Concepts of pride, brand, and communication: architecture, urban design, and knowledge production: Berlin from 1810 to 2010

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Abstract: Embedding universities and research institutions in the urban fabric and deliberate architectural statements are gaining in importance. In an increasingly knowledge-orientated economy, architectural concepts aim to stimulate general curiosity about knowledge production and boost scientific-economic interaction. It is generally accepted that the built environment plays an important role in facilitating communication and knowledge flows, but little research has been invested into better understanding the ‘how’ and ‘why’. With four case studies – considering a wide spectrum of different spatial types of scholarly institutions in Berlin: the centrally located Humboldt University and the Berlin University of Technology, and the Free University and the Adlershof Campus situated on the periphery – this paper reviews how each has specifically intended to intensify knowledge flows in the city and beyond. The historical analysis shows that these aims have always been important for the planning and realisation of universities in Berlin and have had a central impact on the formation of Berlin’s urban identity over the last 200 years.

Keywords: architecture; urban design; knowledge production; knowledge city; qualities of public space; knowledge spill-over; urban growth.


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1 Introduction

Knowledge – independent of all its virtual or implicit forms – has concrete sites: buildings and locations in urban settings as well as in suburban surrounds. Symbolic criteria, such as representational settings or dialogues, as well as practical criteria, such as mode of operation, contribute to the logic of location. While the former focus on architectural design and urban positioning, the latter correspond more with functional requisites for floor plans and buildings. Each location can serve the expectations of cooperative relationships with nearby stakeholders as well as its public appearance in the urban context or on an urban-regional level. All of these levels of the physical locality of knowledge reflect the various requisites expected of it and therefore, also the different historical understandings of knowledge in society and the performance expectations placed upon it.

The importance of the connection between knowledge and the city is indeed not fundamentally new (see Schwinges, 2008) but has been made contemporary by accelerating globalisation. This renewed importance corresponds with a distinct knowledge-intensive economy (see Dunning, 2000), refers – in contradiction to theories of further geographical disjunction (see Castells, 1989) – to such an economy’s specific affinity for urban locations (see Läpple, 2004), and also explains the metropolitan regions’ new agenda as engines of growth (see Kujath, 2005).

The further implications of location in a narrower and more exact sense have been little discussed as such. While this might rather be the case regarding the logic of clusters (see Krätke, 2002), it is hardly the case for architectural and urban development qualities of knowledge places in their contemporary meaning. Three approaches offer insights for delving deeper: the role of urban spaces as generators of encounters and stimulation in conjunction with the role of implicit knowledge, new ideas, and experiments (see Brake, 2010; Matthiesen, 2004); the productive interdependence of knowledge institutions and neighbourhoods in the sense of interactions and cooperation and with regard to a specific quality of public space and the urban milieu (see Kunzmann, 2004); and the importance of the architectural design of knowledge places to their integration in public space and the way in which they communicate with their surroundings.

2 Research designs

An academic study of this issue must consider assumptions regarding the expectations of those working in the knowledge field for the immediate environment’s structural quality. Interests in various complexly structured micro-sites call into question to what extent a reurbanisation of knowledge (see Ahrens, 2004; van Winden, 2010) has accompanied long-since accepted suburbanisation (see Kühn, 2003). The implicit assumption that the growing importance of knowledge work is embedded in an urban context suggests a new relevance of the physical positioning of sites of knowledge production. Numerous arguments qualify knowledge places in terms of their urban qualities (see Mieg and Mackrodt, 2010): factors include the attractiveness of a place in competing for the ‘best brains’ (or a creative class) with their interest in tacit knowledge such as life-work balance; the high-quality atmosphere of public space as an inspirational place of encounter; the work environment between output-oriented routines and contemplative
leisure; and ‘communicative architecture’ [for specific urban planning projects, see Höger (2009)].

This article attempts to structure this subject by identifying forms of understanding the role of knowledge and its interaction with physical and contextual manifestations, exemplified at the case of Berlin. We will discuss the importance of this understanding in its various historical transformations and with regard to:

- urban and peripheral locations
- communicative relations to public space
- requisites for internal cooperation
- networking potentials of built configurations
- the quality and the impression of public space in architectural design.

A research design like this requires the integrative screening of literatures of different disciplines such as urban geography, urban sociology, urban economics, city planning, and social and architectural history.

The upon mentioned aspects, in our opinion, are gaining in importance because the ‘role of universities and research institutions in urban growth’ specifically aligns with cities’ transformation into strong, knowledge-based economies; it compels large, particularly ‘European’ cities to find central developmental resources, and for Berlin in particular, as a specifically deindustrialised city, this represents an indispensable potential.

Places of knowledge therefore play an increasingly important role in urban growth. They might be considered to be the mediators, indeed the institutional elements of local knowledge culture, as locally-based catalysts for the aspiration for knowledge and as partners in an interactive milieu distinguished by stimulation and cooperation.

3 The example of Berlin

As underscored, Berlin hopes to activate a productive use of knowledge to aid further development. Berlin is extraordinarily rich with scholarly institutions (http://www.berlin-sciences.com): four universities, seven colleges of applied science, four art academies, 23 federally accredited private colleges, more than 70 non-university research institutes (http://www.berlin.de/sen/bwf), 22 inner-city technology parks and/or start-up centres, 20 federal or state ministry-sponsored research institutions, diverse scholarly and art academies, centres, and colloquia. Research and development in Berlin contributes more to the GDP on average (3.4%), employs 27,000 people (year of reference: 2007; TSB, 2009), and can boast numerous successes such as awards for excellence and registered patents. Though its output can still be optimised, Berlin may be considered the municipal region in Germany with the most intensive and diverse knowledge base (see also Franz, 2009).

