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HOW TO FACE CURRENT
AND FUTURE CHALLENGES?

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ARCHITECTURE FOR ACTIVE LEARNING AND AGING: TOWARDS OPEN INNOVATION IN UNIVERSITIES

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Abstract

Open innovation in Universities should be founded on several principles: Education is an affective act (implying special attitudes between faculty and students); Education is a collective act (a community of learning generates more knowledge than the individuals); Education is a sustained act (an activity linked to active learning and ageing); Education is a spatial act (human contact is necessary to achieve a complete formation for future citizens, beyond their achievement of mere technical abilities). To achieve these goals, this paper proposes the philosophy of the “Educational Campus”, a modern paradigm that can be applied to transformation processes of Institutions of Higher Education. Actually, this conceptual tool has been used by the Spanish Ministry of Education in the Program “International Campus of Excellence”, since its first edition in 2009.

Excellence in Universities must be based on the main principle of the “Educational Campus”: that the human contact that makes Education possible must take place in a real location. Consequently, it is necessary to underline the critical role that Architecture has to play in the evolution of Universities towards innovation, as it hosts the human contact needed to achieve the true mission of Universities: the integral formation of a human being.

The “Educational Campus” has the capacity of fostering open innovation processes at four scales: relation between University, city and territory; the campus as an independent complex; the building as an architectural piece; and finally, the classroom, as the basic learning spatial unit.

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Overall, the quality of Universities is intimately tied in with human attitudes, but also with the quality of its Architecture. Through sound planning (using the “Educational Campus” paradigm), Universities can improve the nature of their spaces, transforming them into sites where innovative teaching and learning modalities can be hosted, as well as places to invite citizens of all ages to keep on participating through all their lives in the fascinating task of education.

Keywords: University; Campus; Higher Education; Architecture; Innovation; Active Learning and Aging.

1. Education as an affective, collective, sustained and spatial event.

According to the current Higher Education international situation of change and innovation, it is time to remark several fundamentals about learning processes and space.

The first one is that Education is an affective event. The mission of a University is the integral formation of human beings; consequently, that transcendental process requires a sensitive approach from faculty to students.

The second one is that Education is a collective act as well. It has been demonstrated through the history of institutions addressed to this social function that a group progresses more than the individuals in the genesis and transference of knowledge. As a consequence, a University campus becomes an ideal environment in which to build up a true community of learning and research.

The third fundamental is that Education is a sustained act. As inherent to the Long Life Learning idea and suggested by the European Higher Education Area, Education is an activity subject to be developed through the whole life, and thus active learning and aging should be promoted by all kind of policies.

The fourth fundamental has to do with the idea that Education is a spatial act. If human contact is a necessary component of integral formation, that activity has to happen within a physical framework; and this is where Architecture plays a key role, as the material host of such a

relevant relation. Universities cannot be understood properly or planned without a global consideration of their physical spaces, as the material projection of their global reality.

Urban and architectural places designed to house activities of education and research ought to fulfill functions beyond those of service as a part of the built context. Recent studies, such as Pink's: "A whole new mind: Moving from the Information Age to the Conceptual Age" point out that IQ accounts for a reduced portion of career success: just 4% - 10% (Pink, 2005). Consequently, we must ask ourselves what factors account for successful student learning and for the maintained interest of people in active learning and aging? Amongst others, curiosity, feeling of wellness, visual, psychological and environmental comforts, positive perception of shape and form, etc. All have then to be born in mind before starting the formal design of a Campus (or of any human settlement) (Alexander et al., 1976). Another recent study suggested a stable social context might reduce attrition rates, and help students achieve academic and social aims (Wisely & Jorgensen, 2000). But, it's necessary to underline now that an appropriate physical environment may foster positive attitudes, which may build into excellence in education itself. Thus, a university's Architecture should be oriented to achieving such fundamental objectives, the most relevant being the enhancement of student motivation, as the most important energy that can be transmitted to those future citizens in order to encourage their positive learning attitude; and, as a direct consequence of that through time, active learning and aging as a sign of identity of our current modern societies.

2. Excellence in Education - Excellence in its urban & architectural dimension

2.1. Basic concepts

Excellence in Education is intimately tied into the correspondent excellence of its physical setting.

Some principles are critical, the guidelines before starting any Campus plan. The most relevant one could be expressed by stating that the quality of the University is directly connected with the quality of its Architecture. 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 in with local cultures (Chaabane & Mouss, 1998).

