (UGC), which funded the 'utopian campuses' of postwar Britain, took it as axiomatic that spacious settings of parkland were more conducive to creative thinking than urban street-blocks (Birks 1972; Muthesius 2001). Committed to the image of the higher education campus as an extensive

landscape, the UGC rejected municipal pleas for investment closer to city centres: 'spaciousness in itself and a site unencumbered by industrial development were, it was argued, intrinsically advantageous for a university' (Cowan 1974 23-25). The City of Coventry's project for a new university was shipped out to the countryside and rebranded as the University of Warwick (Thompson 1970). The same story was repeated in the historic city of Norwich and again in York, despite a high-profile conservation study (Esher 1968) that identified a new university as the ideal means of reoccupying and restoring the many derelict mediaeval buildings in the city centre.

Fig. 1 Pastoral idyll on the North Campus of TUDortmund, 1980
(credit: Glaser 2009, p.30. by kind permission)

The cult of nature was evident at the heart of the industrial Ruhr when Dortmund's Technical University was founded in 1968. It was designed through an architectural competition in which several entries argued for the selection of an urban site to promote the integration of town and gown - *Einbindung der Universitaet in die Stadt*. But that approach was explicitly rejected under an official policy favouring rural locations (Hnilica & Jager 2015). So this great centre of modern learning came to be established three kilometres outside the city, *auf der grünen Wiese* (in the green meadows), surrounded by pastures grazed by sheep

(Figure 1), with its campus split into two halves to either side of a forest reserve traversed, from 1984, by a modernist monorail. French technical campuses of the same vintage were less extravagantly anti-urban, but in Wakeman's words, they 'reduced urbanity to the ideal type of the garden suburb - a work and recreational paradise for engineers and scientists' (2003 269).

Equally revealing of yesterday's design ethos were the numerous evacuations of existing establishments from the heart of cities such as Aalborg, Brussels, Porto, Québec (Université Laval), and Stockholm. Merlin (1995) has documented how the French authorities responded to the student riots of 1968 with an extensive programme of dispersal to suburban locations. British universities were also being dispersed, although staff car-parking requirements may have been a stronger motive than fear of student radicalism. The *Report of Studies* for London's metropolitan development plan assumed that colleges that could do so would want to relocate out of town in the coming era of full motorization and personal mobility (GLC 1970, Cowan 1974). The London School of Economics explored relocation from its dense cluster of centrally-located buildings to a 45-acre greenfield site beyond Croydon, south of London - a proposal happily rejected, thanks to academic democracy, by an overwhelming vote of the staff in May 1965 (Dahrendorf 1995). TUWein, the Technical University of Vienna, similarly declined to move from its historic base on the Ringstrasse to a campus site fifty kilometres away in Tulln.

The position of larger, older urban universities locked into their central locations, was widely perceived as disadvantageous. Several used urban renewal programmes to expand their sites. When streets, shops, businesses and low-income homes had been cleared the enlarged boundary of the campus was marked by fences, blank walls or buffer plantations of shrubs and trees (Figure 2). There was a paradoxical affinity between the Modernist campus and the archaic scholarly template of the cloister and precinct: both sequestered academics from the disorder of the civic realm. As Tom Kvan puts it, the pursuit of knowledge was framed as an 'inward mission' (Kvan 2016 4-5).

Fig.2 University of Manchester screen planting along Brook Street boundary with adjacent residential neighbourhood. [credit: author]

Universities being what they are, they soon scrutinized their own experience of life in Arcadia. Students interviewed for Peter Marris's study *The Experience of Higher Education* complained of the inconvenience and the isolation of peripheral locations and the sense that they were 'cut off from the Outside World' (Cowan 1974 27-30). It had been hoped that physical segregation would encourage collegiality, interdisciplinarity and a more holistic pursuit of knowledge (Ossa-Richardson 2014). As things turned out, it had rather the opposite effect. The powerful dynamic of academic specialization found expression in building complexes dedicated to separate disciplines. Deans exerted a baronial sway over campus territory. Low spatial density discouraged interaction, reinforcing the conceptual segregation of disciplines in a 9 to 5 environment. In practice the

pastoral ideal of buildings dotted freely in an open landscape 'produced drive-through, sprawling, fragmented and isolated campuses' (Hajrasouliha 2017 363).

