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Campus Development of the IDEA League Universities

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1 ABSTRACT

The university campus – for centuries an important urban building block and also in our future cities of tomorrow: it is impossible to imagine life without it. But what does modern campus planning look like in a re-mixing city of tomorrow and what concepts are being followed to integrate the university campus in the 21st century and to adapt it to digitalization and networking and develop it further?

What concepts can be derived from networks, such as strategic alliances like the IDEA League, an association of five leading technical universities in Europe? How do these universities help to shape our European cities, what urban development ideas do they follow and how can they serve as a motor for urban development?

Based on the IDEA-League partners: Delft University of Technology (Netherlands), ETH Zurich (Switzerland), RWTH Aachen University (Germany), Chalmers University of Technology (Sweden) and the University Politecnico di Milano (Italy), these research questions will be examined and analysed in detail with the aim of developing a design guideline for campus development.

Based on current plannings, such as the campus redesign in Milan by Renzo Piano, the Science City at the ETH Zurich and the RWTH Aachen extensions Campus Melaten and Campus West, first results of the analysis are presented below. Important aspects that will also form the first cornerstones of the design handbook are the "24-student campus", "outdoor space" and the "recreational area".

Keywords: IDEA League Universities, campus development, redesign, future cities, urban development

2 INTRODUCTION

What exactly is meant when we talk about "Future Cities", "Re-Mixing the City: Concepts and Perspectives for Mixed Use in Future Cities?" (REAL CORP 2020) What are the uses, the building blocks, the contents that put together such a future city?

Especially in Aachen, one of the most important and largest urban building blocks is the university, namely the RWTH Aachen University. Campus development and planning is not only in Aachen a current topic of urban development. Universities are growing, student numbers are increasing and more and more people are deciding to study after school. Society is increasingly transforming itself into a knowledge society.

Growth, digitalization and new media have an impact on the teaching units of the universities and force them to adapt and change again and again, regardless of their sometimes centuries-long traditions, such as the RWTH Aachen University, which is celebrating its 150th anniversary this year. Universities are thus involved in constant processes of change, which not only affect aspects of content or the further development of curricula, but are also physically manifested in the expansion of campus areas in the urban space. Despite digitalization, the physical presence of the universities remains untouched, current surveys show that demand for student learning jobs and places to stay at the universities is constantly growing, and that digitalization itself requires increasing space. This is because servers and technical infrastructures also require university buildings, and despite the fact that more and more lectures are available on the Internet, new research clusters and university departments are being developed and built.

Not only are new research areas increasingly emerging, but digitalization also leads to ever new networks. University departments and research institutions are combining forces in an interdisciplinary way, even beyond national borders. One example is the IDEA League, an association of the leading European technical universities. Technical and scientific exchange, which is currently already taking place in the field of traditional engineering subjects, also represents a great potential to be used on an architectural level.

All of these five universities have faculties of architecture and the question that now arises is how these renowned universities can help to shape their home towns and cities and thus be a motor for urban development? Can this network be used to develop guiding principles for urban development and what goals can be identified and how can future urban planning benefit from the knowledge gained?

In summary, the objective is to analyse the aforementioned research questions in more detail with regard to the IDEA League locations and to derive guiding principles from them as to how future campus development should be designed. In this process, we will take a closer look at how campus development and urban development concepts of the European university network of the IDEA League work and how they can be mutually dependent on each other to develop future design principles and concepts.

This goal is to be achieved by analyzing the existing literature and planning documents, by on-site research and interviews with planners, in order to be able to map the developments and active planning in the field of campus development.

3 CAMPUS DEVELOPMENT

By definition, the campus is the site, the field on which the university with its entire number of faculties is housed, but how does one develop such a campus area in terms of urban planning today?

From historical sources, universities have developed in urban locations with an exposed location of their main building (Kruschwitz 2011: 218). The inner-city connection between university and city was not only identity-forming for university life but also for the entire city.

However, the question that now arises is, how can these same old inner-city universities develop in the future and what will future university development models and campuses look like?

The IBA Heidelberg is running from 2012 to 2022 under the heading "Knowledge Creates City". The IBA is concerned precisely with the question of how university and city and the associated development work together.

But where exactly is the campus development going? Today the campus is no longer just the former field - it is much more the outdoor space around the individual university buildings that is gaining in importance. The public outdoor space is increasingly becoming a place for living and working through digitalisation and mobile user terminals.

On the one hand, our teaching is also becoming increasingly digitalized, with lectures being retrievable and traceable from the Internet. The time students spend on campus is being reduced, but at the same time a contrary development can be observed, with students increasingly visiting study and work rooms on campus to meet and let ideas grow through chance encounters. The world is becoming increasingly networked, the campus of tomorrow will be different from the mere place where knowledge is absorbed, but what does this mean in terms of urban planning and architecture, how can one learn from such networks there as well?

These campus development analyses are to be examined and executed on the basis of five leading technical, European universities, which have joined together to form the IDEA League University Network.