Higher Education has a supreme purpose, which is the formation of human beings, building them up as future committed citizens (Nussbaum, 1998). This mission imposes special emphasis on the proper arrangement of spaces that host this central undertaking. University Architecture stands as an interactive dialogue between buildings and individuals; if not resolutely related to the human beings, it risks becoming an empty, cold and meaningless shell. Consequently, any planning process of a Campus has to go beyond merely providing facilities. Designing a complex site demands artistic purpose as a mandatory requisite, and, in the project's development, open spaces must play as much part as built space. Besides, Campus Architecture may be considered as a genuine form of public Art.

2.2. Function, culture and character

It has been already stated that good Architecture consolidates the good University. This claim rests on three elements: function, culture and character; reviewing them over the nine centuries of University life will allow us to assess the different weight and impact that each of these dimensions has had upon the University.

Function-From Classical Rome comes the Vitruvian canon – the three-fold “*utilitas, firmitas, venustas*” (utility, stability, beauty) – that encapsulates the qualities present in any good form of Architecture. Universities ought not to ignore this at all. In educational terms, functionality should also entail a sensible relation with cities, as an active exchange from which mutual benefits flow. Universities both fulfill a wide range of activities. Higher education Institutions of the early 21st century do not focus exclusively on teaching & learning, as they also

must attend to the extracurricular domain. Nowadays, the planning of Universities should keep in mind the need of building up global “urban” academic areas, strongly influenced by the cultural presence of Higher Education. As a consequence, in present times, any Campus should be designed under the global principle of being understood as part of a global neighborhood, as universities must be fully understood as an extremely relevant part of cities; this idea implies the need of paying attention to the different communities that can benefit from educational processes, in particular the seniors (through Long Life Learning), amongst other groups of citizens.

Culture-Universities have to serve as the cradle for the trends, artistic, intellectual and avant-garde, of their time. In facing this challenge, Campus Architecture becomes an outstanding showcase, a sort of dynamic laboratory of contemporary Art and building innovation. In such an educational context, culture implies a rational adaptation to social, natural, urban and architectural circumstance and environment. Understanding the specific task this relationship imposes begins with the definition of heritage itself; it is recommendable to review the approach that was carried out by Marina Waisman, an architect from Argentina interested in the connections between Education, Architecture and History:

“The particular characteristic of heritage is precisely the relationship between the historical object and its environment (...), this unit presents new meanings which cannot be provided by one of the elements alone” (Waisman, 1995, p. 63).

Character-Architecture can be made to transmit subliminal messages, conjure up poetic dimensions, and provide meaning and significance as a whole whilst maintaining a functional capacity for laying down utilitarian spaces. “Character” sets it apart from more conventional or prosaic works. The “character” of an architectural project lies in its strength, originality or (expressed in a more poetic way), its capacity to “stir men’s blood”. Put differently, the central idea of the project – its essence or “soul” – should inscribe itself deeply upon the mind of its ‘consumers’. This, without doubt, is the key role Architecture plays through the external image it projects and the personality it enshrines. When understood

as a series of formal responses in the form of buildings located within the same complex, the particular “character” emerges from the criterion that differentiates them as the artistic projection of their internal personality. Possessing such character, they stand as significant offshoots of Architecture; if, oppositely, architectural pieces lack it, buildings amount to little more than meaningless transcriptions of the general undertaking. Applied to Universities, this third dimension “character” is primordial. A creative expression is essential if it is to have a solid impact upon those who make use of the constructs that encapsulate it.

Among the many examples that History provides of deliberate use of “character” paradigms, is the splendid façade of the University of Salamanca, with its outstanding Plateresque masterpiece - a fascinating sandstone elevation together with the adjacent Patio de Escuelas. Finished in 1529, today it too stands as an emblematic architectural “stamp”, evidence of the commitment of the Spanish monarchs Ferdinand and Isabella, who commissioned Juan de Álava to draw up an abiding tribute to the magnificence of the Alma Mater, and in so doing, created the best-known icon of all Spain’s universities (Rodríguez Cruz, 1989, p.56). A comparable development took place in other Spanish University, Alcalá. Its main façade, designed around 1553 by Rodrigo Gil de Hontañón, appears in our time as an architectural symbol, a lasting testimony to the enthusiasm of the founder, Cisneros, who envisioned in 1499 the first ever planned “University City” of Europe. Viewed as a metaphor, its vertical frontage is a stone tapestry, which solemnly proclaimed the presence of the University before a delighted society. The City of Alcalá, recognizing this, opened up a small piazza (Plaza de San Diego), in front of such a superb architectural masterpiece. Thus, an uncluttered space with certain cloister overtones enhanced the view of the incomparable building. Constructed as a sort of Agora, the rectangular court laid open the urban fabric the better to make the façade more visible.