The present paper starts from the perception that a radical design shift since the millennium has turned on its head the previous relationship between universities and cities (Coulson et al 2015a, 2015b; Taylor 2016). In their book *Urban Design for the Knowledge Society* Kerstin Hoeger and Kees Christiaanse of ETH Zürich find this fresh spirit of urbanism across a wide range of cases - corporate campuses and technopoles as well as universities in inner-city and out-of-town locations. As their title implies, they attribute an epistemological basis for design innovation: a new *Denkkultur* or culture of knowledge (Hoeger and Christiaanse 2007). Drawing on a similar range of examples, the present paper focuses on the design strategies of campus master plans. The task is made simpler by the valuable inventory and analysis recently published by Amir Hajrasouliha (2017). Applying a fine-grain classification to a random sample of U.S. university strategies, Hajrasouliha draws out an extended list of characteristic campus master plan actions. Simplifying the detail in order to discern the trends, we can take contemporary design practice at the scales of the neighbourhood, street and building (Talen 2013). The following three sections consider first the external setting of a campus, then its internal layout, and then its component buildings. Under each heading we will seek to sketch the principal lines of innovation and explain their rationale.

Campus in Context
We begin at the scale range around 1:10,000, where the university estate is visible in its neighbourhood setting. This scale reveals the Lynchian dynamics of a project - its boundaries, edges, focal points, landmarks and linkages - and is home territory for urban design professionals. The most succesful practitioners in this sector are not the designers of individual buildings, however iconic, but experienced urbanists in practices such as Sasaki Associates (Cambridge Mass.), Urban Strategies (Toronto), Venturi Scott Brown (Philadelphia), Farrels (London) or URBED (Manchester). Embedding a university in a city involves urban design skill of a high order.

The critical innovation has to do with the role of the estate boundary. Hajrasouliha (2017) characterizes contextual campus design by what he calls 'welcoming edges'. In his introduction to the RIBA's professional good practice guide on university design, Tom Kvan (2016) highlights a shift from boundaries designed for impenetrability to edges that encourage connectivity. He cites the example of the University of Pennsylvania campus in its setting of inner-city Philadelphia. Half a century ago, when the university was threatening to relocate out-of-town to Chester County, the municipality offered generous use of urban renewal powers to raze adjacent Afro-American neighbourhoods, remaking the campus as a superblock framed by a *cordon sanitaire* (Puckett and Lloyd 2015). Bulldozed sites were used for decades as parking lots for commuting university staff. In the words of the architectural critic of the *Philadelphia Inquirer*:

> As Penn's campus grew more splendid it became an island of privilege in a sea of poverty. Penn effectively cordoned off its campus by erecting buildings that faced inward, going so far as to put the loading dock of Van Pelt Library on once-gracious Walnut Street. (Saffron 2015)

Problems of trespass and muggings, culminating in two highly publicized murders, prompted a policy shift. President Judith Rodin set out to realign the university with the needs of its immediate neighbours, notably by building and sponsoring a public school. The strategy *Penn Connects* (2006) relaxed the cordon by every means possible - street re-openings, reorientation of building fronts and backs, retail developments large and small serving both campus and neighbourhood. The 2011 update *Penn Connects 2.0* has extended the strategy, creating 'bridges of connectivity' to the Schuylkill River that simultaneously expand the university estate and enlarge the public realm of the city with parks and open spaces. Architectural guidelines have been set in place to ensure that new buildings present active frontages onto public thoroughfares and are designed as much for external as for campus viewing. The design team of Sasaki Associates continues to work with university architect David Hollenberg in the successful implementation of the connectivity strategy (Sasaki 2018, Figure 3).
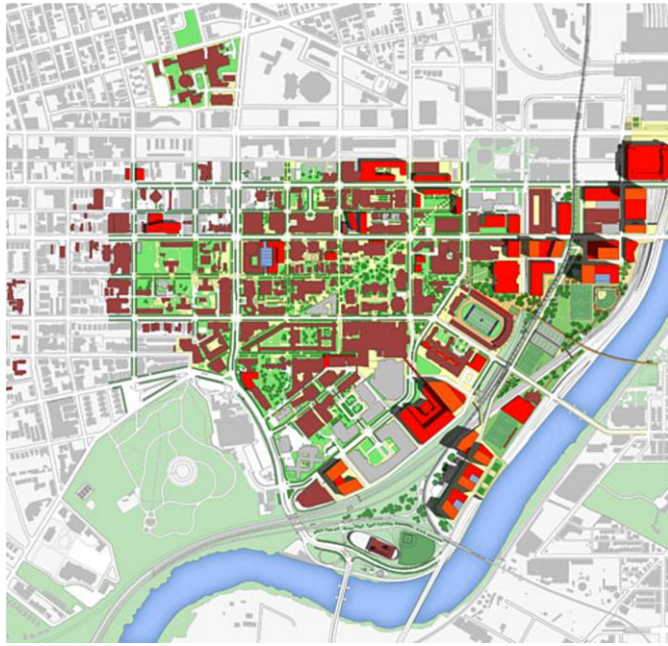
Fig. 3 University of Pennsylvania's *Penn Connects 2,* key diagram updated to 2017 [credit: Sasaki Associates, by kind permission, and with thanks to Victor Eskinazi]

