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UNIVERSITY
IMPLANTATIONS
AS FACTORS OF
TRANSFORMATION.
TOWARDS
EXCELLENCE
OF URBAN
ENVIRONMENTS
AND PROMOTERS
OF INNOVATION
FOR THE POST-
SPECULATIVE CITY

**PREAMBLE: EDUCATION,
SPACE AND CITY**

The quality of the University is directly connected with the quality of its urban & architectural spaces. Any educational environment, especially the one involving elements of Architecture, ought to express a special engagement to its specific natural, social and urban context. Some principles are critical when planning a University precinct, to follow coherent guidelines before starting any campus design. As a first approach, the interference of foreign styles improperly understood should be avoided, in particular those whose origin, essence or formal display would not fit into local cultures (Chaabane, & Mouss, 1998).

Universities have the essential mission of providing an integral formation for human beings. Analysed throughout history, this university mission has also included the raising of good citizens (Nussbaum, 1998). With all these convictions in mind, the key objectives of higher education have to be hosted in an adequate urban and architectural body. This requires special emphasis on the proper arrangement of the physical spaces in which the important enterprise of human formation has to take place.

University architecture incarnates an interactive dialogue between buildings and individuals. Its planning process has therefore to exceed a mere provision of available spaces. The clear artistic intention of the design of the university complexes must be a mandatory requisite, which entails that open spaces are as taken in account as much as the built volumes (Gaines, 1991).

The conception of an educational nucleus must bear a special commitment to its own social, natural and urban environment. Thus, the organisation of the built environment must be deeply rooted in a vocational symbiosis

between the university and its urban context. Such a symbiosis provides excellent opportunities for the conception of post-speculative cities.

General urban & architectural features of universities in Spain

The following aspects could be singled out in a description of the general features of the way institutions of the Spanish university system are physically implanted in the territory and the urban areas at present.

- Universities are essentially linked to the city, although in the 20th century a dichotomy had developed between integration and segregation.
- Following its historical tradition, universities have been located within the old city fabric over centuries. It was during the second half of the 20th century when displacements to the outskirts of cities began. This meant the beginning of some tension between integrated and segregated precincts.
- Universities do not respond to a unique model, they are both complex and diverse
- From a global point of view, universities respond to quite a large variety of patterns in their physical implantations. There is often a direct relation between the institutional profile of the university and its urban and architectural diversification.
- Tendency to compact and macro-dimensional buildings

As a kind of historical heritage of the ancient “Colegios”, contemporary universities in Spain (and Europe) show a tendency to make use of big architectural structures, where quite a large number of functions and spaces are hosted. Besides the construction benefits of these typologies, they introduce some kind of impersonal scale, which it makes difficult for students to

identify with the “house” where they acquire and share knowledge.

- Return to the interpretation of the cultural memory
- In the last three decades, there has been a sound policy of moving the university facilities back to the heart of the cities. This has implied the formulation of neat proposals of innovation in relation to the post-speculative city.
- Spanish universities are not properly adapted to the European Higher Education Area (EHEA)

In spite of the years passed since the EHEA was initiated, the physical implantations of universities have not carried out the necessary processes of adaptation of their buildings and open spaces to the paradigm shift that is inherent in the EHEA.

A model for transformation of universities: the “educational campus”

New urban and architectural spaces for universities should be conceived akin to the innovative proposal of the “educational campus”, designed toward the achievement of excellence. This global concept tries to link education, architecture, the city and nature. The physical spaces designed to host education & research activities must try to go beyond acting as a mere built context. They must accomplish the goal of becoming “lessons” in themselves. Amongst other values, the design of physical spaces should look for the transmission of virtues, such as the ten principles of the “Educational Campus” (Campos, 2010):

First. -Utopia and integral planning. Inspired by the energy of utopian visions, universities must create a “sense of place” for the campus users, and their performance as “learning communities”. If there is a lack of identity with “place”, the feeling of “belonging”,

of being supported in both study and research, evaporates.

Second. - Community of learning and research. (Gabelnick, 1990). A sense of close personal contact is essential amongst students, faculty and staff. Transmitting human values within the global task of integral formation, an ad personam relationship is needed. In such a context, architecture assumes an extreme importance, in promoting that direct contact which is inherent in human relationships. (Boyd, V., & Hord, S.M., 1994).

Third. - Achievement of spatial harmony. This feature is closely connected to sensorial and psychological perception, and to the requirement of arranging masses and voids at a human scale which must be a sign of identity of institutions devoted to higher education.

Fourth. - Affective and intellectual embracement. While performing such a condition, teaching attitudes are reinforced, and learning occurs in a more effective and motivated way. This implies the creation of a built allegory that reflects a “mental reference type” closely aligned with contemporary values and attitudes in education. Well-designed urban and architectural spaces provide those values, being of high relevance to the formation process.