The respective institutions are spread throughout the entire city (see Figure 1). On the one hand, the map reveals a concentration of knowledge in what one might consider the ‘inner city’, especially in urban areas dating to the turn-of-the-century (within the S-Bahn
ring). On the other hand, Dahlem, Buch (‘health region’), and Adlershof (‘City of Science, Technology, and Media’) are pronounced peripheral nuclei; other thematic clusters in the city include transportation technology (TU Berlin), the university clinic Charité (together with BayerSchering, etc. for life sciences), and the cultural band between Museum Island and Potsdamer Platz.

**Figure 1** Map of Berlin showing the locations of publicly financed universities, academies and research institutes (see online version for colours)

Similar to the polymorphic form of the entire city (-region), one might also speak of ‘KnowledgeScape Berlin’ (Matthiesen, 2005). This KnowledgeScape emerged essentially at the turn of the 20th century. Today, this constellation must be contextualised: on the one hand, the federal government is generally responsible for scholarship and research and, on the other, the state of Berlin acts in its capacity for determining building codes while the city is responsible for city-regional land use planning. Berlin’s dual framework between the state’s sphere of influence and the city’s self-determination, a structure that dates back to the early 19th century, has been variously manifested in the positioning and built character of buildings for knowledge production in Berlin – and it has all taken place before the backdrop of shifting political systems. The respective concepts of knowledge over time provide significant avenues of explanation and interpretation for our questions: what understanding of interaction with and implementation of knowledge do exemplary knowledge places in Berlin convey? How is their spatial performance represented in the context of urban growth? What architectural-spatial qualities support the city’s growth goals?
4 Case studies

From the wealth of individual knowledge places – from universities and libraries to museums and theatres – we have here chosen to analyse a select group of publicly funded universities and research institutions, their histories, their profiles, and their specific locations. We will attempt to answer our questions by considering a wide spectrum of different types of institutes – Humboldt University of Berlin, Berlin University of Technology, Free University of Berlin, and City of Science Adlershof, listed chronologically according to the founding of the institution in its current form.

4.1 Case study 1: Humboldt University of Berlin (HU)

The 11 departments, interdisciplinary centres, and central institutes of the Humboldt University (HU) are spread among numerous individual buildings and ensembles that today can be grouped into three geographically discrete locations: the peripheral Adlershof campus and the two inner-city conglomerates. Those are the ‘north campus’, which stretches eastward from the Charité’s campus from Invalidenstraße in the north to the southern end of the former veterinary school (north of Schumannstraße), and the ‘Mitte campus’, whose buildings occupy both sides of the north-south axis of Luisenstraße/Geschwister-Scholl-Straße between Ziegelstraße to the north and Behrenstraße and Hausvogteiplatz/Mohrenstraße in the south (see Figure 2).

Figure 2 Berlin University around 1850, featuring the equestrian statue of Frederick the Great (see online version for colours)

The use of the word ‘campus’ to describe the HU’s networked and yet in no way coherently built sites – as well as its selective preference of the term ‘quartier’
or quarter for these locations (Standort- und bauliche Entwicklungsplanung der Berliner Universitätslandschaft, 2010) – makes apparent that the central physical-spatial configuration of the inner-city location with its significant historical influence has only been partially recognised as the special resource by means of which the HU can distinguish itself from all the other Berlin colleges, a resource that could be developed into a mission statement and could be used to strengthen and convey its identity. In order to emphasise the spatial potentials within the HU’s historically defined central campus, we will here first consider the genesis of the HU’s formative main building and its immediate environment.

4.1.1 Spatial development and importance of the HU’s main building

The HU’s main building lies along Berlin’s primary boulevard, Unter den Linden. The representative address is indeed the university’s calling card. The grounds today remain the institution’s de facto centrepiece, and it was in fact here that the university was founded. In the early 19th century, while Prussia found itself in a deep and extensive crisis as French troops marched into Berlin, it was the fields of education and science that, through special reform projects, were to help the country to recovery [see Vom Bruch, (2010), pp.25f; Schalenberg, 2004]. The most evident sign of these new priorities was Wilhelm von Humboldt’s 1810 initiative to open the Berlin University (Friedrich-Wilhelms-University since 1828; Humboldt University since 1949). The discussions concerning the founding centred around the concepts of nation and science [see Vom Bruch, (2010), p.26], to which Wilhelm von Humboldt gave a new and special meaning: differentiating it from the rising specialised technical colleges, Humboldt emphasised the ‘universality of science’. The new reform university in Berlin should no longer be a mere agency for transmitting knowledge. Research should be conducted in addition to and accompanying what was taught (Schleiermacher, 1808; Humboldt, 1809, 1810), shifting the relationship between professors and students toward partnership (Schleiermacher, 1808). Though the university’s independence from governmental influence was among the key principles in Humboldt’s model of reform, savvy rhetoric simultaneously helped anchor the scientific reforms and the newly founded university in Berlin as a national project [Schalenberg, (2004), p.107f]. The protagonists behind the foundation of the Berlin University, particularly King Frederick William III, understood how important the newly established Berlin University’s spatial-architectural performance in the urban environment was to manifesting and communicating inwardly and outwardly the idea of a ‘cultural nation’ as well as Prussia’s reformed academic ideals as a national renewal project. Despite this the university did not build any new buildings; but it was indeed the decision to transform the erstwhile Unter den Linden palace of Prince Henry into the main building of the new university that persuasively expressed the desired goals. The representative building was part of the Forum Fridericianum designed in 1740 by G.W. Knobelsdorff for Frederick the Great, a concept of a new monarchical-representative total ensemble that aimed to document the comprehensive reforms commenced by Frederick II. With its square-like opening to the Unter den Linden boulevard – the project for a new Royal Palace (later realised as Prince Henry’s palace) to the north and the opera as well as the Royal Library as the perfect complements to the south – the forum was incrementally realised, albeit in a different form, throughout the 18th century (see Figure 3).
This ensemble of buildings offered the perfect backdrop before which to create the new Berlin University in 1810. The modern, prominent knowledge site was thus thrust into direct material and visual comparison with the successful Prussian era of Frederick the Great and his projects in education and modernisation. King Frederick William III bestowed Prince Henry’s palace building to the newly founded university and, with this gesture, also underscored the particular importance of its proximity to the other scholarly buildings and institutions [cabinet order on October 21, 1810 in Gandert, (1985), p.50f], such as the buildings of the Akademie der Wissenschaften and the opposite Royal Library, which the king opened to students. The new Berlin University was thus visibly enhanced as a defining element – both functionally and content-wise – in the exclusive urban environment. While no funds were made available for the necessary functional conversion of the university building, the selection of the urban location signalled what an enormous importance for national and economic renewal Prussia attached to the resources of education, science, research, and culture.

