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Big Science and urban morphogenesis: the case of Lund University

Mattias Kärrholm and Albena Yaneva

Introduction

Universities have always had a large impact on cities, and this impact grew over the late twentieth century. Their physical footprint increased in particular with the introduction of Big Science and the first large synchrotrons during the 1950s (Hallonsten, 2016: 18). The development of nanoscience during the 1980s triggered an unprecedented increase in the construction and use of large-scale facilities since, paradoxically, 'to examine the smallest details of nature, the largest instruments must be used' (Wilson, 1999: 459). Big Science has today become an important part of economic growth and innovation and, as it takes on new scales and dimensions, has led to universities progressively becoming city-builders. In the last couple of decades, we have witnessed the university leaving the single building or even the campus as a model. This strategy of spatial expansion contributes to the development of entire city districts and turns the university into a driver for urban growth, and it has also come at the expense of a disconnect between the university and city life.

What kind of urban spaces does this new kind of university produce? What kind of relation to the city does it sustain? How has this changed over time? Drawing on the case of the Swedish city Lund and its university, this chapter investigates how the changing spatiality of the university (understood as sites of university buildings, positioning and location) affects the city, its heritage and urban futures. As universities grow and their buildings become increasingly specialised, zoning and enclosure

into larger territories becomes inevitable. Rather than being incorporated within the city, vast research facilities now accommodate visitor and conference centres, science museums, university shops and so on, to deal with the integration between research and urban public life. As the gap between the university and the city gradually widens, the pedagogical ways of visualising, advertising and branding science have become more important, affecting the ways in which universities are designed, built and subsequently seen as places of heritage. Research is not just done behind closed doors in the city, but also inside large mega structures in the city outskirts, and this has also raised a new demand for outreach and communication. If in the past (and especially in the 1950s and 1960s) many campus buildings turned their back on their neighbours and did not encourage engagement with urban publics, the growing concern that currently drives the design and planning processes of contemporary campus buildings is how to open up the university premises. Design features such as atria, viewing corridors and the like are meant to draw the attention of passers-by and invite them to come and witness ‘science in action’, to see high-tech equipment and blue-gowned human figures working in a lab, or academics from different disciplines running around a lit and airy atrium. Yet, more importantly, urban publics can witness that ‘public money’ is being used in a sensible way.¹

Following how Lund, a city of medieval origin, and its university have co-developed over the centuries, this chapter scrutinises how, far from being a simple offshoot of national or city politics, the university and its specific spatial logic has become a motor for its urban development. The chapter also outlines a new way to deal with the university’s history and heritage. A recent development showcases this specific relationship between city Politics (with capital P) and university growth. Between the 2000s and 2010s, Lund University developed new large-scale facilities for nanoscience and particle physics, including a synchrotron light source called MAX IV (fourth generation at Lund University) that was completed in 2016. Additionally, the European Spallation Source (ESS) is currently under construction, the result of a partnership of 17 European countries, and will be the world’s most powerful pulsed neutron source when it is put into use in 2023. The ESS stretches over about 1 km of land in the north-east part of Lund. In relation to these research facilities, a new urban development, known as Science Village Scandinavia, is planned as a city for scientists with additional nano labs and departments, dwellings for researchers, restaurants, offices, gyms, a visitor centre and the Lund Science Centre. Aspiring to work as a meeting place between science and society, Science Village Scandinavia is expected to: ‘... develop into a



Figure 9.1 Plan of the ‘Science Road’ (in orange) and the new tramway of Lund 2019. Source: City Office, Lund Municipality



Figure 9.2 Scale model of Science Village, with MAX IV in the upper left corner and part of ESS in the lower right. The model was publicly exhibited at a venue in Lund city centre, 2018. Photo: M. Kärrholm

dynamic, creative and sustainable city district that not only stimulates world-class research but also provides a forum for interaction with society' ([Science Village Scandinavia, 2020](#)).

Science Village Scandinavia is part of the new urban district of Brunnsög, which is planned to accommodate an additional 40,000 people on top of the city of Lund's existing 92,000 inhabitants (as of 2018). The ESS science facilities and the Science Village are connected to the city centre of Lund through a tramway that traces the 'Science Road' (Kunskapsstråket), a line through the urban tissue of greater Lund (see [Figures 9.1](#) and [9.2](#)).

The ESS was already, before it was even built, widely debated and researched by scholars, who often focused on it as a political project ([Hallonsten, 2012](#)), its legitimisation ([Kaiserfeld and O'Dell, 2013](#)) and its history and potential use both in research and as an object of research in itself ([Rekers and Sandell, 2016](#); [Hallonsten, 2018](#)). Thus, the ESS has often been regarded as a projection of big Politics and decision-making at governmental and European Union level. Our ambition in this chapter is to shift the attention towards the university's way of spatially reorganising the city that has its own political dimension (or, politics with small p). We ask: what kind of spaces do the university claim? Through what kind of morphologies? How does this affect existing urban dynamics and structures? How is this gradually shifting the traditional centre of politics and heritage? By looking closely at the spatial evolution of the university, and its development from medieval times to the most recent developments with the ESS, we trace how the spatial positioning and proliferation of specific university buildings within the city affects urban growth, redefines the existing social and cultural patterns of life in the city of Lund and ultimately generates new connections, new relational politics ([Yaneva, 2017](#)).

