

HOW HISTORIC CITIES BECOME ACCESSIBLE

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SUMMARY

The purpose of the study is to identify what actions are essential to ensure access and equal mobility conditions within historic cities to all people, regardless the diversity of their (dis)abilities. The challenge is to reach a fair balance between: 1) respecting the collective memory of inhabitants and future generations by protecting the architectonic heritage of the city, and 2) ensuring equal mobility rights to all citizens to guarantee an active and full participation in society without restrictions. It is necessary to adopt a new approach towards the entrance of historic cities: whilst the ancient urban settlements were commonly located on the top of a hill surrounded by Medieval Walls due to its original defensive purpose, nowadays this reason has oppositely changed and the main objective is to facilitate the access and openness of the city to inhabitants and visitors. These cities present complex topographic conditions, with narrow, irregular and steep streets above the accessible slopes permitted by the regulations, which leads to basic interventions to be carried out.

The methodology followed has been to recreate resembling study cases to allow a further comparison and reach of conclusions: 4 Iberian cities with similar morphological conditions have been analysed under identical circumstances of European academic research during 3 consecutive years. Under the format of an Erasmus Intensive Programme (IP) has been possible to organize several workshops counting with the participation of 9 European Schools of Architecture – providing 4-6 students and 1-2 professors each during 15 intensive days per workshop –, to carry out a specialized study on inclusive urban design. Remarkable results have been achieved after the experience of researching and teaching on this topic during the last 3 years. In addition, it is worth to mention detailed studies carried out by some students who decided afterwards to work in detail as their Final Master Project on a specific site detected during the IP as a strategic point of intervention, which provides full account of the possible solutions.

The aim is to achieve common conclusions on how historic cities become accessible. It is important to notice that the procedures must be based on the user experience or centred design and not on the specific regulations of the city at issue, because they incoherently change from one region to other. The goal is to give clear directions on how to ensure inclusive environments, best practices and innovative thinking and teaching to guarantee inclusive societies.

Key Words: accessibility; heritage; inclusive urbanism; architectural design education; design for all.

PURPOSE OF THE STUDY: INCLUSIVE URBAN DESIGN

The purpose of the study is to carry out research on universal design in public space to promote the suppression of architectonic barriers existing in historic city centres, especially those characterised by being world heritage sites and where topography is complex and steep. These cities, on most occasions, were originally fortified sites on the top of a hill, protected by a medieval wall for defensive purposes. This condition, which was indispensable in the past, has become an absolutely contemporary contradiction: nowadays the main purpose is to reverse this situation and to open the cities to the exterior. We must, therefore, rethink our historic urban areas and ensure that equal access is facilitated, but without forgetting that heritage must be protected and passed down to generations to come.

The aim is to achieve common conclusions on how historic cities become accessible; to give clear directions on how to ensure inclusive environments, best practices and innovative thinking and teaching to guarantee inclusive societies. It is important to notice that the procedures must be based on the user experience or centred design and not on the specific regulations of the city at issue, because they incoherently change from one region to other. Hence, one of the objectives is to organize disability simulations to allow participants to experience the impairment and the diversity of needs of the population first-hand, because putting oneself in another person's shoes is a method for intuitively finding out what is lacking in many current designs, and how inclusive solutions are the answer. It is about internalizing the different movements, identifying the problems, and experiencing what can be done and what not, and, above all, why, instead of simply memorizing the demands explicit in the ordinances.

When organizing a disability simulation, the aim is to be an eye-opener as well: to bring the general public closer to the distant world of disabilities, to break the current taboo about the natural human intercourse, accepting the losing of abilities and ageing as a reality. It is about defeating the fear of the unknown, the 'no way!' thinking. So often, in a disability simulation, there are people who are unwilling to sit on a wheelchair, or reject to move without guiding themselves through sight. Because of this, it is important to introduce the activity in a closer and friendly way, almost as a game and with good sense of humor; the basic gain is to bring diversity - functional diversity, commonly called in Spanish- into normality, so people become familiar with impairments. It is also important to note that part of the teaching staff (and some students as well) were people with disabilities, visually impaired or wheelchair users, who gave a particular insight in the design pedagogies ensuring an increase of the students' sensitivity and a deeper understanding of users needs [Bernadi and Kowaltowski, 2010].

MATERIALS AND/OR METHODS: IP LOCUS

The methodology followed has been to recreate resembling study cases during 3 consecutive years, to allow a further comparison of results and reach of conclusions. It has been possible thanks to the organization of the Intensive Programme (IP)

“LOCUS - Let’s Open Cities for Us”, conceived as European academic teaching and research activities working on the issue of inclusive urban design in heritage sites, under the umbrella of the Erasmus Agreement of the European Union and through OAPEE’s funds (Erasmus National Agency of Spain; www.oapee.es).

