

# BUILDING FOR UNIVERSITIES: TRENDS, VISIONS, DESIGN STANDARDS

## SUMMARY

This book aims primarily to provide support and assistance for those preparing to invest in or design single HE buildings or larger campuses. It contains suggestions for, and examples of, architectural and campus design plans, which can help investors and architects, develop blueprints for new buildings and the modernisation of existing structures. These proposals are based on theoretical analysis of long-term developmental trends in higher education and also on selected examples of contemporary HE buildings. We have taken into account the results of opinion research conducted among the users of buildings and campuses at the University of Warsaw (UW), and also professional post-occupation evaluation. The book grew out of materials assembled by the university's office for campus planning and innovation (BIPA) in connection with architecture competitions announced within the framework of the "University of Warsaw 2016-2025" development programme.

In campus planning for an HE establishment, it is a *sine qua non* to have a detailed vision of the way that the institution is to function over a longer period of time. The book therefore begins with a review of the most important trends in higher education at the turn of the century. Globalisation and competition are the key words summing up the changes taking place. Higher education institutions which until recently were mainly of local importance, are now participating in a global competition for students, academic staff, research funding and other related resources. They also have to meet social expectations by regarding new age groups as potential "consumers" [lifelong learning] and by involving local communities in problem solving [the third mission]. To meet these challenges, specialist HE institutions are joining together in vast teaching and research combines and are building networks of global influence through branch campuses or through distance learning. We have exemplified these trends with many concrete illustrations from all over the world, for example the experiences of the *Université Paris-Saclay*. This federation of numerous HE teaching and research institutions on a purpose-built campus on the *plateau de Saclay* south of Paris has been one of our most important benchmarks, referred to and analysed in many of our chapters.

We have used selected concrete examples to demonstrate processes of adapting HE space to new challenges.

The significance of planning is stressed — and that planning should be based on local spatial, economic and social considerations as well as the specifics of the vision of the future functioning of a particular institution. Processes of this kind are traced in three very diverse and currently expanding campuses: the Höggerberg campus of the Swiss Federal Institute of Technology in Zurich (ETH), the Paris-Saclay urban campus and Manhattanville at Columbia University in New York. In turn-of-the-century academic building, the idea of confrontation between town and gown has been abandoned, and solutions predominate that integrate campuses with their urban environment, or introduce urban functions onto the campus. These solutions take into account the social context (government, local authorities etc.) and the commercial environment. A further important question is the competition between the physical space of the HE establishment and the virtual space of the Internet. One crucial function of the campus or HE building is facilitating personal interactions of various kinds. The current generally accepted model of studying, which allows the student free choice of subjects and particular classes, creates the need for space for individual and group work on campus. This has far-reaching implications for the design and planning of classrooms, libraries and common areas. One interesting example of new thinking about HE space can be found in the Rolex Learning Centre at the Polytechnic in Lausanne (EPFL). HE institutions are also greatly concerned to construct new buildings to the highest standards of energy conservation and environmental protection, reflected in the award of BREEAM or LEED certificates. The examples that we discuss of designs of this kind are the Singapore Polytechnic, the new campus of the University of Northampton in the UK and Columbia University's new Manhattanville campus. Planning large buildings, with a surface area of at least 10,000 m<sup>2</sup>, helps to keep down running costs, as does multi-functionality which encourages optimal use of the building throughout the year.

Because of the book's genesis, there is inevitably considerable discussion of campus planning at the University of Warsaw. The UW's buildings are mainly found in three groupings or campuses: Centrum-Powisłe, which is the site of the historic main campus; Ochota — which is the home of pure and natural sciences; and Służew, where the Faculty of Management is located, and where

there are also auxiliary buildings and student accommodation. The total surface area of the UW buildings in Warsaw is 490 000 m<sup>2</sup>, of which 20% is in buildings scattered around the city which do not form part of the main campuses and are often at a considerable distance from them. We discuss the historical development of particular campuses, and stress evidence of long-term planning strategies, sometimes lasting decades, even though their implementation was sometimes side-tracked. We examine the UW campus development plan dating from 1995 that envisaged bringing together the scattered units into three campuses, and consider the separate problem of planning strategies that will turn the buildings of these three groupings into fully-integrated university campuses. The “UW 2015-2025” programme is intended to help with both these aims. We also deal with the plans for particular UW campuses worked out in BIPA.