In addition, the idea of an urban planning focusing around routes (such as the tramway and the Science Road) may also question traditional ideas about Lund's urban development (by focusing on areas rather than routes as the basic object of development). These new ideas not only have an impact on future developments, but also play a part in re-evaluating the heritage of the university. The spatial expansion ignites new processes of re- and de-heritagisation where the value of both old and future heritage sites is being rewritten ([Sjöholm, 2016](#)).

The spatial expansion of Lund University

European universities began their existence as a 'child' of the city. From their beginnings in the thirteenth and fourteenth centuries, universities

depended on their host cities to get students and supplies, as well as to enable an academic community (Hyde, 1988). But cities also depended on their universities. The city of Bologna, for example, encountered problems with scholars moving to competing universities in other cities during the 1300s, and legislated against it (Ferruolo, 1988: 23). Other universities provide examples of a move towards more anti-urban or more pastoral ideals, especially in the Anglo-American tradition (Bender, 1988a), and even invented new urban morphological patterns in this spirit. In *The City in History*, Lewis Mumford notes that: 'In the original layout of the colleges in Oxford and Cambridge, medieval planning made its most original contributions to civic design: the superblock and the urban precinct divorced from the ancient network of alleys and streets' (Mumford, 1961: 276).

The superblock, so much favoured by the anti-urban modernists, can thus be seen as a descendant of early European university building. The tradition of the anti-urban and even pastoral university grew even more strongly in the USA. The word 'campus' was first used to name the greensward around Nassau Hall at Princeton in the 1700s, and the first properly built campus is said to be the 1817 plan of the University of Virginia in Charlottesville. Soon, the scientific ideal was, as Thomas Bender has suggested, to aim for a denial of place where the academic profession and international relations severed academic life from locality (Bender, 1988a: 3). The role of large cities as attractors for students and teachers has, however, continued to be important, and the struggle between urban and the anti-urban tendencies is an ongoing one.

In Lund, education at university level began in a monastery in the early fifteenth century, but a proper university was not founded until 1666. In contrast to other European countries, Sweden began universities not in relation to central power but in connection to dioceses and their cathedrals in different provinces (Klinge, Knapas, Leikola and Strömberg, 1988: 262). Sweden's first university was founded in Uppsala in 1477, with a second in Dorpat (now Tartu, Estonia) in 1632; the third was Åbo (now Turku, Finland) in 1640; the fourth was Lund in Scania, a city and region then newly captured from the Danes. The first important building used by Lund University was the cathedral, where lectures were held, but the university also used Kungshuset (The king's house), a building to the north of the cathedral, built as residence for the (then Danish) king in Lund in the sixteenth century. In 1744, the area around Kungshuset was walled and a park was planned by the celebrated architect Carl Hårleman, leaving the city with a small, central and clearly demarcated university area and park, secluded yet positioned in the very centre of the city. A few

years later, a botanical garden with an orangery, also designed by Hårleman, was added to the north of Kungshuset (Johansson, 1982: 101–20; Tägil, 2001).

It was only in the nineteenth century that the first purpose-built scientific buildings, identifiable as building types of their own, were built in Lund. Since the early days of the European universities, buildings were used to attract students and to lure quality teachers. In the case of Bologna mentioned above, the problem of migrating professors during the 1300s was first confronted with legislation (including death penalty as a punishment), but it has been argued that what motivated scholars to stay was in fact the university's first building, a chapel exclusively built for scholars in 1322 (Ferruolo, 1988: 23). Similarly, there had always been a competition for students and teachers between Lund and other university cities, especially Uppsala. However, there was also a debate in the 1820s, and again in the 1860s, about centralisation, that suggested closing the old universities in Uppsala and Lund and opening one in Stockholm instead. There was a struggle for power, which Stockholm eventually lost, and the erection of new buildings both in Uppsala and Lund probably had its part to play in this outcome (Lindroth, 1976: 150–57; Kristenson, 1990: 16).

Apart from the old orangery, and the administration building 'Kuggis' built in 1802 (as a wing to Kungshuset), the first purpose built scientific building in Lund was the Department of Zoology, Chemistry and Physics, built in 1842.² Following this, a building for Anatomy opened in 1853, a Chemical department in 1863, a new botanical garden was built in 1862–67 and the observatory building in 1867. Lund University thus expanded in the city centre and, by 1882, a new main university building, designed by Helgo Zettervall, was also erected (see Figure 9.3). This building in Lund was different from its contemporaries at several other universities at the time. Whereas main university buildings often faced a square or an important urban space (as the case is with Copenhagen University), Zettervall's building instead looked inwards towards the park-like University Place (*Universitetsplatsen*) and turned its back to the city and its main street, Kyrkogatan (Kristenson 1990; Tägil, 2001). The university consisted of a miniature city (a building and a park) within the city of Lund, and this formed an original urban concept; a concept that has evolved spatially over the years with the development of various campus strategies and science parks.