Figure 3   Diagram of buildings on the HU’s ‘north campus’ and ‘Mitte campus’ (see online version for colours)

Source:   HU Berlin
The number of enrolled students increased with the incipient scholarly and economic successes that soon followed and with Berlin’s strong population increase fueled by advancing industrialisation. Due to this increase lack of space became a perpetual problem as early as the latter half of the 19th century. In the last third of the 19th century a series of new natural science institutional buildings were erected on individual properties without any conceptual relationship to one another. (See e.g., the chemical laboratory, Georgenstraße 1865 to 1867, the institute for physics, Reichstagsufer/Wilhelmstraße 1873 to 1878, physiological institute, Dorotheenstraße/Wilhelmstraße 1873 to 1877; Güttler, 2004) The increasing demand for space – paired with the ever more diverse needs of more specialised fields – made fundamental and long-term planning for the university’s further expansion essential (Laitko, 1991). In the mid 1890s, the Prussian cultural politician Friedrich Althoff developed and communicated a comprehensive mission statement for the physical development of the Berlin University. It was his idea to establish a ‘German Oxford’ on the government’s provincial domain stretching through, at that time still rural, Dahlem. [Vom Brocke, (1980), p.58], which meant importing the English campus model (Laitko,
1991). The general urban development dynamics of the growing metropolis – a notable expansion of new, attractive residential areas to the west (see Reif, 2008) – fueled the initiative. Moving the university to Dahlem intended to initiate a broad physical future concept that would both satisfy the demand for space long term with a coherent site and visually and conceptually link the science and research of the future with Berlin’s 1910 general municipal plan for a ‘garden metropolis’ (see Bodenschatz and Nägelke, 2010). While the emperor could be won over for the university’s planned relocation to Dahlem [Vom Brocke, (1980), p.58] the professors continued to refuse [Vom Bruch, (2010), p.29] for fear of marginalisation and the dissipation of the Humboldtian university ideal (Vom Bruch, 1997). Although only few institutes of the HU moved to Dahlem during the following years (as e.g., the Plant Physiological Institute, 1913) the villa colony was nevertheless on its way to becoming a scientific centre by 1910.

At the same time, the HU’s requisite expansion was further developed in the middle of the city. Following plans by Berlin’s head of municipal planning Ludwig Hoffmann, the old U-shaped building was extended with two perpendicular wings to the east and west (Nägelke, 2004). These additions enlarged the area of the main building by a third [Gandert, (1985), p.88]; the building took on a weightier appearance and moreover, with an expansive urban design concept, became more potently interlocked with its urban surroundings (see Figure 4). Hoffmann’s design called for throughways running both along and across the building, which would be extended into the design of the exterior space and lead to the inclusion of Hegelplatz to the north of Dorotheenstraße as well as create access to the newly erected Pergamon Museum. Only the building expansion project was completed in 1920. It asserted the university in its urban context, opened it to all sides, though particularly to the north, and put it in dialogue with the nearby museums; simultaneously it again highlighted Humboldt’s principles of universality.

4.1.2 Performance in the urban environment

Following German reunification 1990 the HU’s first order of action was to establish ‘addresses’ for its various scattered institutes. A number of representative, historical projects were completed in the course of comprehensive renovations: above all the old anatomy building and the former veterinary school on the north campus as well as the law building on Bebelplatz and the Old Palace on Unter den Linden. Systematically developing the university’s exterior spaces and important communicative subspaces (north campus) and opening further parts of buildings into the interior (various subprojects in the main building, such as the cafeteria and lecture/conference rooms) are the primary goals of physical development in the coming years (Standort- und bauliche Entwicklungsplanung der Berliner Universitätslandschaft, 2010; Dubrau and Gast.Leyser, 2011). The plans for spatial reorganisation in order to create spatial connections between the central main building, the Charité to the north, and Museum Island to the east, were addressed again in only recently completed construction projects.

Among these are the institute’s buildings facing the newly shaped Hegelplatz (see Figure 5) and the somewhat removed main library, the Jakob-und-Wilhelm-Grimm-Zentrum, forming a square in front of it. Yet, still the existing spatial relationships between these buildings are not really recognisable as a feature unique to the HU and a resource crucial to its identity.
The renovation and expansion of the main building, which today still represents the literal and academic heart of the HU [Berliner Wissenschaftskommission, (2007), p.24], is currently the focus of the university’s expansion efforts. The planned measures include moving large parts of the administration, expanding the representative and public spaces, expanding the cafeteria with a generous opening to the interior, and augmenting the garden courtyard with lecture halls that would facilitate a conference centre. Upon completion the humanities and classical and ancient studies (philosophy, history, Winckelmanninstitute/classic archaeology) will move into the main building. This choice of departments represents a conscious reference to Humboldt’s ideals of education and universality. Even if this ideal can hardly still be applied in the face of increasingly complex and specialised academic structures, the programmatic selection of these subjects to inhabit the central and representative location reveals that the HU is consciously and visually calling upon its singular – and physical – history to communicate these ideals both internally and externally.