Our analysis has led us to distinguish three basic types of teaching and research buildings, differentiated by their size and the resultant manner of organising internal communications pathways: *self-standing units* — small buildings serving one particular department; *teaching centres* — fulfilling a predominantly teaching role; and *teaching and research combines* — which also have office accommodation. The buildings are usually part of campuses and therefore the space between them and their environment play a major role. The maximal area of green space on campuses should be open for use — to sit down, perhaps in discussion groups, to lie down, for team games etc. Motorised traffic should be limited as far as possible; car parks should be located on the outskirts of the campus, and the circulation scheme within the campus should be designed primarily for people on foot or bicycle; it should also facilitate meetings between people from different buildings. The ground floors of buildings should be open to the external environment.

The internal design of buildings must prioritise the convenience of the users, including persons with disabilities. It is suggested that neutral, non-aggressive colour schemes should be used, that there should be direct access to fresh air, and that roofs should be used as recreational areas. One pre-condition of user convenience is the appropriate siting and distribution of storage space, technical back-up premises and service areas. Well thought-out circulation systems aid effective movement about the campus, and these should be part of the building plans. Our basic recommendation is flexibility. Universities that are changing quickly need space which can be cheaply and easily adapted to new needs.

In contemporary university buildings common areas that are available for all the users of a given building play a major role. This is of primary importance in creating an academic community, and also animates meetings in contexts other than the classroom or research laboratory. Common areas should be distributed throughout the building, and also have component units of differentiated size. These will be mainly based on parts of the circulation space, which can fulfil many other functions apart from simply allowing people to move about between rooms. For purposes of analysis, circulation space has been sub-divided into functional circulation space,

serving mainly users who want to get from one place to another, and activating circulation space, or in other words, open informal space which intersects fluidly with the circulation pathways and accommodates additional facilities like space for individual work and group work, reading space, food outlets and rest areas. This all helps to make use of the available space more effective: for example, in open plan arrangements, cafeteria tables can serve as study spaces after the cafeteria is closed. We have conducted detailed analysis of common areas in a dozen or more selected buildings. Common areas occupy much more space in contemporary buildings than was the case earlier, and depending on the type of building constitute 35% to 50% of total space. At the same time, in teaching centres the optimal ratio of activating circulation space to functional circulation space should be at the most >0.45.

The largest common area should be “the heart of the building,” that is, the point — usually on the ground floor — at which trajectories will intersect and the activities of all users and guests will come together. The arrangement of common areas on the open ground floor of buildings is of especial significance. It is recommended that there should be easy access to these common ground-floor areas from outside, linking the functions of the building with those of its environment. Sales and service outlets should be on the ground floor, including food outlets. It is important to have separate comfortable and informal places where users of the building can meet guests. We draw attention to the potential value of staircases as vehicles for encouraging the integration of the building. These can sometimes serve as places for conversation, rest and even informal lectures. On grounds of scale, common areas are categorised as “L,” “M” and “S.” For each of these, we present design proposals and examples of existing buildings.

Teaching remains a primary and fundamental function of contemporary HE institutions, and rooms designed for holding classes form a basic part of their space. But the models for teaching space that grew up over centuries require modernisation if they are better to meet the expectations of contemporary users. While in earlier period, the basis of academic education was one-directional communication (lectures given in a lecture hall), today teaching rooms have to provide conditions in which interactions can occur — between students, between students and lecturers and via the Internet with partners at a distance. Our analysis and recommendations deal only with teaching rooms that do not require specialist laboratory equipment. The following desirable characteristics have been identified for teaching rooms: flexibility, or in other words, the possibility of using them for varied teaching methods, in particular group work; modularity, or in other words, rooms that can be joined together to form larger units, or divided to provide smaller ones; and openness to innovation, or in other words, with the appropriate infrastructure for making use of contemporary technology; enabling interaction, or in other words, with furniture set up in ways that enable students to make eye contact; universality, or in other words, adapted to the needs of people with varying degrees of disability. To meet these criteria the amount of space allotted to one work station (student)

in a teaching room must be increased. This depends on the number of work stations and depending on the size of the room ranges from 1.1 to 3.0 m<sup>2</sup> per station. On the basis of assessment of the size of teaching groups at the University of Warsaw, we put forward detailed proposals for the following types of rooms: XS — 16 stations, S — 32 stations, M — 49 stations, L — 250 stations, XL — all larger lecture theatres. For all these types, we offer design proposals and concrete examples of built designs.