During the second half of the nineteenth century, Lund University started, for the first time, to build outside the perimeters of the old urban walls. This included the botanical garden and the three new large buildings, the Department of Physics (1886), Physiology (1893) and the



Figure 9.3 Universitetsplatsen, with Kungshuset (1580s) to the left and Helgo Zettervall's new main university building from 1882 to the right – with four sphinxes on top. Photo: M. Kärrholm, 2020

new building for Anatomy (1897) (Kristenson, 1990: 281; Tägil, 2001: 16). The expansion outside the walls happened in a north-east direction, with several further new buildings emerging during the 1920s. A new, large campus area was also built as the Lund Institute of Technology (LTH), which opened in 1961. The campus area, completed in 1968, was soon incorporated as a part of the university. In 1983, a new kind of science park, Ideon, was founded next to the LTH campus as a place where private companies and research could interact. Ideon has today grown even bigger than the LTH campus itself (see Figure 9.1).

We could argue that the further expansion of the university to the north-east follows a direction set already in the nineteenth century. However, whereas previous expansions more-or-less followed the emerging layers of the city, where the north-east part of each layer could be seen as being a segment of the spatial growth of the university, the most recent expansion embraces a fully different shape and scale. With the MAX IV and the ESS, the university, with the helping hand of the Municipality of Lund, takes on the role as a city builder. As city development focused around the Science Road and the partly intersecting new tramway – both cutting through former expansion zones (see Figure 9.4) – what the MAX IV and the ESS add is not simply a new urban layer, but a self-sustained urban entity that substantially stretches the borders

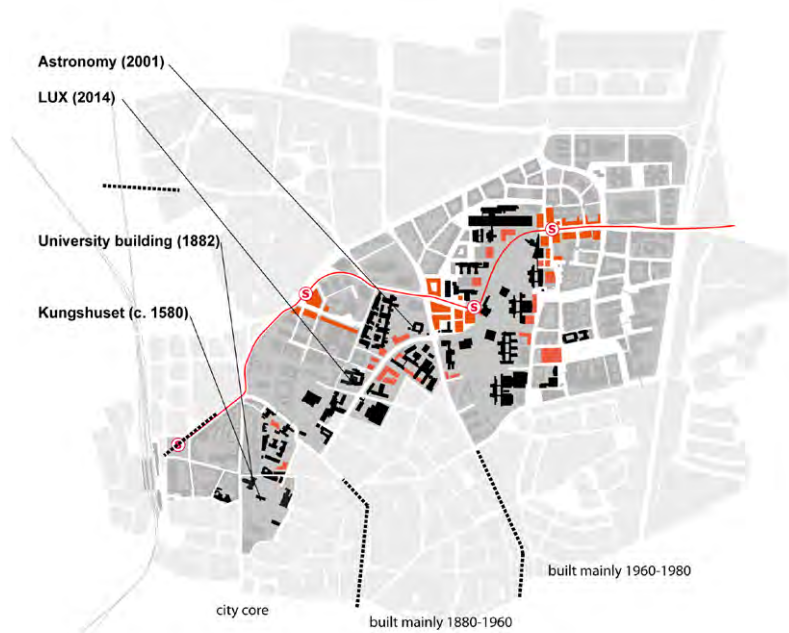


Figure 9.4 The Lund University area. University buildings are in black and planned new buildings are in red. The urban layers of different building ages are divided by the dotted lines. Map: M. Kärrholm

of the city and leads to renegotiations of the boundaries of the existing areas. During the first decade of the 2000s, the university expanded mostly through the densification of existing areas and additions to existing buildings (Tägil, 2001: 97). With the plans of the new tramway line between the Central Railway Station in the city centre and the ESS, the university and the city of Lund have embarked on an expansion that could be considered to be a city of its own. In fact, the new Brunnsög district makes all of Lund's other urban districts look small in comparison. The tramway connects university facilities in the city centre with all buildings along the larger part of the route, from the University Hospital, the LTH Campus and Ideon Science Park, to the MAX IV, the Science Village Scandinavia and the ESS (Figure 9.1).

What can we learn from tracing the spatial expansion of Lund University? Here we would like to point out two observations. Firstly, the development of the university is not only directed by top-down political decisions but is also driven by specific scientific developments, as well as by spatial translations of scientific needs. Looking back at the history, we

can see how the development of Physics has driven Lund's university and campus development. At first, Physics was part of the Department of Zoology, Chemistry and Physics, and as such was hosted by one of the very first buildings designed specifically for the university in 1842. However, already by 1886, it needed both its own department and its own building. In the 1950s, a series of connected buildings were built for Physics along Sölvegatan; and today, Physics has become an independent urban unit – a science village with nano labs and the ESS. The development of Physics in Lund showcases how the growing demand for research facilities drives various architectural responses that ultimately lead to urban restructuring. Secondly, the consolidation or clustering of 'the university area' has evolved through different phases, following a line of flight in the north-east direction. The core area around the cathedral was gradually complemented with new departments in other parts of the city core in the mid-nineteenth century; the university buildings located in the old city core were subsequently complemented with a series of new departments constructed outside of the old city walls (1880–1930s). Over the course of the twentieth century, the university area was supplemented not just with single buildings but with entirely new areas, such as the campus area of LTH and the science parks of Ideon and Medicon Village. Finally, the most recent developments, the MAX IV, the ESS and Science Village Scandinavia, are situated even further out, at the very outskirts of the city. Following the line of flight in the north-east direction, these moments of urban expansion, addition and consolidation set a specific rhizomatic pattern of urban growth.