4.2 Case study 2: Berlin University of Technology (TU)

The Berlin University of Technology (TU) is located in the inner city on a very compact site. At its founding in 1879 as a fusion of the Bauakademie (Building Academy) and the Gewerbeakademie (Vocational Academy), it stood for a qualitative increase in Prussia’s shift from technological academies to engineering sciences during the upswing of the industrial revolution. The site, located on the edge of the Tiergarten and several villa colonies and halfway between the two royal residences, was chosen for its ‘utter refinement’ [Konter, (1979), p.176]; in addition, its location in the ‘New West’ of Berlin put it in close proximity to the Physical and Technical Institute of the Reich (Physikalisch-Technische Reichsanstalt), the artillery and engineering school
(Artillerie- und Ingenieurschule) and the research station for water management and shipbuilding. This original site was expanded to include a ‘northern campus’ after 1945.

The TU’s main building was completed in 1884, its representative and style-setting neo-renaissance front facing the major thoroughfare leading from Brandenburger Gate to the Charlottenburg Palace (see Nägelke, 2000). It was a closed structure measuring $750 \times 170$ ft. [Ebert, (1977), p.44] and consisting of two rows organised in five courtyards; at four stories and a stature of some 98 ft, the building boasts a wide monumental forecourt and grand decorative facades. Together with the flanking building to the east (chemistry, 1884) and the west (expansion building, 1902 and 1913) in the same style and with cut-stone faces, the Technical College elicited strong statements from contemporaries: with its nearly 1,300 ft. sequence of facades, it made a ‘boastful’ impression [Schalenberg, (2008), p.193], was like a ‘force’ [Fritsch, 1884 in Bodenschatz, (2000), p.507], was a ‘powerful’ [Rürup, (1979), p.12], imposing, and monumental ‘palace of technical sciences’ [Brachmann and Suckale, (1999), p.47]. A building for mining and metallurgy was added to the south in 1916 [Peschken, (1979), p.179], for physics in 1932 and a student centre in 1936, and a row of shorter labs and workshops in a simpler yellow brick were built along the eastern edge facing Fasanenstraße (ibid., p.176) (see Figure 6).

**Figure 6** Diagram of buildings on the TU’s main campus (see online version for colours)

Plans to further develop the TU continued, however. The need for more space, the idea of creating a department for defence technology [initially to the north of the college/Rürup, (1979), p.26f], the need to expand the Friedrich-Wilhelm-Universität, and parts of the plans for Hitler’s ‘Germania’ capital finally culminated in the project of a ‘NS University City’, which sought a campus south of the Olympic stadium instead of in Dahlem; the
initial construction for the department of defense technology was discontinued as a result of the war [see also Ebert, (1977), p.75ff; Brachmann and Suckale, (1999), p.104ff].

The TU was founded anew after the war and the hold of fascism. With its new departments in the humanities and social sciences (1950) – as well as with the economic department (1952 [Technische Universität Berlin, (1965), p.283]) – the college aimed to develop an institution befitting of the open, democratic society. Wartime damages were all repaired by 1953. It was agreed upon that any further buildings should be concentrated around the historic location in order to avoid ‘isolated independent existences’ of individual academic fields [Dübbers, (1965), p.66]. An orientation toward a ‘modern’ and thus Anglo-US understanding of above all technological sciences became apparent [see Brachmann and Suckale, (1999), p.140].

Two approaches were taken. On the one hand, the TU campus expansion only encompassed a few and moderately dense structures to the east and on the opposite side of the east-west axis. Ten large buildings were erected on the north campus’s 24 acres [Dübbers, (1965), p. 66] between 1958 and 1968. These followed a unifying concept [see Brachmann and Suckale, (1999), p.141] and served individual faculties and institutes [see also Bodenschatz, (2003), p.73]: a structured and sparsely built campus arose around an interior space and greenways. The adjacent Ernst-Reuter-Platz was transformed into an archetype of modernism for (West-)Berlin, completed with various free-standing high-rises and the ‘Telefunken’ high-rise, which was transferred to the TU in 1975. Simultaneously the pre-existing campus was filled in. The southwest edge of the original campus was augmented with taller buildings for mining and metallurgy (1959), the cafeteria (1963), and physics (1984), the north campus with taller buildings for mathematics (1982) and electrical engineering (from 1989). The buildings from this era also reflect the zeitgeist of the times. Doubling the TU campus was structurally significant, while the individual buildings are paradigmatic of functional modernism.

The TU’s development plans for 2015 (Standort- und bauliche Entwicklungsplanung der Berliner Universitätslandschaft, 2010) will focus on optimising available assets and building new buildings on the ‘Charlottenburg campus’, including an eastern expansion extending to Zoologischer Garten train station. One stated goal (of six) is the “improvement of the TU campus including its urban integration” (ibid.).

4.2.1 Performance in the urban environment

Scholarly work requires communication with the constituents (the society) or with interested parties (stakeholders), with the general local knowledge culture and in concrete cooperation structures. Architectural representation and spatial interdependencies of buildings of knowledge production correlate with these communication needs and with the prevailing conception of the function of knowledge production. The following can be said regarding the TU Berlin.

The TU is primarily urban, organised extraordinarily compactly, and can be located fairly definitively in the city. Additional special application-based locations (such as at the Spreebogen or in Wedding) do not change this fact. The campus boasts no landmarks: the representative potential of the main building is hidden by its new façade, and the Telefunken high-rise is hardly advertised as housing the TU.