Hajrasouliha's survey finds similar language and design solutions in many other American universities: town-gown compacts, community partnerships, street corridors along campus edges, and general public encouragement to make the university a destination place (2017 374). The University of Minnesota celebrates its strategy to 'weave campuses into the existing fabric . . . opening through streets to improve access, placing new housing units among classroom buildings, and reintegrating pedestrians, cars and light rail at street level' (Urban Strategies 1994); Yale University's *Framework for Campus Planning* of 2000, with its premise that 'Yale should strive to mesh the borders and edges of the University campus with its surrounding neighbourhoods by reducing those barriers, whether physical or psychological, that prevent the blending of Yale and New Haven' - as for example in the low-rise, outward-facing premises of the Broadway retail district (Yale 2000 149); the *University of Michigan Master Plan* commissioned by President Lee Bollinger 'to conceive of our Campus as a whole and consider its place in the larger Ann Arbor community' (VSBA 2002); McMaster University's strategy of re-orientation towards its host city of Hamilton Ontario through gateways, facades, walkable pedestrian ways and 'university-community partnerships' to bring new faces onto the campus (McMaster 2008); MIT's

ongoing redevelopment of former parking lots on the eastern end of its campus into buildings with a mix of uses and dual aspect, serving both the campus and the adjacent district of Kendall Green (MIT 2010, 2017). South of the Mexican border Sasaki Associates have won awards for their *Tecnológico de Monterrey Urban Regeneration Plan*. Despite the markedly different context of a Latin American city, there are evident similarities in the shift from a defensive, security-driven enclave into an extrovert partner, regenerating its urban setting through spatial connectivity and practical collaboration (Sasaki 2016).
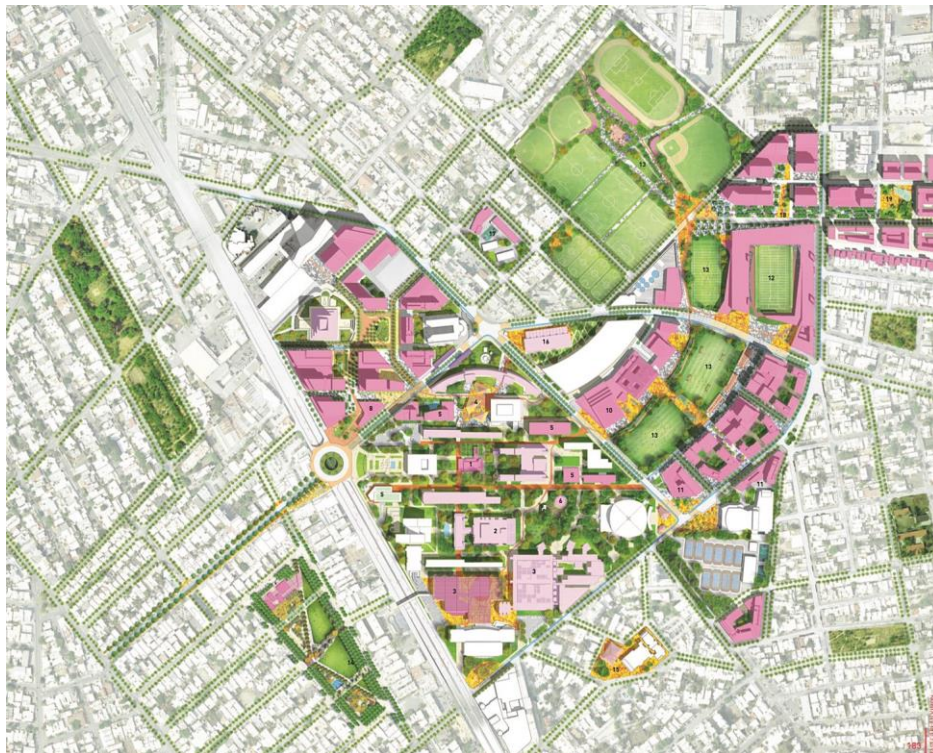