Urban crystallisation and heritage

Since 2000, a number of new university buildings have seen daylight in Lund. The new Astronomy building opened in 2001, the New Design Centre in 2002, the Geocentrum in 2003, and the Language and Literature centre in 2004. The joint departments of the Faculties of Humanities and Theology all moved into the so-called LUX building in 2014. All of these projects were built within the existing university area, and most of them involved additions to existing buildings. What they also have in common is that they were all built along Sölvegatan Street, the main artery of the Science Road, where more similar additions are planned to follow in the years to come ([Akademiska hus, 2012](#)).

What we witness here is that the spatial expansion of the university follows a pattern of a (north-east bound) crystal growth. Following Lewis

Mumford, Fontana-Giusti (2011) has described how cities crystallised through citadels and even more through the formation of fortifications and city walls. In a recent article, Brighenti (2020) has taken the notion of crystallisation, and its role in political and urban history, a step further. Discussing the process of crystallisation as an urban phase transition, Brighenti (2020) suggests that it includes individual entities that grow around certain given critical points and that, once started, these resultant ‘crystals’ often evolve at a quicker pace than their surroundings. Crystallisation entails both an increase of order and a break with existing orders. The process establishes a state of metastability, which allows for certain dynamics while also setting some limits for the change, and for the crystal to evolve through certain ‘recurrent features and privileged directions’ (Brighenti, 2020: 4).

A similar process of urban crystallisation can be witnessed in the case of Lund. Here, the new spatially expanded city takes form with Sölvegatan Street and the tramway – including their nodes and tramway stops – to form the Science Road as the centre of a series of aligned crystal nucleuses (on urban nucleus, see Conzen, 2004: 252–55). As the new, large facilities align themselves at greater densities, and at an accelerating pace, the urban shift from the city centre to the outskirts may be witnessed. The previously less-ordered urban tissue, consisting of different dispersed morphological patterns, turns into an easily legible and more coherent morphology. This crystallisation has to do with the forming of a specific growth pattern, but also can be perceived to gradually affect the relation between the university and the city. If, previously, the city and the university were always connected, now we witness a shift where a city-university gradually crystallises as a distinct rhizomatic figure of the urban tissue. A new *Gestalt* has come to town, and as such it also becomes an actor of its own, affecting the way in which both the university and the city heritage are perceived (Brighenti and Kärrholm, 2021). If studied over time, the lines between city centre and the different spatial nodes and clusters of university buildings do not come hierarchically from above or in a linear causal relationship, but rather pass through the tissue of associations they produce with other entities, forming a kind of rhizomatic structure (Deleuze and Guattari, 1987). The line of flight that connects central Lund with Brunnsög passes through the 1880s department buildings in the fringe belt outside the old walls, runs energetically through the street of Sölvegatan and shapes a rhizomatic urban formation. As that line of flight runs through the ‘veins’ of Sölvegatan, a complex, multi-layered urban space emerges, composed of transversal folds and nodes of different scales, now stabilised



Figure 9.5 Moves of departments and research facilities since the year 2000. The figure includes the planned but not yet realised move of the Physics department to the Science Village, and the move of MAX IV, from the former MAX-lab location. Diagram: M. Kärrholm

through the ongoing densification projects around the new tram stops. The connections of Lund with Brunnshög, via Sölvegatan Street, shape an informal diagram of crystallisation running through different lines and nodes of the urban tissue (see [Figure 9.5](#)). To grasp the dynamics of these processes, we need to visualise and analyse how the different associations between entities of different scale emerge and gradually shape an urban network, a flexible and transversal one, which stands perpendicularly to all vertical structures.

The urban crystallisation process sheds new light on heritage sites. As the internal network of the university area evolves and transforms, certain buildings and heritage sites suddenly find themselves outside of the centre of attention and risking deterioration, like the old observatory that has been standing empty since 2001. On the other hand, new sites

and buildings become the focus of attention, like the old windmill of Odarslöv (dating back from the mid-1600s) situated at the threshold of the new ESS. Rediscovered recently, the windmill was subsequently renovated and turned into a visitor centre (see [Figure 9.6](#)). It enacted new forms of relational politics as it connected – in a fresh way – local communities, architects, planners, students, farmers, artists and academics.

Thus, buildings that colonise the Science Road become a focal point of heritage interest, while buildings that fall outside the line of flight are left behind. The urban crystallisation process therefore affects the ways in which the university rethinks its built heritage. A close look into the spatial morphology of old university buildings shows that buildings have come and gone; this is the natural course of history. Hårleman's orangery was partly torn down and partly integrated into the building *Palestra et Odeum*, built in 1883, while Kuggis was torn down in 1897. Yet, during the last few decades, this process has speeded up. The facility once built as the Department of Zoology, Chemistry and Physics in 1842 is strategically located on the Science Road. It was bought back from the church in 1994 and is now used for academic conferences. The academic activities of the university (research and teaching) have all moved out of the old city centre during the last few decades, thus enlarging the rhizomatic formations. Departments like History, Art History, Archaeology, Astronomy and Philosophy have moved out of the old city centre to new premises along Sölvegatan Street. At the same time, many of the centrally located buildings are now used for administrative functions, meetings and conferences (*Kungshuset*, the old departmental buildings for Physics, Physiology, Anatomy and others), whereas buildings located less strategically were sold or are rented out. The Chemical department, built in 1863, was sold in 2016 and has now been rebuilt into apartments by a private company. The Anatomy building from 1897 is now the location of a private high school. The School of Social Work left its premises on Bredgatan in 2019.