Thus, in the reviewed cases of Salamanca and Alcalá, City and University each contributed to bettering the other by extending the crucial impulse their architectural character transmitted in both form and spirit.

As a consequence of all these arguments, it must be remarked that making use of the power of its function, culture and character, the Campus layout, itself a meaningful heritage creation, has to be shaped with extreme sensitivity to the underlying educational model of its own University, as well as reinforcing on a human scale its surrounding community, a policy that will necessarily involve the elderly.

3. Opportunities for University innovation and conscious and active learning and aging

3.1. The institutional European and Spanish scenario

The European Higher Education Area (EHEA) is offering an outstanding opportunity for innovation across multiple dimensions: teaching & learning modalities, governance, and urban & architectural layout.

Faced with the prospect of the EHEA, and beyond, Universities also have the onus of drawing up innovative models of learning in which the student plays the key role, rather than the lecturer: a true paradigm shift. The coherent consequence of this priority is that the way Knowledge is transmitted and shared has to be modified. One of the positive outcomes of such a change will necessarily be conscious active learning and aging, as the EHEA clearly supports the idea of extending Education to all kind of citizens, through ideas such as Long Life Learning.

Universities respond to international trends, and are repositories of the information and know-how related to those trends (Navarro & Gallardo, 2003). From this it also follows, innovative spaces have to be defined in parallel. The physical environment plays a key role in fostering innovative approaches to learning that go beyond the formal lecture, both in Universities and in Schools (Boyd & Hord, 1994). Thus, the first stage towards a profound change in teaching strategy and technique is to define new ways of learning. This global topic has been recently deeply studied in the Research Project titled “Innovative Spaces for University Excellence: a Study of Paradigms of Optimization in Teaching and Adaptation to the

European Higher Education Area” (Lead Researcher: Pablo Campos, 2010-2011), under the Spanish Ministry of Education national policy “Programa de Estudios y Análisis”.

The EHEA is provoking a major change in the University System. That change has necessarily to involve the urban & architectural dimension of Universities. The physical body of universities is critical for assuring the overall quality of the maturation of any student, as well as of the enrichment of seniors, as an important community of learning. This point is also made in documents, issued by the EHEA:

“Ministers stress the need for appropriate studying and living conditions for the students, so that they can successfully complete their studies within an appropriate period of time without obstacles related to their social and economic background”. (Council of Ministers, Berlin communiqué, 2003, p.5).

Regarding the mentioned urban & architectural dimension of Universities, synergies between Campus Architecture and nearby cities play a key role in accomplishing global excellence. Implicitly, the idea of “quality” must be closely tied in with the physical space dimension. And the benefits of appropriate provision and facilities should penetrate beyond the limits of the academic establishment *stricto sensu*, into its immediate environment; this penetration will clearly contribute to bringing Education closer to different communities and citizens, especially those (the elderly) that can suffer from a lack of agility in transportation.

Universities have always promoted innovation. A Campus implanted gives rise to a centrifugal dynamism of social, cultural, economic and urban renewal well beyond academe’s groves. Changes in learning patterns are decisive if major progress towards quality culture is to be effective. Innovation, which the EHEA requires, has to be applied both in the ambit of the physical “learning sites” and the range and variability of modern learning modalities. In parallel to the EHEA, some countries are developing national programs to foster innovation: United Kingdom, France and Germany. In Spain, the Ministry of Education (in coordination with the Ministry of Science and Innovation) launched in 2009 the Program “International Campus of Excellence”. The basic aim of the initiative is

to promote the modernization of the Spanish University System, towards excellence and internationalization. Through a policy of aggregation amongst Institutions of Higher Education, the Program inspires new visions of campus that can be used by Universities for innovative change. The adaptation of physical spaces to the teaching & learning modalities promoted by the EHEA requires a sound reflection about the nature of all those spaces; the Spanish Program “International Campus of Excellence” takes care of the urban & architectural implementation of all Universities as a fundamental component of Higher Education.

3.2. An innovative concept for transformation of Universities towards excellence: The “Educational Campus”

A first approach to the concept of “Educational Campus”

The concept of “Educational Campus” consists of a university-spatial philosophy capable of structuring the transformation of the university’s premises towards comprehensive excellence. Prior to proceeding in the definition of this innovative idea, it must be underlined that University Architecture has the essential aim of modifying human behavior, fostering visual comfort and psychological wellbeing. As suggested by the German professor Rudolph Arnheim: “The Sensualist philosophers have reminded us forcefully that nothing is in the intellect which was not previously in the senses” (Arnheim, 1962, p.2).