Fig. 4 *Tecnológico de Monterrey Urban Regeneration Plan* (Sasaki 2016)
[credit: Sasaki Associates, by kind permission]

A desire to reintegrate hitherto discrete land use cells with the urban matrix has many parallels in the retail sector, transport planning and housing estates But the theme of connectivity has particular resonance for higher education. Cities who compete for investment and jobs in a global marketplace have come to appreciate how a locally embedded university can enhance their productivity and competitiveness (Benneworth and Hospers 2007). Academics, for their part, have become more aware that the pursuit of knowledge ends not in scholarly publication but in readership, citation, translation into technology and other types of impact: strong links with a host city facilitate knowledge transfer (Goddard &

Vallance 2013). The very fluidity of the information economy reinforces the incentive for universities to be connected into their geographical contexts, and 'sticky' in attracting and retaining talent (Taylor 1916 7). Knowledge transfer has been described as a contact sport: the more information is globally networked, the greater the demand for face-to-face contact in sites of innovation. This creative symbiosis between region and campus depends on everyday encounter and shared lifestyle, such as is only possible in an embedded university. (Florida 2006).

In sum, the effect of the knowledge economy is to break down conventional boundaries between campus and city. In the newest developments the two may be as intermixed as they were in the oldest urban universities. Thus, the current northwest suburban extension of the City of Cambridge, built upon 150 hectares of university-owned farmland, mingles private housing development (1,500 units) with accommodation for postgraduate students (2,000 units) and university staff (1,500 units) and academic buildings with R&D space, start-ups and commercial units. The master-planners, AECOM, have aimed to replicate the land use blend of historic Cambridge in a twenty-first century environment. (Coulson 2015a 170)

Estate layout
One advantage of the conventional low-density campus was to bequeath an ample land supply to successive generations of estate managers. Universities enjoyed leeway to develop in response to changing demand, and buildings were positioned in an ad hoc fashion within the accommodating landscape of open parkland. But master plans of recent years have taken a more assertive view of place-making quality, imposing design discipline to safeguard the role of campus spaces as the most significant collective expression of corporate identity (Coulson 2015c, 117). Through shared frontage lines and orientation, individual buildings are asked to act in concert with their neighbours to provide campus settings. In the words of the French national *Plan Université 2000*, a 'logic of densification' has superseded the former 'logic of extension' (OECD, 1998 52). The techniques of urban design have been applied to formerly open-plan campuses, joining buildings together to

create enclosure (Carmona et al 2010). Universities have learned the visual vocabulary of streets, squares and places: in the words of Brian Edwards's standard text, 'enclosure, route, gateway, promenade and vista are essential qualities in campus place making' (Edwards 2000: Dober 1992).

Fig.5 University of San Diego Masterplan by M.W. Steele urban design team (2017). [credit: University of San Diego by kind permission)

Analyzing the process and the outcomes Polyzoides (2000) defines successful campus design as 'figuration of the void'. It implies making the outdoor space of the campus as legible as the buildings that define it: in *Gestalt* terminology, solid and void should form a reversible figure-ground (Hebbert 2017). Legibility is linked to walkability, liveability, safety, identity and sense of community - values that recur repeatedly in recent campus plans (Hajrasouliha 2017 368). We can see this place-making ethos in the strategy of the University of San Diego to build over surface parking lots, replacing them with architecturally designed three-dimensional parking structures that frame the campus's hill-top courtyards (USD 2017 71); in Sasaki Associates' approach to infilling of the campus of the University of Texas at Austen (Sasaki 2011); in the long-term strategy of consolidation and place-making within the immense estate of Stanford University, of which the former university architect David Neumann liked to say 'we are building a campus, but every building is campus-building - with *building* as a verb' (Blum 2004 208); and at the University of Connecticut, where one response to