A closer look at student housing shows a similar pattern of development. Student housing in the east part of Lund has recently been abandoned, a large part of the student housing area *Vildanden* was sold in 2017, and *Blekingeska nationen* (a student nation with housing) moved their activity in 2019. Large, new student housing areas are now being built in relation to LTH Campus or in the area north of campus (*Norra Fälåden*). We can thus witness a move from city centre to outskirts and a gradual process of studentification ([Smith and Holt, 2007](#)), which is to say a concentration of students that starts to dominate certain parts of the



Figure 9.6 The windmill and old farm of Odarslöv, now renovated and transformed into a visitor centre for the ESS. Photo: M. Kärrholm, 2018

city, following behind the university development described above. The student population thus follows the architectural and urban nodes of the slowly crystallising rhizomatic morphology.

University heritage and public visibility

The university as an institution can be described in its ‘semi-cloistered heterogeneity’ (Bender, 1988b: 290). It is half-opened, yet half-closed. This is true for Lund University, which was never fully urban but was established in a park from the beginning and walled-in since its beginning (a crystal node). On the other hand, it has never been fully external in its approach (which is to say, located wholly outside the city) but has been integrated into the urban infrastructure as a cohesive entity within the city. Lund University has also slowly increased its visibility in the city over the years and established a recognition relating to individual, personal and categorical – as well as spectacular – aspects of heritage (Brighenti, 2010: 53). Individual recognition includes the possibility of being recognised as a university among others, this is as an individual entity.

Personal recognition comes with time and, for Lund University, this has been clearly established with its park, Lundagård, built between Kungshuset and the cathedral during the eighteenth century. With the first new university buildings during the nineteenth century, personal recognition was probably strengthened further, but it also came with a categorical recognition, which is to say the possibility of recognising a certain *type* of building as a university building. As the first buildings leave the original nucleus, as we witness when following the line of flight, and buildings (and hence part of the university) land in dispersed urban contexts outside of the old university walls, the notion of categorical recognition becomes more important. During the twenty-first century we can also see increasing efforts to establish a kind of spectacular recognition, or the recognition of something beyond the ordinary. Both the university and the city of Lund aspire for the ESS to become an iconic development. As stated in the brief, the buildings should be ‘profiling for the ESS and a branding symbol for the science community of Lund’ (Kildetoft, 2012: 4). The call for the spectacular becomes clear as Lund University not only has the ambition but also the means to establish and brand itself in a European context.

Architecturally, the ESS is in many ways treated as an architectural icon of Big Science developments. The brief also stipulated the importance for the ESS urban complex not to appear isolated and fenced-off; instead, it was important for the complex to remain visually accessible, even though the actual accessibility is impaired through so called ‘ha-ha walls’. In our talks with architects from the Henning Larsen firm, the partner in charge of the ESS, Jacob Kurek, explained that an important question for the designing team was how to ‘connect the city to science and to research so that somehow it does not become a barrier, but something that can raise someone’s curiosity’ (interview on 6 November 2019). To do this, the architects tried different strategies. For example, a specific landscape design was used to invoke curiosity and afford panoramas, whereas security and safety issues required a design that is less noticeable. The concept of ‘spallation’, as the breaking-up of a bombarded nucleus into several parts, played an important inspiration for the architects to approach the complex spatial design of the ESS. During the conceptual stage, the architects developed ideas about having a moving light along the proton beam corridor to make visible the movement of spallation; yet, these design ideas did not come to fruition. The spallation is, however, noticeable now in its urban dimension. As Jacob Kurek argued, ‘one of the places where you are able to understand the scale and the magnitude is actually on the motorway, so how do you understand and read the

building, driving by?’ (interview on 6 November 2019). Only when one drives for a while, can one fully grasp the scale of a one-kilometre-long building as seen from the motorway, and it is also here that the full scope of the ESS becomes perceivable and observable as part of a longer, urban and moving line of flight. In fact, the entire ESS complex is designed as several buildings, and the location of these were chosen to mimic a spallation process since they are scattered on the premises as if broken up through spallation. Furthermore, the different colour schemes (mostly different shades of grey) of the buildings are designed to enable the passers-by to read the spatial layout and the positioning of these buildings, ensuring that the ‘exploded’ layout is perceivable also from afar. Thus, the iconography of spallation accompanies the design and urban reading of this new crystal-shaped development.

Following the history of spatial evolution presented above, we can argue that the ESS and its design-mimicking spallation, has triggered a process of ‘urban spallation’. This process breaks out of the urban centre of scientific and political authority, related to the traditional urban heritage of the city core, and into several offshoots spreading out of the city nucleus and, consequently, extending the city-university. The ambition of these iconic-to-be science developments, such as the ESS, is not so much to represent a certain Politics with capital P, but to establish live mundane connections with the city, its growing rhizomatic morphology and its urban publics who are the consumers of heritage and research spectacles. And that is how the growth of Lund University generates political effects, understood as relational politics. Echoing the breaking out of the nucleus, urban spallation is an important imitation that transgresses scales and accelerates the urban morphogenesis of Lund.