Fifth. - Nature and Art. Incorporating both as active cultural values, the educational spaces experience a sound enrichment. This conviction implies a sound sensitivity of urbanism and architecture to the environment. A well-designed overall architectural framework is a powerful medium for integrating the individual with the natural context, as well as with the urban frame.

Sixth. - Image and accessibility. It must be taken as a prerequisite that universities project themselves in a sensitive way towards their contexts. This implies paying attention to local culture and traditions. As a consequence, the

design of all university spaces should project a suitable interpretation of the locality’s heritage and multiple cultural values.

Seventh. - Sustainability. An university must be exemplary in the application of systems and techniques associated to that value. A built environment must a necessary factor among the conditions present at a particular site. If architectural elements are appropriately adapted to the global context, the advantages achieved in terms of sustainability, are considerable.

Eighth. - Memory and avant-garde. The design of educational precincts must incorporate an acknowledgement of past educational urban and architectural paradigms, harmonised with a commitment to avant-garde artistic ideas. Together with that, sharing knowledge with other cultures (building “bridges” between educational architectures) can be an outstanding tool to plan innovative changes in the universities of a particular country. (Campos, 2006).

Ninth. - Relation between university and city. Increasingly, universities are being required to be innovative as much in laying down new pathways of transformation as in defining new procedures for increasing synergy with society, whether through spatial solutions, facilitating a vibrant interaction of campuses with their social and economic contexts, through raising scientific output, or stimulating economic growth. (Clark, 1998). Overall, the presence of educational precincts is a key instrument to plan alternatives for the post-speculative cities.

Tenth. - Innovative teaching and learning modalities. The incorporation and enrichment of university spaces that result from the activation of innovative teaching and learning modalities is a very strong strategy to increase the quality of the whole process of human formation. Besides, it can be of extreme usefulness when adapting universities to the EHEA.

Proposing these Ten Principles of the “Educational Campus” has the purpose to offer a sound instrument of planning for universities, under the acknowledgement that their presence and development can provide very valid alternatives for the post-speculative cities.

UNIVERSITY AND HERITAGE: EVOLUTION TOWARDS EXCELLENCE IN THE POST-SPECULATIVE CITY, PROJECT CASE STUDIES

New Campus of Villamayor - University of Salamanca, Spain (2005)

In 2005, we received the commission to design a Master Plan for a new Campus. The emerging precinct would be located in the adjacent municipality of Villamayor, along the bank of the river Tormes. The distance between the campus areas and the core of the historic city of Salamanca is shorter than 2 miles. The Master Plan defined the basic guidelines for one of the most important projects under development in Europe. One of the most relevant features of this future complex is that it would imply an

extension of the University’s existing buildings, which will remain as a world heritage in the old town of Salamanca, where they have been located since its foundation in the year 1218.

Regarding the student population, the idea is to have a low-density campus in the future, designed to host up to 1,500-2,000 students (in @005, the University had 32,000 students and 2,300 faculty). From its early development, it will be adapted to the EHEA recommended parameters (25 students/teacher).

The design of the Campus consists of three academic areas, connected through a linear botanical park along the Tormes riverside. The whole precinct is divided into three main areas: the South Area (Agronomic-Environmental), the North Area (Communication & Arts), and the East Area (Scientific Park). There have been several sources of inspiration. One of them is that the project develops innovative interpretations of traditional university and city typologies, like the “plaza” and the “cloister”, which define medium-small scale areas to foster human contact within a properly scaled built environment. Another conceptual foundation has to do with the fact that the town of Villamayor has a strong tradition of sandstone quarries. The campus refers to the sandstone expressiveness (blocks) and extractive techniques, in order to design the assembly of architectural volumes. But not only architecture characterises the complex, nature plays a critical role as well. The Tormes riverbank, together with the indigenous vegetation and cultivations are integrated into the university campus as spatial elements of a unified scheme. Along the mentioned riverbank, a large botanical park will include two miles length of indigenous trees and plants interacting with the university, architecture and life.

The implantation of the new campus will give a transcendental role to learning, going



1. Villamayor Campus – South Area

beyond the limits of the academic area. The basic circulations are to be pedestrian, bicycle and river navigation. Public transport is recommended for the communication with Salamanca (two miles) and the small town of Villamayor (one mile). Within its boundaries, the campus will generate strong interaction, fostering participation of all kinds of members of the academic and urban community and thus transforming the social, urban and economic dimensions of the adjacent town (the scientific park, which will act as an engine for economic growth).