12

declining student applications has been to build Storrs Center, a New Urbanist-style neighbourhood of streets and squares on the campus boundary, framed by five storey buildings, bringing urbanity to a former no-man's-land (Coulson et al 2015c). A British example is provided by the design history of the University of Manchester. In the sixties the university's planning consultants Hugh Wilson and Lewis Womersley combined an architecture of brutalist mega-structures with the ambience of an out-of-town campus, framed on all sides by high capacity roads designed for speed and screened by buffer planting. Inside the frame, 45% of the area was taken up by parking lots, the rest laid out to an informal landscape of grass, shrubs and trees (W&W 1967). Forty years late the Project Unity plan prepared by Sir Terry Farrell and partners sought to eliminate all sense of a barrier around the edge of the campus and reconnect the university to its civic setting. Surface car parks and informal grassy swards were reallocated as sites for intensive development that would restore the sense of a coherent system of solids and voids. Instead of the edgeless 'lost space' (Trancik 1968) of an informal landscape the new public realm would consist of streets and squares with proper names, planted with street trees, framed by active building frontage (Farrells 2004).
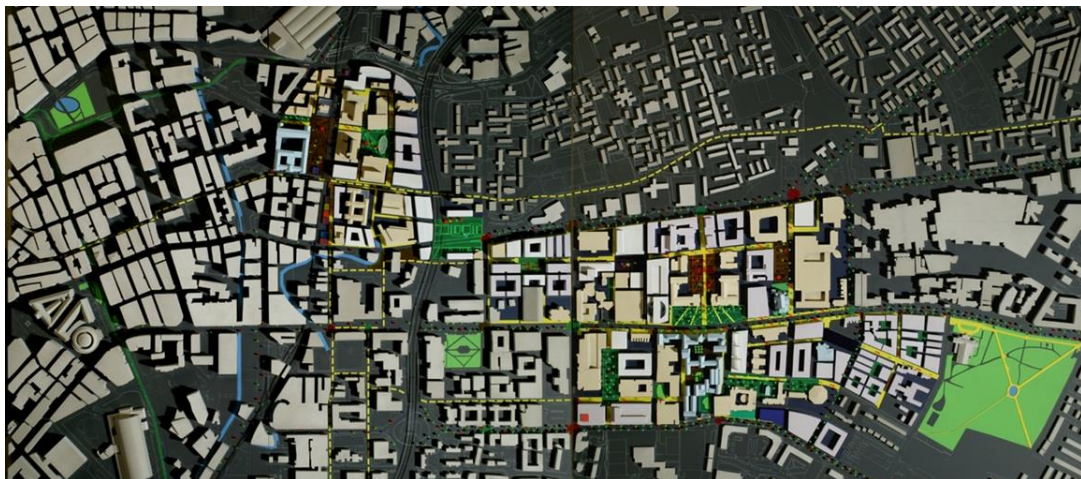

Fig.6 Sir Terry Farrell's University of Manchester campus master plan 2004, [credit: Farrells by kind permission]

The same paradigm shift could be observed in out-of-town sites. A celebrated instance is the Hönggerberg site of Switzerland's most prestigious technical university ETH Zürich, built in the 1960s as a spacious science park outside the city. 'In common with many satellite science precincts built at this time it suffered

from its isolated location, unwelcoming open spaces and uninspiring buildings. It was a 9am to 5pm commuter campus, overshadowed by fragmentation and remoteness' (Hoeger and Christiaanse 2007 202). The solution to Hönggerberg's problems was densification. The university hired the Dutch designer Kees Christiaanse to build over its void spaces, bring in housing and shops, and transform the monolithic out-of-town campus into a quasi-suburb, a process celebrated in the book *Campus and the City: Urban Design for the Knowledge Society.*

Fig 7 Visualisation of Science City ETH Zurich by KCAP Architects&Planners [credit: KCAP (c) by kind permission]

This process of internal consolidation has an evident economic basis. In a context of declining public subsidy and intensifying global competition for students, faculty and research funds, universities must put their assets to good use. The business basis has been well documented for the United States and elsewhere by the scholars David Perry and Win Wiewel (2005). Estates laid out to grass or outdoor parking lots, teaching rooms empty for extended vacation periods and staff offices occupied scarcely once a week offer obvious targets for responsible management. New architecture and high-quality landscaping evince vitality, attract students and draw investment (Marmot 2014).

Two other factors reinforce the concern for place-making. One is climate change. Ideally, as Brian Edwards suggests (2000 v), the university campus should offer society a glimpse into the sustainable future. The inclusion of carbon-mitigation in universities' performance measures gives fresh impetus to layout that is

compact, accessible and energy-efficient. Walkability was found to be the single most-cited goal in Hajrasouliha's content-analysis of fifty campus master plans (2017 367).