As research and teaching facilities become more complex, and as they become more distant from everyday urban life, the spatial pedagogic (that is, informing about use through spatial form) of building design becomes increasingly important. This does not only include the way in which research buildings are designed, but also affects the repertoire of different building types that the university needs to mobilise. New and old building types focusing on mediating science are thus built, including science centres and visitor centres (Kärrholm, 2016). Since the research facilities are no longer built as an integrated part of the city, the city has to be brought, in a manner of speaking, into the research facilities. That is why the newly-built science structures incorporate urban and public qualities, including mediating spaces such as plazas and large atriums. As a result, some ambitious public spaces are designed in relation to the new

facilities. LUX (hosting the Departments relating to Humanities and Theology), for example, has a proper plaza in front of its main entrance, and received the City of Lund's urban design prize (*Lund Stadsbyggnadspris*) in 2014. In the Science Village, Rydberg's square (named after a professor in Physics from Lund) is planned in relation to the last tram stop, unifying both a series of iconic buildings related to the university and its research, and allowing for a strategic view towards the ESS-facilities. In conjunction with this trend to include new, open public spaces related to university facilities, we also witness the developments of large indoor atriums (Yaneva, 2010), often located together with cafés and libraries and connected to the main entrance. As buildings expand into large complexes, they start to act like small cities with streets and different neighbourhoods (in this case, the departments), where large atriums act as interior public spaces; the LUX is an example in that regard. Thus, the zoning and enclosure of the large science facilities integrate research and public spaces to accommodate wider audiences interested in university heritage and contemporary research.

The idea of solving planning problems through public space has grown increasingly strong over the last decade, especially so in the Nordic Countries, where the influence of urban designers such as Jan Gehl cannot be underestimated (Listerborn, 2017: 21). Also, when it comes to problems of social segregation, researchers, designers and planners are looking at public spaces, as part of the answer (for example, Legeby, 2010; Sarraf, 2015; Sandström, 2019). It is therefore expected that universities and municipalities will use similar strategies to integrate science. However, one could argue that this strategy of re-staging the interaction between research and urban life tends to rewrite the role of urban citizens as tourists who, in their capacity as visitors and spectators, can encounter 'Academia' (with capital A) and 'Science' (with capital S), and engage in experiencing them as objects of, for example, heritage. The process of crystallisation, and the forming of a specific and legible *Gestalt* (the Science Road), goes hand in hand with this development.

Urban heritage and Big Science

The situatedness of science has been systematically ignored or denied by scholars both from the fields of science and technology studies (STS) and geography (Livingstone, 2003). The 1990s saw the advent of the 'localist' or 'geographical' turn in science studies as a great accomplishment of scrutinising science in relationship to site and urban context. This also

prompted a dialogue between architects, architectural theorists and science studies scholars interested in the design of university science buildings (Galison and Thompson, 1999; Gieryn, 1999, 2006). Such work is indebted to the growing exchange between STS and the fields of geography, urban studies and architecture, but while representing a considerable achievement, it is still incomplete. Recent studies of the architecture of the new generation of university buildings focused on science lifestyles (Kaji-O’Grady and Smith, 2018), the symbolic imageries of the buildings (Kaji-O’Grady and Smith 2019) and how science architecture matters for research and accelerates the speed of invention (Novoselov and Yaneva, 2020). Yet, the new dynamics between science architecture and urban developments are yet to be explored more thoroughly. Engaging in an analysis of the relationship between university science and urban dynamics, the case study discussed here contributes to advancing knowledge on the urban situatedness of university science in the context of Lund.

By tracing how the spatial positioning and proliferation of specific buildings within the city fabric affects urban growth and redefines the existing social and cultural patterns of city life and heritage, we have reached three conclusions. Firstly, urban morphogenesis is not simply steered by top-down political decisions (Politics with capital P) but rather goes in tandem with specific scientific developments and spatial translations of academic needs, and the resultant architectural responses. Secondly, just like the nucleus spallation, the urban morphogenesis of Lund, as witnessed here, follows a line of flight (a movement of ‘urban spallation’) from the city centre: as a traditional nucleus of heritage that goes towards the urban periphery, then as a vector running in the north-east direction and gradually adding single buildings, followed by larger science parks and villages, and, recently, by mega structures like the urban complex of the ESS. Thirdly, the spatially expanded and splintered university-city, acquires a new crystal-like nucleus – or rather a route with nucleuses grouped around Sölvegatan and the tramway line – that accelerates further the process of urban crystallisation (of clustering and densification) and thus de-centres both the core of political authority and cultural heritage. As a result, spatially dispersed offshoots of the dense crystal-like urban morphology gain heritage value. The rhizomatic crystallisation of the urban tissue affects the ways in which the university rethinks its built heritage and escalates the processes of de- and re-heritagisation.

Arguing that a shift is taking place in the fabric of capitalism as a result of a change in how the business of invention is understood, Nigel

Thrift (2006) points to the importance of studying the new generation of science buildings as innovation incubators. These 'performative' machines share a number of features in common: they include some forms of public display of science, their design is intended to stimulate interdisciplinarity, they are porous as both scientists and information constantly flow through them, they encourage a 'buzz' of continuous conversation oriented to 'transactional knowledge' that contributes to innovation, and they are meant to be transparent. While Thrift's account captures well the architectural trend in the development of new university facilities, it fails to acknowledge the shift in urban morphogenesis that accompanies the construction of these iconic 'temples of interdisciplinary science', and how the scalar transformation affects urban development and heritage sites. The Lund case shows convincingly how university buildings make a larger impact on the city fabric, and that they take on new dimensions and gradually become 'cities within cities'. The city-university emerges and re-distributes the sites of heritage and the standard patterns of heritage valuation.