4 THE IDEA LEAGUE UNIVERSITIES

4.1 The Idea of the IDEA League

The IDEA League is a strategic alliance of currently five leading European universities, which pursue the goal of representing Europe as a leading technology and innovation location worldwide. The five research-oriented partner universities have a high international reputation and educate future generations of engineers.

The title of the IDEA League goes back to the names of the four founding universities. These include Imperial College London (United Kingdom), Delft University of Technology (Netherlands), ETH Zurich (Switzerland) and RWTH Aachen University (Germany). In addition, ParisTech (France) joined the league in 2006. Imperial College London and ParisTech have already left this network and were replaced in 2014 by Chalmers University of Technology (Sweden) and the University Politecnico di Milano (Italy) in 2016.

For Imperial College London, the reasons for leaving the alliance were financial, and for ParisTech, the reorganization into Université Paris-Saclay (UPS). (Schlaefli 2014)

The League is an alliance whose name "IDEA" stands for its basic attitude, namely to act less out of lobbistic, political interests and more with the motivation of a common exchange of ideas. (Schlaefli 2014)

In addition to the function of the best possible European representation, the network aims to link research and teaching and to promote technological exchange and knowledge sharing between leading European

technical universities. Through exchange programs and summer schools, for example, students and scientists in many fields of study come together to network the universities.

4.2 Urban Development in the European Context

Especially in the field of architecture and urban planning, however, very little discourse takes place in the context of the IDEA League, which means that the potential of different urban development ideas and concepts within the university network is not exploited. Especially with regard to the urban development planning of the campus areas in the individual IDEA League cities, synergies could be used and strategies could be exchanged and thus mutual inspiration and learning could take place.

What role do urban planners play in these development strategies and which actors work together in these campus development processes?

The intention is not only to achieve a functioning campus planning, but also to create a "livable city" in which there are no urban parallel societies between university and city society. The aim is to create a "city for all" that integrates knowledge into the city and thus allows the public welfare of an interlocking and multi-layered urban society to be experienced.

Furthermore, it is not only the spatial integration of the university into the city that must work, but also a social integration is crucial. The university must not see itself as an elitist, difficult-to-access urban component, but rather it must be accessible at various levels, to all social classes, in order to be able to integrate itself really actively into the city structure. Recent efforts such as children's universities, summer schools or the concept of study courses for senior citizens contribute precisely to such an opening of the university and create integration and networking with the city. Due to the subliminal use of the university in the everyday life of the non-university urban population, a natural and true integration of the university into the urban fabric is achieved.

This aspect also leads to the fact that the urban fringes of university campuses, which often show hard urban breaks, begin to intertwine with the usual urban fabric, because the campus areas are then also used by the entire urban population. A prerequisite for this, however, is that the university understands and designs the areas around its research buildings as atmospheric outdoor spaces and recreational areas of the city and does not see them as purely functional, as a park or a rubbish dump. The integration of gastronomy, sales and recreational areas, as an extension of the urban mix of uses, especially at the edges of the campus, will allow the campus to be successfully linked to the city.

4.3 Future Campus

"The identity of a city cannot be measured" (Reicher 2019: 27), but it is particularly the interplay of the individual city components that makes up the identity of a city. A university is also one of these city building blocks and the example of the five IDEA League universities shows how campus planning and development can be thought of in very different ways in connection with the city.

How do these five differently sized cities of the League deal with the challenge of campus development and how can a university influence an entire region or metropolis?

The examples of Aachen, Zurich or Delft show how globally identity-giving for the entire city are their universities, whereas Milan or Gothenburg are not necessarily known primarily through them.

However, the connecting element of these five universities is that they are constantly growing and also have to expand spatially, resulting in five very different campus development systems, which are to be analysed and compared.

A campus development is currently taking place in Milan. Milan is not only known for its university, but increasingly sees itself as a city of science, and the Politecnico di Milano with its inner-city locations the Campus Leonardo and the younger Campus Bovisa shall be complemented by the Renzo Piano Campus. The Renzo Piano Campus will be created by redesigning the campus areas along the Via Bonardi. The decisive design element is to connect the individual solitary university buildings by means of new buildings and to open up the intermediate areas, the exterior space by means of intensive greenery. This will create a liveable campus and a completely new urban area of knowledge.

What exactly is the so-called "Science City" (Schmitt 2004: 3) as propagated by the ETH Zurich as a campus and urban development system and what exactly is the implementation of this idea of a sustainable city district that includes knowledge locations?

In 2010, the new ETH Zurich Hönggerberg campus was awarded the European Science Culture Prize. This campus area, located on the outskirts of the city just outside the city centre, is aimed to become the new flagship of ETH Zurich as "Science City". As an expansion opportunity for the university, which is actually located in the city centre, an attempt was made to directly shape the aspect of the stay on the campus through its location in a former natural recreation area, through living and sports facilities.

In the same way, the example of RWTH Aachen University also raises the question of how campus development clusters in Aachen West or Aachen Melaten function detached from the innercity campus.