Finally, as often in university history, there's an abstract epistemological basis to the physical trend. Today the frontiers of science and creativity lie across the boundaries between disciplines. The most fertile knowledge environments are no longer cells of specialization, but interstitial spaces where different specialisms come together. This too gives fresh impetus towards shaping a physical public realm. The point is well illustrated with an example from the intensely competitive research environment of multinational pharmaceuticals. When Ciba-Geigy and Sandoz merged to form the company Novartis, their 51-acre St Johann factory in Basle was redeveloped as a research facility. Against all the precepts of science park design, the site was configured at high density as a set of urban blocks, based on a grid of deep, narrow streets scaled to resemble the city's historic core. The 2001 master-plan by Vittorio Magnago Lumpagnani laid out an extension of the Basle street grid, with street trees and standard paving and lighting details to match, and cafes to encourage everyday interaction between workers from different sections (Figure 8). Buildings were commissioned from a selection of top architects within a brief that protected the integrity of the street. The entire project aspired to be as different as possible from low-density campus environments with their stigma of placelessness. Novartis Ville presented itself not as a science park but as a nascent city where creativity would be sustained by 'an increasingly urban way of life' (Ingersoll 2009 257). In truth this so-called town is no town at all but a high-security corporate research division inside a sturdy perimeter fence, but its quasi-urban plan sufficiently echoes contemporary practice to earn a place in Kerstin Hoeger's collection *Urban Design for the Knowledge Society* (2007)*.

Fig 8 *'Un campus pensé pour les gens qui s'y côtient . . un cadre moderne qui stimule la collaboration interdisciplinaire et l'échange de savoirs'* ; from the Novartis website
[credit: <www.novartis.ch/fr/a-propos-de-novartis/campus-novartis/campus-le-projet> by kind permission]

Mixing of Uses

Zooming in finally to the building scale, what are the architectural implications of the new campus urbanism? The answer can be found in the characteristic building types of the traditional city: built to the edges of plots, addressing the public thoroughfare and courtyards or gardens within; vertically layered with active frontages onto the street; above all, buildings with a mixture of uses above and below. The discrete building types of the last century are being replaced by hybrids, designed for multiple functions and for versatility over time. In the era of ubiquitous mobile and laptop IT the single-function library is merging with the café, the corridor, the common room, the seminar, computer cluster into 'learning commons'. A blurring of typologies reflects real-world changes in work-patterns and learning behaviour. Marketing strategists have tracked the shift of the 'Y' (post-1977), millennial and post-millennial generations towards urban life-styles and consumption patterns: an aversion to daily commuting and willingness to live on-site; preferences for walking or cycling rather than driving; daily routines that dissolve conventional boundaries between living and working; a social geography that has taken the coffee house back to its eighteenth century origins as a place to exchange ideas and do business.

The implications for university architecture can be illustrated by three post-millennial additions to MIT's estate in Cambridge Mass. A seminal example of the new hybridity is the Ray and Maria Stata Center for Computer, Information and Intelligence Science (A&U 2005). Designed by Frank Gehry and opened in 2005, the building reverses the traditional relation between cubicle offices and corridors. Circulation space predominates, with informal benches and chalkboards at every turn to encourage chance encounters and the jotting down of inspirations. More conventional in appearance but equally radical in function is the redevelopment of MIT's University Park, a 27-acre site on Massachussets Avenue, formerly occupied at low density by the aromatic Necco wafer candy factory redeveloped in 2005 as an incubator zone for bio-technology and other hi-tech industries. The design by Koetter Kim created 2.5 million square feet of mixed development in urban blocks aligned to the neighbouring street grid. The buildings combine R&D labs with offices, apartments, a conference centre and hotel and in a second phase are being extended to include retail on Massachussetts Avenue. The third example, already cited above, is from the eastern edge of the MIT campus, abutting Kendall Green, where the university is redeveloping former parking lots into a mixed-use district of lab, office, residential, retail, cultural, and academic space, and a two-acre landscaped square. The project was launched with the announcement that One Broadway would incorporate a grocery store and food market serving both the local and the academic communities (MIT 2017).