Spatial transformations affect the university as a site of heritage. Like many other nations, Sweden is today a society that builds universities. The research facility is on its way to become the paradigmatic building project of our time. Yet it is important to acknowledge how this building type has changed over the years. During the 1960s and the 1970s, Sweden was a society that invested in housing facilities. The huge housing projects from that period required old housing areas to be torn down and the old housing types suddenly became obsolete. Similarly, when a university expands at an unprecedented pace, it also leaves old buildings in its wake. Therefore, heritage valuations and discussions cannot be confined to one single site (or the quality of, or the knowledge about, individual buildings) but need to account instead for the scope of large-scale spatial transformations. It is this awareness of the broader processes of urban morphogenesis that sets the heritage agenda in motion.

The ESS is planned to be up and running for 40 years with the prospect of being dismantled at the end of this period. What will remain on its site will remind the future generations of our great ambitions for Big Science and the urban expansion of Lund. A new site of urban heritage will emerge, and new forms of heritage valuation will be devised. Yet, more importantly, these new forms of heritage will require novel choreographies of human and nonhuman types of expertise to be put together, and new forms of relational politics to be activated. The university of tomorrow will never cease to surprise us in its friendly rally with the ever-expanding rhizomatic silhouette of the city.

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Notes

- 1 A possible comparison with the National Graphene Institute building in Manchester (UK) can be drawn. As one of the first buildings on the University of Manchester campus that ‘opens up to the public’, its design aims to encourage a relationship with people walking past who may see and wonder: ‘Oh, what are they doing? Can I do this? Can I be part of that?’ The building design encourages this train of thought and inspires other buildings on campus to follow this trend (Novoselov and Yaneva, 2020).
- 2 However, the original building for the Department of Zoology, Chemistry and Physics became the bishop’s new residence by 1848. The new bishop had refused to live in the residence built for the bishop just next to the cathedral, and the church thus swapped buildings with the university (Tägil, 2001: 12f.).

References

- Akademiska hus. (2012) *Lunds Universitets Campusplan*. Lund: Akademiska Hus.
- Bender, T. (1988a) ‘Introduction’. In T. Bender (ed.), *The University and the City: From medieval origins to the present*. Oxford: Oxford University Press, 3–10.
- Bender, T. (1988b) ‘Afterword’. In T. Bender (ed.), *The University and the City: From medieval origins to the present*. Oxford: Oxford University Press, 290–97.
- Brighenti, A. M. (2010) *Visibility in Social Theory and Social Research*. Basingstoke: Palgrave MacMillan.
- Brighenti, A. M. (2020) ‘Urban phases: Crystallisation’. *City, Culture and Society*, 20, <https://doi.org/10.1016/j.ccs.2019.100327>.
- Brighenti, A. M. and Kärrholm, M. (2021) ‘Urban crystallization and the morphogenesis of urban territories’. *Territory, Politics, Governance*. <https://doi.org/10.1080/21622671.2021.1872040>.
- Conzen, M. R. G. (2004) *Thinking about Urban Form: Papers on urban morphology 1932–1998*. Bern: Peter Lang.
- Deleuze, G. and Guattari, F. (1987) *A Thousand Plateaus*. Minneapolis: University of Minnesota Press.
- Ferruolo, S. C. (1988) ‘Parisius-Paradisus: The city, its schools, and the origins of the University of Paris’. In T. Bender (ed.), *The University and the City: From medieval origins to the present*. Oxford: Oxford University Press, 22–43.
- Fontana-Giusti, G. (2011) ‘Walling and the City: The effects of walls and walling within the city space’. *The Journal of Architecture*, 16 (3), 309–45.
- Galison, P. and Thompson, E. (eds) (1999) *The Architecture of Science*. Cambridge, MA: The MIT Press.
- Gieryn, T. (1999) ‘Two faces on science: Building identities for molecular biology and biotechnology’. In P. Galison and E. Thompson (eds), *The Architecture of Science*. Cambridge, MA: MIT Press, 423–59.