RWTH Aachen University is a constantly growing group of new faculties and comprised 32,240 students in the winter semester 2010/2011, which has now increased to 45,628 students in the current winter semester 2019/2020. (RWTH Aachen University 2020)

Particularly in so-called university cities such as Aachen, the university is the largest employer and closely interwoven with the city. But campus expansions are increasingly being relocated to peripheral locations, which means that the city loses the positive influence of demographic change and thus also part of its identity as a university city.

Another question that can be derived from this aspect is the question of if a university in its function as an economic real estate player and employer would not have to intervene much more strongly with its campus development in the context of urban development in order to do justice to its identity-forming role?

An example of this would be the campus developments at RWTH Aachen University. With its newly built research clusters on the Melaten campus, the university has moved away from Aachen city centre. But RWTH Aachen University is continuing to expand, and in June 2018 it purchased the Aachen West area, a disused railway area at Aachen's Westbahnhof station. The university now has the opportunity to build a completely new campus in the link between the original inner-city Mitte campus and the new Melaten campus, and to build a new piece of the city as a developer, so to speak.

RWTH Aachen University will thus not only become one of the largest research campuses in Europe, but will also have the opportunity to connect its campus areas. In contrast to the campus development in the Melaten area, the goal was once again defined: not only to create more university and research clusters that are completely empty at night as on the Melaten campus, but also to revitalize the west campus with housing, shops, restaurants and cultural offerings. The question that now arises is whether RWTH Aachen University will be able to create the so-called 24-hour campus and if it creates an integrated new urban quarter with the campus.

Furthermore, the question arises if an integrated urban district is created when living on the campus is only planned for students or university members. On the one hand, this would create a ghettoising, planning definition, while on the other hand, it would help to tackle the acute housing shortage for students. However, in view of the prospect of the Re-Mixing City, an attractive residential area should be created on campus for all parts of the city's population to ensure that this part of the city is not only busy during the semester.

5 CONCLUSION

In summary, the first results of the campus analysis in Milan, Zurich and Aachen show the aspect of a re-mixing city. An essential component of a functioning, high-quality campus structure is the integration of mixed use. City and campus development must be thought and developed together so that they are positively interlinked. The campus must be designed like a piece of quality city and not like a collection of faculty buildings that seem abandoned at night.

The often mentioned and demanded 24-hour campus is based on exactly this model of mixed use. It is especially the main attraction of living that leads to a 24-hour revitalization of a campus area. A positive side-effect of the residential use is a public transport connection that must be guaranteed 365 days a year, whereby learning rooms and, for example, sports facilities on the campus are also well connected at weekends.

Through a connection with gastronomy, utilities and cultural offers, living on the university campus itself becomes an attractive area of public life and is included in the urban space.

This makes it clear that living is the guarantee for a 24-hour lively quarter and that this aspect should be taken into account in new campus developments or extensions. Regardless of whether it is an inner-city campus area or a spin-off, the remixing city aspect is essential for a qualitative atmosphere on the campus. From an inner-city point of view, the campus must be seen as a piece of the city and try to develop it further in a peripheral location, otherwise industrial area-like structures will be created and the homogeneity of the campus landscape will break up urban structures or prevent them from being created. It is precisely this homogeneity of a single use that is responsible for the creation of a ghost campus, where after the end of lectures and on weekends areas lie fallow and the potential of urban building blocks is not used.

This aspect leads to a further analysis result, the residence areas. As banal and simple as this aspect may seem, it is also decisive. The aim is to increase the quality of life on the campus. Because it is precisely the intermediate areas between the lecture hall and the seminar rooms that allow time for creativity to develop and create space for encounters. It is about creating a campus where people like to be in the city and even spend their free time. Because this is the breeding ground for new ideas, initiatives and start-ups. Various studies show that boredom promotes creativity and how important it is in the development of children to awaken their own creative will and fantasies. Large corporations have also taken this insight on board and create consciously atmospheric lounges and areas to stimulate their employees' idea development through brief relaxation phases. The campus therefore needs areas where people like to get bored and simply linger. Today's working time models are becoming more and more flexible and longer, so places to relax on the campus are essential, and it is also essential to offer catering in the later evening hours. It is not acceptable that elitist research is carried out on the university campuses of today and that new research clusters are constantly being created, but that the essential infrastructural aspects of daily needs do not grow with them.

This aspect also leads to the third result of the analysis, the external space / interspace. What may have been simple pathways or traffic areas in the past is now used much more naturally as outdoor space. Public places, but also open staircases are becoming meeting places and recreational areas in public urban space. The outside space is getting prominent. Since working and learning is no longer limited to libraries or power connections due to the progressing technology, this is now possible on the entire campus and especially in the outdoor areas. Some university campuses have managed to create and secure atmospheric outdoor spaces or even green spaces, but many campuses are an accumulation of different solitaires from different decades. The challenge now is to combine them into an atmospheric campus by upgrading the exterior and intermediate areas and creating recreational spaces.

These initial results of the analysis will serve as basic building blocks for the design guidelines and will provide a more in-depth analysis of how the different university cities deal with these issues. Country-specific planning ideas and approaches on the urban planning level will be considered and worked out in further steps in order to create a design guideline for inner-city campus development as an objective and imlication of research.

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