Regarding other principles, the Villamayor Campus was conceived as a sustainable complex, designed according to principles of bio-climatism, orientation and ecology values, which will create a healthy environment for university life. The Tormes river water will be recycled for campus use. Overall, the “Educational Campus” in Villamayor brings an outstanding opportunity to create a modern, deeply rooted and sensitive new academic space: the future of this eight century old university for the next decades. In such a challenge, architecture is called to play a transcendental role in education and research, the first lesson to be received both by users and visitors.

Sustainable Campus - Madrid, Spain (2007)

The Spanish energy company Iberdrola organised a competition in 2007 for the design of a project, a campus dedicated to the corporate training of its employees at San Agustín de Guadalix on the site of a former learning centre on the outskirts of Madrid. Our project's philosophy was based on two aims: first, to create an “Educational Campus”, where architecture and nature serve as cultural elements, conveying values of environmental harmony and quality; second, to generate a sustainable urban

and architectural environment using renewable energy to promote sustainability and represent the identity of the company.

As a basic leitmotiv in the conception of the complex, architecture is expected to show people how to relate to nature, transmitting ecological values and environmental sustainability.

The project was conceived at a human scale, in both the educational and functional sense. Any place on the campus is a potential site for meetings and teaching and learning events. Besides, the complex gives pedestrians priority over wheeled traffic.



2. Iberdrola Sustainable Campus – Global view

The Iberdrola campus project incorporates basic geometric shapes. They have been chosen according to the following reasons: to encourage appreciation of the visual meaning in the different volumes, and to associate each shape with types and uses of renewable energy. A section dedicated to the sun will be characterised by rectangular shapes (a symbol of stability and passiveness), a section devoted to water will take the form of triangles (representing movement and instability), while a section for wind will incorporate circular shapes (evoking dynamism).

Regarding nature, native vegetation (sustainable and ecological grass) would be planted in the general garden areas at minimal cost (EURO 200/hectare). Pools, in addition to offering visual relief, will contribute to the campus with a fresh breeze and serving as a storage cistern to supply the complex and for use for fire fighting. Ecological binding materials such as recycled powdered glass will cover paths and road surfaces.

The architectural design pays special attention to the roofs of the buildings (the so-called “fifth façade of architecture”). For sustainability, ecologically green types of roofing and storage will be combined. In terms of structure, a double skin system with wood on the outside and glass on the inside would be used, along with adjustable timber shutters sliding on metal frames. The shutters would be made of either natural coloured bamboo slats with an oil finish (a highly durable, minimum-maintenance ecological material) or cedar wood autoclave treated with fungicide and insecticide (also low-maintenance).

Educational Research Campus - University of Alcalá, Spain [2008]

In 2008, the University of Alcalá commissioned us to develop a master plan of the new campus, situated in the northern periphery of the city of Alcalá (a town located 20 miles east from Madrid). The precinct (870 acres) was located in areas belonging to the very attractive geological terraces of the river Henares. Due to the fertility of the soil and the direct relation with the natural and agricultural environment, the campus represented an enormous strategic zone of unaltered nature able of hosting landscape projects. Those projects could help to transform the site under the principles of quality and sensitivity towards the cited landscape.

The demand of carrying out a planning document (master plan) for the external campus was launched as an urgent need to gain efficiency in the use of spaces and resources, as well as to reinforce the atmosphere of a community of learning. Besides, it was one of the aims of the institution to facilitate a sufficient positive interaction of the university with its economic and overall social context.

Besides all these opportunities, the university demonstrated an intense demand of renovated spaces for research and development, together with some new buildings for academic purposes.

The Master Plan that was designed in 2008 under the supervision of the Technical Office of the University of Alcalá, tried to accomplish coherence between the environmental quality improvement and the need of fulfilling the new university function and space requirements. Together with these basic aims, the planning document included some criteria to improve the adaptation of the different spaces to the new EHEA.

One of the basic aims of the master plan was to provide the external campus with a solid spatial character which corresponds to the relevance of the University of Alcalá, one of the oldest in Spain, as it was originally founded in 1293, and later re-founded in 1499 by Cardinal Cisneros as the first “University-City” ever conceived as a complete entity in history.

Secondly, the planning process intended to transform most parts of the existing precinct (south area) providing solutions for the punctual functional and image problems identified, and defining opportunities for sound development. As new uses it will incorporate a new central library (which will adapt an existing old helicopter hangar for this purpose) and a dining facility. The new library would fulfil the requirements of the innovative Resource Centres

for Learning and Research, which are being inspired by the European Higher Education Area. The planning of this south area would also include a reinforcement of the “academic axis”, where most of the faculties and schools are aligned.