Higher Education in its built form has not shown in the last decades enough energy, as reported in the case of Spain by acknowledged professors such as Antonio José Campesino (Campesino, 1995), or Josefina Gómez-Mendoza (Gómez-Mendoza et al., 1987). Following the intention of suggesting a sound change to this situation, the “Educational Campus was enunciated by the author of the present text in 2005, together with the design of the new Campus of the University of Salamanca, in Spain. It was later published in the Reviews “Programme on Educational Building” by the OECD (Campos, 2005), “Centre for Effective Learning Environments

Exchange” (Campos, 2010) and in the book “Spain-Campus of International Excellence” of the Ministry of Education (Campos, 2010).

The vocational and intrinsically educational facet of a university’s physical spaces is consistent with the calling of Architecture in general. The capacity to instruct that a well-made architectural object may have springs from its ability to express its own needs to its surrounding city and community, and so bring change into alignment with the needs of the environment. These issues have been addressed by several Italian authors, like Purini and Della Volpe (Purini, 1980)

Ideas or values are expressed in architecture by means of a system of geometric, three-dimensional, visual signs. That is to say, architecture uses a language made up of measurements appropriate to the creation of visible order through the repetition of similar masses... (Della Volpe, 1964).

These approaches turn on the internalization of buildings and places annexed to teaching premises in the manner of three-dimensional textbooks (Nair & Fielding, 2005); i.e., the campus as a student’s first lecture. Instructing capacity of Architecture, an idea involved in the concept of “Educational Campus”- As Orr remarked in *The Nature of Design*, “the curriculum embedded in any building instructs as fully and powerfully as any course taught it in it” (Orr, 2002, p. 137).

Architectural units within an educational complex serve as “3D texts” and very especially so when sustainability is built into the design goals of universities: “Transparent architecture and engineering systems are ideal in a learning setting because they can engage students’ imaginations and spur learning about buildings as 3-dimensional textbooks” (Nair & Fielding, 2005, p. 80).

The “Educational Campus” model is proposed here as a conceptual and practical tool, towards the transformation of Universities towards excellence. It seeks to give concrete shape to a universal philosophy capable of driving forward a process of commitment to modernization in universities generally. The success of any process of transformation towards excellence at a Higher Education institution can be structured into a tetrad of consecutive stages: conceptual foundations, planning, consensus and communication. If this itinerary is drawn with sufficient

clarity, it may suffice to introduce the conceptual basis inherent in the concept of “Educational Campus”, the definition and implementation of which are the present concern of this paper.

The current European and Spanish context is an invitation to change. The “Educational Campus” was conceived as a paradigm for transforming any Higher Education establishment. It begins with the idea that the built form of the University should become a “lesson in itself and by itself”. Planning a University precinct entails a special commitment to its urban, cultural, economic and social environment. Universities have the obligation to be avant-garde in all their manifestations, including, of course, Architecture. Both designing Higher Education Architecture as indeed, the Educational Campus itself, involve “works of Art“. As explained by Thomas Gaines:

“Unlike the two-dimensional art of painting, the three-dimensional art of sculpture, and architecture, in which the fourth dimension is function, a campus has a fifth dimension: planning. The well-planned campus belongs among the most idyllic of man-made environments and deserves to be evaluated by the same criteria applied to these other works of art.” (Gaines, 1991, Introduction)

To delineate the intervention philosophy that may guide the innovative transformation of university campuses towards excellence (and their suitable adaptation to the EHEA), there follows a definition of the concept of “Educational Campus”, as an ideal University precinct embodying the values contained in these ten principles:

The Ten Principles of the “Educational Campus”

University Architecture transmits added value to the Institution: the sense of human habitation on Earth (Purini, 1980). If the built environment does not wholeheartedly relate its users, it is an empty shell. This is a devastating outcome, as the group SITE noted, particularly since Architecture is the only genuine public art form (Restany & Zevi, 1982, p.16). Amongst the values that the design of physical space should look

to foster and proclaim, the following ten may be considered, as commandments of the “Educational Campus”:

First-Utopia and integral planning (Campos, 2006). Inspired by the energy of Utopian envisions, Universities must create a “sense of place” for the Campus users, towards the performance of “learning communities” (Gabelnick, 1990). Absence of identity with “place”, the sense of “belonging”, of being supported in both study and research, evaporates. Planning is of high importance to root a Campus in culture, as the case of the University-City of Madrid, and evolve in a coherent manner (Campos, 2004).

Second-Building up a community of learning & research, and contributing to active learning and aging. A sense of close personal contact is essential. It can never be entirely replaced by the “virtual campus”, which nowadays is one of the greatest dissolvents of educational values. As Richard Dober, whose experience of Campus Planning spanned some four decades, stated in the Annual Conference of the Society for College and University Planning (USA, July 2003): “Internet transmits facts, but not values”. Transmitting the latter demands an ad personam relationship. Architecture assumes an extreme importance, in promoting that human touch.