The majority of buildings have their roots in two main epochs: the Gründerzeit era between 1880 and 1913, a time characterised by Prussia and Germany’s accelerating feudalistic industrialisation. These buildings were demonstratively representative by
design in the contemporary habitus and architectural style of state institutions – be they courts, barracks, or post offices – and thus hardly specific; their structure was monolithic and distanced from their surroundings, their effect was “monumental, authoritarian, and defensive” (Schade, 1979), and with their physical image they did more to convey a gesture of distance and isolation from the environment much more than to give any impression of their technological mandate. These buildings seem to beg for respect and to exude exclusivity more than to aim to generate curiosity. Concurrently the scholarly achievements of the Technical College excelled.

The second period between 1955 and 1970, commonly known as the period of reconstruction, was marked in Germany by accelerated industrial Fordism. The buildings from this phase were decisively functional in nature and – no matter office, hospital, or school – reflect general principles of modernism with their completely different architectural signatures and yet with unmistakable trappings; their effects range from individual to autistic even in instances that their ensembles suggest the possibility of cooperation.

The buildings and campuses of both eras seem equally insular relative to their markedly urban immediate surroundings [Bodenschatz, (2000), p.511] and – in both structure and atmosphere – hardly accessible to the outside public. This understanding of [the relationship between] scholarship and city, however, seems to be changing.

**Figure 7** View of Straße des 17 (see online version for colours)

Notes: Juni from the East through the TU campus [north campus to the right/main campus (including the newly constructed building front of the main building) to the left] toward the ‘Telefunken’ high-rise at Ernst-Reuter-Platz.

Source: TU Berin; photo: Elke Weiß (March 9, 2011)

The TU itself has reflected on how little the university represents itself as open or networked in the urban context. The boulevard Straße des 17. Juni – technically an axis but potentially a plaza – manifests the TU’s deficits in its performance in the urban
environment (see Figure 7) (see also Bodenschatz, 2000): as with buildings that recall rather unspecific bureaucratic offices [see also Bodenschatz, (2003), pp.72f], the TU misses the opportunity to make use of crucial potential to stimulate those interested in knowledge. It falls short of making an attractive offer to the scholars (‘brains’) who increasingly feel reliant on a stimulating urban environment (see Brake, 2010; Höger, 2009) and thus runs a deficit vis-à-vis the general public of the self-proclaimed knowledge city (see above).

The areas in which the TU has contact to other interesting cooperation partners or stakeholders are now – through the founding of new companies, start-up-technology and innovation centres – being activated and more diversely put into play. These developments mark a shift from the university’s position as an exporter of scholarly services to broker of products and ideas in a more open network.

The urban development department of the Berlin senate has realised the potential that can be mobilised with the TU and the neighbouring University of the Arts (Universität der Künste Berlin, UdK). The city district and the universities have joined forces in a project to promote the “sustainable vitalisation of the science location Charlottenburg” (http://www.navi-bc.de; accessed on October 2010), in which the relatively disparate inner-city constellations between the TU’s north campus and the Spreebogen are to be transformed by academic fields with particularly urban-oriented working methods in order to generate experimental exchange between the sciences and industry. The master plan for the University Campus TU/UdK, in the larger framework of the revitalisation of Berlin ‘City West’ (2009), also includes three options. It aims to attend to the physical proximity of the TU, this huge science building complex, to the Zoologischer Garten hub. The underdeveloped synergies with the urban areas west of the TU are to be addressed with the idea of a ‘university quarter’. With regards to the creative economy, the potential interactions between technology and art are to be strengthened by the direct neighbours TU and UdK.

The TU has since recognised how essential its performance in the urban environment can be. As a result of this the TU managers have focused their efforts at winning the Excellence Initiative 2011 on the ‘Charlottenburg Campus’ – as a place to both live and work – where they hoped to create a motivating and networked knowledge place of the future. The TU has now started the process of cultivating its urban integration.

4.3 Case study 3: Free University of Berlin (FU)

The Free University of Berlin (FU) is mainly located in Berlin’s villa suburb Dahlem. Since the 1990s the FU has strived toward geographical concentration and the creation of an interconnected university campus. Today the buildings of the main campus are divided between two primary clusters: the original campus on Garstäße and Boltzmannstraße and the new campus to the northeast, which is bisected by Fabesstraße into two equally large subgroups, the large-scale structural buildings of the 1960s to the southwest (the so-called ‘Rost- and Silberlaube’), which house the humanities and social sciences, and the individual buildings erected for the natural sciences between the 1960s and 1990s to the northeast (see Figure 8). There are two additional peripheral locations in Lankwitz (geosciences) and Düppel (veterinary medicine), of which only the latter is being further developed in the medium term.
4.3.1 Spatial development between pragmatism and vision

The FU was founded in 1948 at the dawn of the Cold war as a secession from the HU, then in Berlin’s Soviet-occupied zone, as a new institution in Dahlem in West Berlin’s US sector. The mostly idyllic villa colony saw a new interpretation of the traditional academic campus and offered an ideal backdrop for a new, free university – the late realisation of the ‘German Oxford’ envisioned in 1910.

While it had proven impossible to relocate the HU to Dahlem in the early 20th century, the impetus to found non-university research institutions with emphatic affinity to economic protagonists had been spurred on vigorously (see McClelland, 2010). Prussian cultural politician Friedrich Althoff was a driving force behind the dynamic, and his efforts culminated in the foundation of the Kaiser-Wilhelm-Gesellschaft zur Förderung der Wissenschaften (KWG, today the Max-Planck-Gesellschaft) (see Vom Brocke, 1990, 1996). The institution was to facilitate basic and applied research freed from the teaching obligations of universities and in closer cooperation with the German economy. The new research and science institutions were a direct reaction to the structural, substantial, and organisational problems of the university, which proved incapable of flexibly adjusting to the immense increase in and specialisation of research’s
demands at the beginning of the 20th century. The KWG, built in 1911, aimed to enable just that. The institutes for chemistry, physical sciences, electrochemistry, fibre chemistry for cell physiology, and astrophysics built in Dahlem specifically targeted future fields and secured competitive scientific advantages for Germany into the interwar period. The KWG’s buildings in Dahlem were erected in close proximity to one another but without an overarching urban design concept. The buildings’ interiors fulfilled their technical requirements while their exterior appearance – historicist or in the style of new objectivity – more or less blended into the surrounding villa neighbourhood (Bollé, 2004). No connecting or communicative exterior space emerged between the individual groups of buildings that might have stimulated informal or coincidental interaction between scholars (see Figure 9).