Office space is essential both for teaching staff and for administrators. The latter spend almost their entire working day in offices, while academic staff use a palette of places. Office space accounts for a considerable proportion of university buildings. The need for cost monitoring, the effective use of space and fostering group work leads to a reduction in the number of traditional individual offices in favour of shared space that is used in a productive, functional and inspiring manner. On the basis of analysis of the needs of UW employees and the experience of many universities in other countries apart from Poland, we present proposals — both for particular rooms and for the configuration of sets of rooms — that meet the above criteria. One important source of economy in designing individual offices is to create opportunities for performing certain tasks in common areas adjacent to the offices. This makes it possible to reduce the size of individual rooms without restricting user convenience. One new feature is the proposal for “clusters,” or in other words multi-functional spaces that facilitate team work. The projected size of offices for single-use units is 8-16 m<sup>2</sup> and 5-8 m<sup>2</sup> per person for multi-occupation units. Social areas where people can meet, eat and relax should supplement grouped offices. Proposals are given for the furnishing of single and multi-occupancy offices for both teaching and administrative staff, and also for that of larger socialising areas termed clusters and bays.

We have paid a great deal of attention in this book to student accommodation. Units of student accommodation have a dual function, in that they provide cheaper rooms for students than the open market, while at the same time helping to create a student community. Shared functions make it possible to keep rents low, but on the other hand, when too many functions are included, this leads to a deterioration of common areas and prevents the inhabitants from feeling at home. Just as in the case of other elements of the university infrastructure, expectations are rising in the area of student accommodation. This applies particularly to the demand for single living quarters, either completely self-contained studio flats, or single rooms in larger units. As in other cases, we have based our proposals on analysis of selected student accommodation units and on the opinions of students who live there and staff that run them. Three types of properties have been identified on the basis of size: the student house (60-120 inhabitants); the student residence (120-200 tenants); the student village (230-350 inhabitants); and the multi-residence unit (more than 350 inhabitants). We consider the student house to be the optimal unit on grounds both of exploitation costs and tenant convenience. Units of this kind function well both on campuses and within the wider urban context.

They allow or the provision of a considerable number of single rooms or studio flats. To maintain cost efficiency, it is however necessary here to limit the amount of space in common areas. From the point of view of creating a community the student village is a cost-efficient solution, for here in the larger common areas; space can be allocated to services that can be used both by tenants and people from outside. The designs and built examples that we present offer mainly single-occupancy rooms, or at the most double rooms in suites or apartments, and also utilities in common areas, including study rooms, kitchens and laundries.

The narrative of our nine chapters is interwoven with interviews with architects and urban planners about the questions raised in particular chapters. The first of these interludes, dealing with the benefits of campus planning, is the transcript of a debate held at the UW in 2018, in which the current university pro-vice-chancellor, Prof. Anna Giza-Poleszczuk, took part, together with the Warsaw City Architect, Marlena Happach, the French planner and architect, Lise Mesliand, and the former Chief Flemish Government Architect, Peter Swinnen. There is a separate conversation with Marlena Happach about the potential of the *Pole Mokotowskie* parkland in Warsaw as a site around which several large higher education establishments are situated. A conversation with the principal planner of the urban Paris-Saclay campus, the Belgian architect Xaveer De Geyter, ranges generally over questions of designing academic campuses. Prof. Ewa Kuryłowicz, who is principal architect of several designs commissioned by the UW, stressed in her interview the need for flexibility in designing HE buildings. The architects Kristina Argyros and Ryan Neiheiser, curators of the *School of Athens* exhibition at the 16th International Biennale of Architecture in Venice in 2018, spoke of the fact that teaching rooms are becoming less important than the multi-functional space that separates and links them. Clément Blanchet, Pierre Jean Le Maitre and Edouard Pervès, the OMA-associated designers responsible for the exceptional Lab City at Paris-Saclay also talk about multi-functionality of buildings and common space. Professor Kees Christiaanse, an architect and urban planner from the Swiss Federal Institute of Technology (ETH) in Zurich and founder of the firm KCAP Architects&Planners, talks about office space and also the significance of higher education campuses in contemporary cities. The last two conversations, with the French architects Alessandro Gess and Matthieu Moreau, and with the Slovenian architect Vasa J. Perović, are about student accommodation.

The book ends with three appendices written by other authors. The engineers Jerzy Kwiatkowski and Joanna Rucińska write about energy conservation. The psychologists Joanna Stefańska and Anna Wiczorek write about evaluating buildings after occupation (POE). The sociologist Aleksandra Gołdys, the architect Ewa Rudnicka and the sociologist Wojciech Wilk, who all work with the UW's BIPA Office, describe the procedures used in consulting campus plans or designs for new UW buildings with their future users.

Translated by Emma Harris