As a third objective, the master plan ought to face the design of the new areas that were located in the north area of the campus. As this was conceived as a kind of semi-autonomous part of the precinct, the guidelines of the composition were based on the principle of conceiving an environmentally advanced campus, following as well the main decalogue of the concept of “Educational Campus”.

As a consequence of such an orientation, the precinct was meant to show a sound commitment to nature, as well as being flexible in its expected evolution through time. This north area of the complex would be structured by an emerging “research and environmental axis”, whose direction would be almost orthogonal to the mentioned academic one. The two axes were designed to meet in a sort of “kneecap”, which would be in charge of hosting uses of research and development.

The “Research and environmental axis”, which consisted of a long and rectilinear element, came to organise the north area through a progressive increase of building density, dedicated to the main functions assigned to this north area of the whole campus. The core of this new axis will be occupied by a big linear park, where nature and landscape are expected to play a key role. The described linear scheme would run somewhat parallel to the natural unaltered areas (slope which brakes the two geological terraces) towards the east, where the campus finds its limits, at the existing railway line. This large rectilinear model would host the new architectural components of the scientific park extension, together with university



3. University of Alcalá Research Campus – General plan

research and development facilities. In order to achieve all these goals, the composition of the project establishes a system of modules, as a recommendable urban strategy to enable a flexible and progressive process through several phases or stages.

All the new areas of the campus were to be ordered following the criteria of the master plan commissioned by the University of Alcalá; those criteria were applied in the design towards the accomplishment of the mission that the spaces built together by architecture and nature involve themselves in an active way in the tasks of experience, study and research. And, overall, the master plan conceived the transformation of a big urban peripheral zone that would contribute in a critical way to the development of a city where knowledge should be a clear alternative to the current post-speculative situations of many metropolises.

Educational Campus - University of La Laguna, Spain (2009)

The University of La Laguna was founded in 1792. Its implantations are located in the Spanish Canary Islands, mostly within the area of La Laguna, a historic town seven miles west from the capital, Santa Cruz de Tenerife. The main precincts of this university are placed within the urban fabric of the town (San

Cristóbal de La Laguna), whose magnificent historic district was acknowledged by UNESCO as World Heritage in the year 1999.



4. University of La Laguna – Central Campus with the new Resource Centre for Learning and Research

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After a long period of complex evolution over the last decades, the university has been planning its next future, in terms of physical implantations and territorial structure.

For this purpose, the university commissioned us to develop a strategic plan and a master plan in 2008-2009, choosing the principle of the “Educational Campus” as a global inspiration source for the design of the future evolution of all the university spaces. This brought an outstanding opportunity to create a modern, deeply rooted and sensitive new series of academic spaces.

Amongst the layout of other areas, the University of La Laguna planned the requalification of its central space (adjacent to the Plaza Cruz de Hierro). The Institution decided to renovate the great open core ambit to achieve a sound transformation of this traditional location, by removing the current parking lots and redesigning the space as a new pedestrian environment (enclosing a new botanic garden). A new building was planned to be erected, Resource Centre for Learning and Research, to reinforce this urban nucleus. The outcome of such a modern transformation will be the birth of a big urban and academic agora, which will exemplify the close union between the university and city.

CONCLUSIONS: SOME RECOMMENDATIONS FOR CAMPUS PLANNING

Education is a spatial act; this conviction must be noted to fully understand the decisive role that architecture and cities have in the correct

conception of spaces dedicated to the formation of human beings (Alexander et al., 1976, Di Bitonto & Giordano, F., 1995).

University urban planning and architecture provide the frame for an ever-renewed connection between buildings and individuals, which goes beyond the mere supply of available built areas. (Orr, 2002)

Developing a masterplan for a campus is a redoubtable undertaking (Turner, 1984). The principle of human scale must be compatible with organising the urban layout of a very large site. The “Educational Campus”, which emphasises both the spiritual and the ideal, can help universities in their unceasing search for excellence, offering post-speculative cities new opportunities for coherent and solid transformations. The emerging concept of the “Educational Campus” was assumed by the programme “Campus of International Excellence”, developed during 2009, 2010 and 2011 by the Spanish Ministry of Education (Campos, 2010), (Campos, 2011).

Finally, it is recommendable to elaborate a list of criteria of excellence, in a general understanding, whose application to each campus project must end up with detailed suggestions in each case. (Nair & Fielding, 2005) Among the most relevant criteria are:

- University spaces must bear a commitment to their own social, natural and –especially– urban environment: the place
- The clear intention of the complexes must be a mandatory requisite and open spaces should be as essentially taken in account as the built components.
- University design must be conceived under integral planning; when possible it is of high interest to plan it to correspond to the city General Plan.