**Figure 9** Site plan of Kaiser-Wilhelm-Gesellschaft institutes in Dahlem around 1912

The spatial structure and identity of the villa suburb of Dahlem in 1910 was thus largely shaped by the side-by-side existence of exclusive residences and academic and cultural institutions – not only the KWG but also the botanical museum, university institutes, the Material Testing Agency, ethnology museum, secret state archives, etc. After the long-term division of Berlin became apparent in 1948, and the students of the HU had on their own initiative battled for a ‘free’ university, Dahlem, preconditioned as place of knowledge production (and located in the US sector), provided the logical setting to found a new university.

The newly founded university was able to use the scattered buildings of the HU and the former KWG, and villas in the neighbourhood were bought and rented (Lönnendonker, 1988; Kubicki and Lönnendonker, 2008). Shaped by various chance opportunities and improvisations, the FU’s geographical structure was heterogeneous and dispersed. The US’ generous financial support enabled the construction of the first new buildings along Garystraße, which introduced an US-style university campus to Dahlem [Tent, (1988), p.244]. The ensemble of buildings – including the Henry-Ford-Bau (main building with Aula Magna) and library and the neighbouring economics departments as well as a series of small buildings – gave a spatially organised impression, a modestly
representative, transparent modern style that melded into its environment [see Muthesius, (2003), pp.20f; Bollé and Hundertmark, 2004). Continually increasing enrolment into the early 1960s necessitated a broad new plan. For an 11 acre plot between Habelschwerdter Allee and Fabeckstraße French architects Candilis, Josic and Woods designed a grid-like structure that could be extended in all directions. The seminar and institute rooms, which are grouped around intimate inner courtyards (see Figure 10), are organised along long, straight ‘streets’ that run through the building.

**Figure 10** View into an inner courtyard of the FU institute building ‘Silberlaube’ (see online version for colours)

The concept hoped to engender openness, spatial proximity, the opportunity to communicate, chance encounters, and brief meetings and should remain flexible to adapt to new situations. The architects saw their work as a built manifesto, a theoretical model for an open, horizontally organised urban society (Geipel, 2005). They aimed to contrast the exclusive emptiness of the surrounding villa colony with urban qualities such as encounters, chance, and exchange (Tzonis, 2005). The completion of the FU’s central buildings, in which the humanities and natural sciences were first housed, coincided with the student protests in the late 1960s. The architects’ concept was hardly understood by the buildings’ users and largely rejected. The first challenge was getting a handle on the experimental building’s technical problems (a novel façade system by Jean Prouvè), and since 1997 the priority has been modernising the building’s inner functions and spatial configuration. Foster + Partners of London designed a concept to reduce the exceeding complexity of the reticulated interior structure and to create institute ‘addresses’. The welcoming design of the entrances bolsters the building’s new clarity and facilitates better orientation. The philological library – an idiosyncratically formed ‘implant’ (Kleilein, 2005) – imparts the sprawling building structure with a ‘communicative and
Concepts of pride, brand, and communication

publicity-friendly ‘image’” (Geipel, 2005). The planned third phase of construction for the FU’s ‘small departments’ will further work to qualify the structuralist concepts of the 1960s and thereby help ‘strengthen the FU’s current identity’ (Staab, 2005).

4.3.2 Performance in the urban environment and communication

The FU is not an example of a classic campus built in the open countryside as Höger and Christiaanse (2007) suggests. This university site benefits from an urban network and some hundred years of history as a place of science and research. The early-20th-century expansion of Dahlem’s residential neighbourhood to include scientific sites was essentially predestined by the city’s modernist urban mission statement, which coincided with the efficient development of Berlin’s public transportation and the extension of the subway to Dahlem.

Today the subway also provides a fast and sustainable link to the city; clear signage pointing out nearby transportation (and its media dissemination) signalises the central import of this urban connection for the FU.

Since 2004, the FU has developed a clear urban design concept and has made strides to implement it: the ‘green-belt’ leitmotiv aims prospectively to interlink both campuses in Dahlem with an effective new design for the exterior spaces (see Figure 8) [Masterplan 2015, in Standort- und bauliche Entwicklungsplanung der Berliner Universitätslandschaft (2010)]. Upgrading the exterior spaces and implementing a communicative and qualified concept for the open spaces, in which Dahlem’s university buildings can align also visually, emphasises the FU as a knowledge place that fosters communication, nature and recreation.

Figure 11 View into the entrance hall of the Philological Library of the FU (see online version for colours)

Source: FU Berlin; photo: Philipp von Recklinghausen

Today, the FU is focusing on the recognisability of its geographical-structural qualities and its content-based goals. The publicly successful key buildings (the historically accurate renovation of the main building, the conceptual reconfiguration of the ‘Rost- and Silberlaube’ with the philological library by Sir Norman Foster (see Figure 11), the Campus Hotel and Conference Center by Helmut Jahn) have increased the university’s
visibility – physically, conceptually, and in the media – and have strengthened the structural potentials to extend its networks locally and beyond.