- Gieryn, T. (2006) 'City as truth-spot: Laboratories and field-sites in urban studies'. *Social Studies of Science*, 36, 5–38.
- Hallonsten, O. (ed.) (2012) *In Pursuit of a Promise: Perspectives on the political process to establish the European Spallation Source (ESS) in Lund, Sweden*. Lund: Arkiv.
- Hallonsten, O. (2016) *Big Science Transformed: Science, politics and organization in Europe and the United States*. Basingstoke: Palgrave Macmillan.
- Hallonsten, O. (2018) *Big Science in a Small Town: An introduction to ESS and MAX IV for the humanities, social Sciences, economics, and legal studies*. Lund: Lund University.
- Hyde, J. K. (1988) 'Universities and cities in Medieval Italy'. In T. Bender (ed.), *The University and the City: From medieval origins to the present*. Oxford: Oxford University Press, 13–21.
- Johansson, G. (1982) *Lunds Universitets Historia II, 1710–1789*. Lund and Stockholm: Liber.
- Kaiserfeld, T. and O'Dell, T. (2013) *Legitimizing ESS: Big Science as a collaboration across boundaries*. Lund: Nordic Academy Press.
- Kaji-O'Grady, S. and Hughes, R. (eds) (2018) *Laboratory Lifestyles: The construction of scientific fictions*. Cambridge, MA: MIT Press.
- Kaji-O'Grady, S. and Hughes, R. (2019) *LabOratory: Speaking of science and its architecture*. Cambridge, MA: MIT Press.
- Kärholm, M. (2016) 'In Search of Building Types: On visitor centers, thresholds and the territorialisation of entrances', *The Journal of Space Syntax*, 7 (1), 55–70.
- Kildetoft, B. (2012) *European Spallation Source, Design Contest Architect, Contest Brief – General Description*. Lund: ESS AB.
- Klinge, M., Knapas, R., Leikola, A. and Strömberg, J. (1988) *Kungliga Akademien i Åbo 1640–1808*. Helsingfors: Otava.
- Kristenson, H. (1990) *Vetenskapens Byggnader Under 1800-talet: Lund och Europa*. Stockholm: Arkitekturmuseet.
- Novoselov, K. S. and Yaneva, A. (2020) *The New Architecture of Science: Learning from graphene*. Singapore and NYC: World Scientific Publishing.
- Legeby, A. (2010) *Urban Segregation and Urban Form: From residential segregation to segregation in public space*. Stockholm: KTH.
- Lindroth, S. (1976) *A History of Uppsala University 1477–1977*. Stockholm: Almqvist & Wiksell.
- Listerborn, C. (2017) 'The Flagship Concept of the "4th urban environment": Branding and visioning in Malmö, Sweden'. *Planning Theory & Practice*, 18 (1), 11–33.
- Livingston, D. N. (2003) *Putting Science in its Place: Geographies of scientific knowledge*. Chicago: Chicago University Press.
- Mumford, L. (1961) *The City in History, Its Origins, Its Transformations, and Its Prospects*. New York: Harcourt, Brace and World.
- Rekers, J. V. and Sandell, K. (eds) (2016) *New Big Science in Focus: Perspectives on ESS and MAX IV*. Lund: Lund University.
- Sandström, I. (2019) *Towards a Minor Urbanism: Thinking community without unity in recent makings of public space*. Lund: Lund University.
- Sarraf, M. (2015) *Spatiality of Multiculturalism*. Stockholm: KTH.
- Science Village Scandinavia (2020) 'Science Village – A Part of Brunnsög'. Accessed 21 January 2020. <https://sciencevillage.com/en/science-village-2/science-village-a-part-of-brunnsog/>.
- Sjöholm, J. (2016) *Heritagisation, Re-heritagisation and De-heritagisation of Built Environments: The urban transformation of Kiruna, Sweden*. Luleå: Luleå tekniska universitet.
- Smith, D. P. and Holt, L. (2007) 'Studentification and "apprentice" gentrifiers within Britain's provincial towns and cities: Extending the meaning of gentrification'. *Environment and Planning A*, 39 (1), 142–61.
- Tägil, T. (2001) *Universitetsmiljöer i Lund*. Lund: Lunds universitet, Akademiska hus and Statens Fastighetsverk.
- Thrift, N. (2006) 'Re-inventing invention: New tendencies in capitalist commodification'. *Economy and Society*, 35, (2), 279–306.
- Wilson, R. R. (1999) 'Architecture at Fermilab' In P. Galison and E. Thompson (eds), *The Architecture of Science*. Cambridge, MA: MIT Press, 459–74.
- Yaneva, A. (2010) 'Is the atrium more important than the lab? Designer buildings for new cultures of creativity'. In P. Meusbürger, D. Livingstone and H. Jöns (eds), *Geographies of Science*. Dordrecht: Springer, 139–150.
- Yaneva, A. (2017) *Five Ways to Make Architecture Political: An introduction to the politics of design practice*. London: Bloomsbury Publishing.

Co-curating the City explores the role of universities in the construction and mobilisation of heritage discourses in urban development and regeneration processes, with a focus on six case study sites: University of Gothenburg (Sweden), UCL East (London), University of Lund (Sweden), Roma Tre University (Rome), American University of Beirut, and Federal University of São Paulo, Brazil.

The aim of the book is to expand the field of critical heritage studies in the urban domain, by examining the role of institutional actors both in the construction of urban heritage discourses and in how those discourses influence urban planning decisions or become instrumentalised as mechanisms for urban regeneration. It proposes that universities engage in these processes in a number of ways: as producers of urban knowledge that is mobilised to intervene in planning processes; as producers of heritage practices that are implemented in development contexts in the urban realm; and as developers engaged in campus construction projects that both reference heritage discourses as a mechanism for promoting support and approval by planners and the public, and capitalise on heritage assets as a resource.

The book highlights the participatory processes through which universities are positioning themselves as significant institutions in the development of urban heritage narratives. The case studies investigate how universities, as mixed communities of interest dispersed across buildings and urban sites, engage in strategies of engagement with local people and neighbourhoods, and ask how this may be contributing to a re-shaping of ideas, narratives, and lived experience of urban heritage in which universities have a distinctive agency. The authors cross disciplinary and cultural boundaries, and bridge academia and practice.

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