Third-Fostering spatial harmony, a feature closely connected to sensorial and psychological perception, and to the requirement of arranging masses and voids on a human scale.

Fourth-Performing a physical metaphor of the “affective & intellectual embracement” corresponding to teaching attitudes. This implies the creation of a built allegory that reflects a “mental reference type” closely aligned with contemporary values and attitudes in education. A physical space provides those using it with comfort and protection, indispensable if students of all kinds (with special mention to seniors) are to fulfill their aims and ambitions.

Fifth-Incorporation of Nature and Art as active cultural values. This implies a sound sensitivity of physical spaces to the natural environment. A deft and well-designed overall architectural framework is a powerful medium for integrating the individual with the natural environment. Used

thus, Architecture ensures that appropriate and judicious ties are laid down between the University's built space and its natural environment.

Sixth- Considering image and accessibility. A sensitive projection of the University towards its context implies paying attention to local culture and traditions. Mies Van der Rohe believed:

“Architecture is the will of an epoch translated into space” (Mies Van der Rohe, 1923). Consequently, the design of any architectural unit should project a suitable interpretation of the locality's heritage.

Accessibility comes to be a key issue for promoting conscious and active learning and aging, as the elderly often have difficulties in reaching some University seats.

Seventh- Adequacy to local environment, fostering sustainability values and techniques. A built environment must necessarily factor in the conditions present at a particular site. If buildings are appropriately adapted to context, the advantages in terms of sustainability that result are considerable. Architecture may foster renewable resource usage, through recycling processes, energy saving and its attendant efficiency. Recognizing this priority includes strategies across such areas waste management, sustainable transportation and bio-climatic Architecture (Campos, 2008). One special sustainability value should be narrowly connected to the idea that Education is in effect a sustained act, as promoted by the policy of Long Life Learning.

Eighth-The acknowledgement of past educational urban & architectural paradigms, harmonized with a commitment to avant-garde spatial ideas. This consciousness of the “architectural memory” finds outstanding types in History. Why this particular value merits its place in “The Educational Campus” can be justified on much the same grounds as those put forward by Barry Blesser & Linda-Ruth Salter: “Evolution is fascinating just because it has the potential to offer explanations about phenomena that would otherwise appear to have no explanation” (Blesser & Salter, 2006, p. 317).

Besides, sharing knowledge with other cultures (building “bridges” between educational Architectures) can be an outstanding tool to plan innovative changes in the Universities of one particular country (Campos, 2007).

Ninth-Generating close ties 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 Campus with its social and economic surrounds, through raising scientific output, or stimulating economic growth (Clark, 1998, 2005). In effect, no HEI can nowadays be taken seriously if it remains in glorious isolation from the overall social context of its Nation. Yet, there are caveats even so. As Hale, remarked: “It is a road which leads to disaster to lift a solution to a problem from one country and to try to apply it unaltered in another” (Hale, 1987).

Besides, the described relation University-City is of particular interest within the European and Spanish scenario, as History shows the long tradition of connection between both entities. Together with this, it should be kept in mind that EHEA Area fosters the University Third Mission, which is undoubtedly connected with the idea of active learning and aging; in this sense, University spaces hosted within urban fabrics are an excellent tool to foster such active learning and aging, as physical proximity is a sound advantage when planning participation in educational activities of all kind of people, particularly seniors and their potential difficulties to cover big distances on a regular basis.

Tenth-Designing of new spaces to host and foster innovative teaching & learning modalities, as the best way to adapt University buildings to the EHEA and to promote the participation of all citizens, fostering as a consequence the development of conscious and active learning and aging.

Proposing these Ten Principles of the “Educational Campus” has the purpose of recalling that planning University environments ought to be bound into the idea of positive evolution. Arguably, such a task is best developed by a diverse group, as this tends to create more inclusive plans, and deals with a wider range of needs (Proudfit, 2000). Planning means foresight, anticipating change and incorporating flexibility (Daigneau, 2005). It is an indispensable instrument for strengthening the feasibility and sustainability of a Campus, and to realize that the world of today for Higher Education is completely different from the past (Keller, 1983).

Besides, planning also implies sensitiveness towards the elderly, as its basic aim is to cover a wide range of years with educational activities that go beyond the traditional campus activities, places and addressees.

The paradigm of the “Educational Campus” can guide Universities towards excellence in Education, through urban & architectural innovative models, benefiting both the traditional University life as well as those activities associated to the active learning and aging.

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