4.4 Case study 4: Adlershof

The ‘city of science, technology, and media’ in Adlershof lies on the periphery of Berlin. Adlershof was initiated by the Berlin senate as an ‘integrated business and technology site’ in March of 1991 to promote “synergies between research and industry and the accelerated transformation of innovation into production” [Hertel and Schmitz, (2010), p.43].

The location, however, has a history of its own. The first German motor airplane landing field was opened in suburban Johannisthal/Adlershof in 1909; the first air traffic was scheduled in 1919 [Senatsverwaltung Stadtentwicklung und Umweltschutz Berlin, (1994), p.2]; and Johannisthal became a Mecca for aviators in the European aviation industry [Senatsverwaltung Stadtentwicklung und Umweltschutz Berlin, (1994), p.11]. The Deutsche Versuchsanstalt für Luftfahrt (German Test Facilities for Aviation/DVL) was founded here in 1912. Before World War II National Socialist Germany had concentrated its entire R&D department of the aviation industry there. With pilot stations and test facilities (wind tunnels, etc.) for all German airplane producers and institutes for aerodynamics, navigation, material research/testing, control engineering, engine technology, aerial photography technology, electrophysics, etc., Adlershof had risen to become global market leader in some areas. Germany’s first major film studios had been established here after 1918.

This long history of metamorphosis imbued Adlershof with the aura of entrepreneurial innovation. It was reestablished in 1990 on a defined campus (1.6 square miles) as, City of Science Adlershof’ and is now managed by an operating company (Wista GmbH) (see Herfert, 2005; Dörhage, 1999), enjoys investments of some 1.8 billion Euro (1991 to 2009), and with its 14,000 employees (2009) turns over approximately 1.8 billion Euro. Its focus lies on photonics and optics, micro-systems and materials, communication technology (IT) and media, biotechnology and the environment, and photovoltaics. The Science and Technology Park is home to 339 private companies and 11 non-university research institutes; the HU campus there has six institutes for the natural sciences and geography; Media City is made up of 139 private companies, while the area for business and services is home to 281.

Boasting this constellation Adlershof can now count itself among leading centres of innovation worldwide and, with its orientation toward urban growth qua knowledge application (see also Mieg and Mackrodt, 2010), as Berlin’s absolute post-reunification success story.

4.4.1 Performance in the built environment

Adlershof was explicitly conceived as a city of science and business – not as a (technology or innovation) park. The Berlin senate’s 1992 policy decision [see also Senatsverwaltung Stadtentwicklung und Umweltschutz Berlin, (1994), p.34] made the case for a high-quality business site for a new generation of technology parks with urban elements, relatively high density (floor-space index: 1.0–2.0), and small-scale mixed-use structures including residential uses (ibid., p.10).
This direction was based on a set of nuanced assumptions: the necessity of ‘social connectivity’ among the individual (large-scale) institutions, of an innovative technological-scholarly milieu to facilitate the transfer of knowledge, and of exchange/communication between technicians, researchers, students, young professionals, and the public [Berlin Adlershof Aufbau Gesellschaft, (1995), p.12f; Hoffmann-Axthelm and Strecker, 1995]. That is, an ‘urban milieu’ – as consciously distinct from the traditional ivory tower – that encourages “the important social context of science” [Schäche, (2006), p.59]. New working conditions in the sciences highlighted the “interdependency between actions and contemplation” (ibid., p.62) and made the case for better “quality of experience” (ibid.), high-quality ‘design of public space’, as well as a “place to linger and identify with” (ibid., p.60) and “innovative urban architecture” (ibid.): in total, an ‘architectural culture’ that is both a “factor in the competition between cities” (ibid., p.62) and a marketing tool (such as the ‘value of an address’s image’) (ibid., p.60).

Adlershof’s emphatic orientation toward urban land use structures as well as the current agenda of sustainability – in the sense of the “mixed use, compact structure, public space, and socio-cultural qualities” of the ‘European city’, that is, urbanity [Schäche, (2006), p.59] – is reflected in these goals. Following the framework of this conception and a further resolution by the Berlin senate 1993 [Senatsverwaltung Stadtentwicklung und Umweltschutz Berlin, (1994), p.35], the development of Adlershof was set into motion with catchphrases about “urban landscape consisting of business, science, living and relaxation” (ibid., p.2), “a new urban district”, with “attractive mixed uses” (ibid.) and living spaces for some 5,000 residents in order to secure the capacity for common facilities and services (ibid., p.11).

Thematically grouped locations and public space determined the structure, particularly the central axis ‘boulevard’ (see Figure 12).

**Figure 12** Bird’s-eye view of the ‘Science Campus’ at Adlershof (diagonal: ‘boulevard’/centre: ‘forum’) (see online version for colours)
The developers countless on design ordinance to help assure ‘innovative urban architecture’, favouring instead competitions, positive examples, and the personal interest of the individual builders to present an appealing ‘calling card’. Preserving historical buildings – such as the thermally constant spherical labs, the large wind tunnel, the trundle wind tunnel, and airplane hangars – as technical monuments was important for creating identity for Adlershof. Establishing a recognisable image was supported in part by the very expressive architecture of individual new buildings (see Wista, 2007) as well as by the efforts to find an architectural language specific to knowledge places (Henn, 2004).

4.4.2 Adlershof’s contribution as knowledge place to urban growth

Adlershof is a Zwischenstadt-like knowledge place (see Herfert, 2005) that sees itself as a ‘city within the city’ (Berlin Adlershof Aufbau Gesellschaft, 2003). The spatial urban arrangement has been an important topic for Adlershof and the protagonists active there: the logo ‘Berlin Adlershof City of Science, Technology, and Media’ and architectural publications (Berlin Adlershof Aufbau Gesellschaft, 1999; Wista, 2007) reveal this focus. After overcoming long fostered misgivings (see Simons, 2003) Adlershof is now increasingly considered a very successful knowledge place – economically (DIW, 2008) as well as critically (Herfert, 2005). A corresponding opinion is that the synergetic energy facilitated by the on-site factors (see Mieg and Mackrodt, 2010) as well as the interactions engendered through knowledge networks and milieus thanks to proximity and dependence on space (Jähnke, 2009) contribute significantly to Adlershof’s success. To what extent this can also be extended to the spatial dimension of the knowledge city is not yet evident: systematic feedback has shown that the ‘atmosphere’, ‘urban qualities’,...
and ‘flair/ambiance’ as prerequisite for inspirational encounters and work-life balance for the world’s ‘best brains’ needs improvement (see Chang, 2007).