Conclusion

It is rash to generalize about trends in campus design. Conventional suburban landscaped campuses are still being created in large numbers, especially in China where the greatest expansion of higher education is now occurring. As Brian Edwards points out (2000 3) the drawings in a university master plan guarantee nothing: these aspirational documents may be ignored in implementation, or overridden by a change of university president or by the appointment of a new campus manager. But however we qualify the generalization, the historical trend is clear. Knowledge is no longer a élite activity requiring seclusion from the masses. It must be distributed as widely as possible through the working population. The city-campus dichotomy has been reversed. Janne Corneil and

Philip Parsons of Sasaki Associates propose we should aim to make the boundary between the university and the city at least porous, at best non-existent: 'in a healthy knowledge society the university becomes the city and the city becomes the university' (2007 114-127).

In the last century universities migrated out-of-town to seek a better future in the open landscape. To conclude, consider two brief examples of recent moves in the other direction. One is the epitome of a U.S. Land Grant campus, Arizona State University, which grew up by the Salt River outside the city of Phoenix, and today sits in the suburban ring of the metropolitan area. Attempting to expand into the vibrant areas of bioscience and informatics, the university authorities realized that recruitment would be compromised if interdisciplinary frontier initiatives such as the Translational Genomics Research Institute were sited in suburbia. Jon Jerde was commissioned to design a new campus in the mixed area just north of the central business district of the City of Phoenix: an 'emerging knowledge hub' with 15,000 students and 3,800 employees. Its buildings are street-based and mixed-use, with rentable Class B office space for commercial tenants to create 'a synergistic force in downtown Phoenix'. At its launch in October 2004, Mayor Phil Gordon spelled out the economic significance of the Downtown Campus in graphic terms (Friedman 2009):

> Good paying jobs occur where educated people migrate. And the long range impact of educational opportunities in downtown Phoenix will do more for increasing the economic wealth of Phoenix residents that any other single economic development initiative being contemplated. Ever!
> That's where our plan and our vision are taking us - and $50 billions is what they're bringing us. Boy, do I love education !!

Fig 9 Campus Plan of Université Diderot (Paris VII) within Quartier Masséna, Rive Gauche, Paris
[credit: <www.univ-paris-diderot.fr/DocumentsFCK/deplsh/File/Plan_UP7.jpg> by kind permission]

Let the French have the last word. Their universities led Europe's centrifugal shift in the 1960s. Thirty years on they were leading 'the return', often bringing new life and activity to derelict buildings (OECD 1998). Examples could be drawn from many cities including Lille, Grenoble or Lyon but the most conspicuous is the relocation of the Université Diderot (Paris VII) from its out-of-town campus to the former industrial and transport zone behind the Gare Austerlitz on the left bank of the Seine. Planned by Christian de Portzamparc, the Quartier Masséna is a new district constructed partly on derelict railway lands and partly on a deck over the operational tracks. Street-based buildings are dispersed among the houses, shops and business of the quarter. At its heart, Université Diderot proclaims itself a 'campus immersed in the city, immersed in life'. In this *université citoyenne,* urbanism and the pursuit of knowledge are two sides of a single coin (Diderot 2018).

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Caption list

Fig. 1
Pastoral idyll on the North Campus of TUDortmund, 1980
(credit: Glaser 2009, p.30. by kind permission)

Fig.2
University of Manchester screen planting along Brook Street boundary with adjacent residential neighbourhood
[credit: author]

Fig. 3
University of Pennsylvania's *Penn Connects 2,* key diagram updated to 2017
[credit: Sasaki Associates, by kind permission, and with thanks to Victor Eskinazi]

Fig. 4
Tecnológico de Monterrey Urban Regeneration Plan (Sasaki 2016)
[credit: Sasaki Associates, by kind permission]

Fig.5
University of San Diego Masterplan by M.W. Steele urban design team (2017)
[credit: University of San Diego by kind permission)

Fig.6
Sir Terry Farrell's University of Manchester campus master plan 2004,
[credit: Farrells by kind permission]

Fig 7
Visualisation of Science City ETH Zurich by KCAP Architects&Planners
[credit: KCAP (c) by kind permission]

Fig 8
'Un campus pensé pour les gens qui s'y côtient . . un cadre moderne qui stimule la collaboration interdisciplinaire et l'échange de savoirs' ; from the Novartis website
[credit: <www.novartis.ch/fr/a-propos-de-novartis/campus-novartis/campus-le-projet> by kind permission]

Fig 9
Campus Plan of Université Diderot (Paris VII) within Quartier Masséna, Rive Gauche
[credit: <www.univ-paris-diderot.fr/DocumentsFCK/deplsh/File/Plan_UP7.jpg> by kind permission]