4.4.3 What do the case studies show?

The HU has completed series of high-quality, architectural and historically landmarked individual projects in the city centre since 1990. The expansion and renovation of the main building marks the next phase of the university’s move to improve its public appearance. The projects have a consistently high potential to network its urban surroundings physically and intellectually. These spatial potentials, however, have not yet been made sufficiently visible or palpable. The messages the HU expounds about its academic possibilities and goals have hardly been linked to the university’s spatial resources, nor does the HU’s media and web presence adequately emphasise its architectural and spatial possibilities. The networks, permeation, transparency, and relationships that take quite different forms in the urban environment – in larger and smaller squares, entrances, throughways, facades, courtyards, and park-like green spaces – could each be made manifest in their spatial, historical, and intellectual interconnectedness. A comprehensive spatial mission statement could be helpful in achieving this.

The TU is compactly located in the inner city, largely attached to the urban structures of Berlin City West and the district Charlottenburg.

The location’s urban embedding and networking, however, is lacking. The TU is a fortress in the city, and is widely considered so. One vision for the most part considers only the improvement of internal access routes. Elaborate plans for external institutional and small-scale cooperation have been laid out but have yet to be fulfilled. The TU has great physical potential to generate ‘interior public space’, but this too has been insufficiently utilised. Using elements of its location to create identity has as of yet not been practiced.

The buildings’ communicative abilities are underdeveloped. Internally, the disciplinary focus of individual buildings has proven difficult to crack; the surrounding public space receives no impetus from what is happening in the individual buildings, receives no intellectual fodder that might inspire a curious public audience. It is noteworthy that the TU focused its submission for the Excellence Initiative 2011 on the Charlottenburg campus as a work-life world for a motivated and networked knowledge place of the future. This approach would indeed drive the TU to cultivate its embedding in the urban environment.

The FU’s spatial mission statement for the ‘green-belt’ expresses its goal of being a campus university with high quality of inner and outer spaces and in relationship to the attractive inner city as well as the ‘world’ (conference hotel in the heart of the site, large-format public installations and emblematic/meaningful architecture that hope to make science experiential). In order to strengthen the transfer between science and business, the FU is cooperating with neighbouring scholarly institutions and private companies (see the biotechnology park); space has been reserved to accommodate additional cooperative projects. The FU has made great efforts to renovate, improve, and augment its building complexes and to utilise its spatial-architectural strengths in its overall identity: web presentation, promotional films and materials (see Präsidium der Freien Universität Berlin, 2004, 2005, 2007) all conspicuously draw upon the high-quality architecture and spatial qualities of the area [interior and exterior space...
In the future, the FU should continue to pursue its overarching goal to create a unified campus at a single location in order to strengthen its economic and local networks. Adlershof is located on the urban periphery without direct links to urban structures. The general concept and challenge is to create a network explicitly to generate synergies. Identifiable, thematic clusters organise the site into clearly observable campuses. Adlershof’s suburban location has made the need to become urban extremely virulent. The founding concept emphasises a ‘City of Science, Technology, and Media’; how to execute this mandate is a continual issue. Being a city is part and parcel of creating its identity, and the quality of the built environment is communicated intensively. The buildings’ communicative abilities go hand in hand with Adlershof’s mode of setting standards. Until now individual buildings have pursued their own high standards, which are potentially communicated through multi-institutional buildings. Externally, however, the quality of public space as a meeting place is in need of improvement.

‘Location quality and atmosphere’ is currently one of the three goals (in addition to ‘outstanding growth’ and ‘targeted internationalisation’) in the plan of action for 2020. Adlershof is actively addressing the challenges of transforming a suburban knowledge place into an urban environment.

5 Conclusions: Berlin’s development into a knowledge city

The relationship in Berlin between universities/research institutes as places of knowledge and urban development in the sense of urban growth can currently be summarised as follows: since 2005 an economic development has emerged that brings Berlin closer to nationwide indices. Knowledge-intensive economic activities have played a major role in this turnaround (Gornig, 2010). At the same time Berlin has enjoyed a strong influx of young, well-educated people.

Public scholarly institutions are – caught between budget restraints and the need to distinguish themselves – undergoing a massive restructuring, the first one taking effect in form of periodic university contracts outlining concrete performance goals and autonomously managed funds, the second one put into action by the federal Excellence Initiative competition, in which Berlin universities have also been successful.

Politically, Berlin hopes to mitigate the communication void – a lack of transfer – between the city’s rich fund of scholarship and the sphere of private business: directives for economic ‘specialised areas’ (http://www.berlin.de/sen/bwf) and the ‘Masterplan ‘Wissen schafft’ Berlins Zukunft!’ (Master plan Knowledge is Berlin’s Future, http://www.berlin.de/sen/bwf, 2007) are intended to fill this void. Likewise the communication of science to the public – such as the annual ‘long night of science’ – beyond just temporary events (such as large exhibitions) shall contribute to this aim. In addition, Berlin has proclaimed itself a ‘creative city’, referring to the city’s attractiveness for artists and bohemians on the basis of its specific urban qualities. All in all the new stress for Berlin to become a Knowledge City put the universities under pressure to give themselves a clearer profile.
References


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