The research has been carried out specifically in 4 Iberian cities with similar morphological conditions: Tarragona (Spain - 2008), Girona (Spain - 2008), Évora (Portugal - 2009) and Ibiza (Spain - 2010). All of them are medium-size cities with similar conditions of topography and development growth, transferred into problems of mobility and easy connections between the old centre located up the hill and the new city in the lower part. In general aspects, LOCUS sites have steep topography, which makes mobility very difficult and slow, and this topography is mostly not modifiable, which severely reduces the number of possible solutions. Furthermore, LOCUS faces it in the most restrictive scenario: that one of guaranteeing accessibility to all regardless their different abilities and, simultaneously, respecting the heritage of the city. Thus, the objective of solving highly complex situations, as the ones proposed by the LOCUS IP, is to provoke an evocative brainstorming of the participants (not only students and professors but local authorities as well). The aim is to exercise, in an open-minded view, the design of innovative and feasible solutions and stimulate the conception of new proposals.

LOCUS IP is formulated as a set of workshops counting with the participation of 9 European Schools of Architecture – providing 4-6 students and 1-2 professors each during 15 intensive days per workshop –, to carry out a specialized study on inclusive urbanism. In order to get more inputs and different views on the topic of universal design, an effort has been made to obtain the maximum variety of participating countries; coming from different European regions with different manners to approach accessibility and disability issues: Finland, France, Germany, Italy, Poland, Portugal, Romania, Spain and Sweden. A group of about 30 students has participated in each workshop, being split into mixed-ability and multicultural teams of 3-5 students to foster group discussion and cooperative learning. The work system involves a complete immersion into the subject: by living and working in the city at issue of study for fifteen intensive days, in order to propose innovative designs to improve the general accessibility of the place. This methodology allows a design process from the inside to the outside; that is: inhabiting the site day and night, feeling and experiencing how life is carried on, where the nice places are located, why do they feel nice, which locations remain empty, and why it is so. “What is particular to the process of inside out is creating from the potential of the site and the needs of local residents” [Franck, K., Lepori, B., 2000]

RESULTS OR EXPECTED RESULTS

Remarkable results have been achieved after the experience of researching and teaching on this topic during the last 3 years. In addition, it is worth to mention detailed studies carried out by some of the IP participants who decided afterwards to work in detail as their Final Master Project on a specific site detected during the IP as a strategic point of intervention, which have provided full account of the possible solutions.

One of the first basic actions where people with special needs are concerned -also given the considerable increase of tourism of the elderly- is to facilitate a map indicating the accessible paths versus the non-accessible ones. Thus, the methodology consists of analysing the public urban space, by mapping the streets in relation to their slopes, in a gradient from yellow to red: starting with yellow where the terrain is considered flat (0-2%) and therefore fully accessible; passing from light to dark orange in relation to the gradient of the slope (4-6-8%) considered as accessible with restrictions, and finally dark red (10-12% or more) where the slopes are hardly accessible or completely inaccessible. The slope-maps allow to rapidly detecting where are the main inaccessible points -commonly called 'dark points' by LOCUS participants and identified as dark red areas on the maps-. They are found in those areas where the slope is much higher than that allowed by regulations; thus, the most feasible solution is to integrate mechanical transportations into the urban environment. This strategy will provide two basic tools of action in the urban scale, which, on most occasions, must be complemented one with the other:

1. Mechanical vertical communication

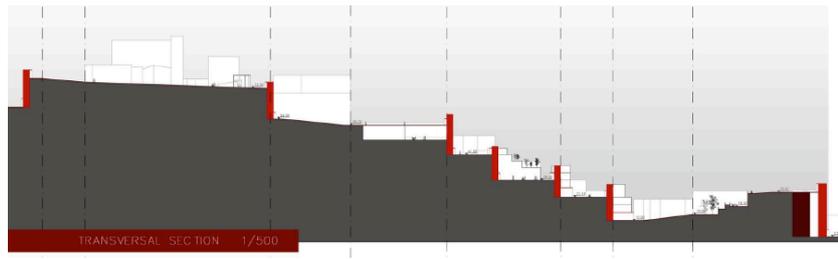
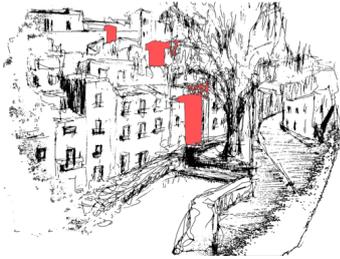
The aim is to identify those inaccessible areas impossible to be solved in any other way than by means of mechanical vertical communication, such as lifts, mechanical ramps or funiculars, to illustrate some examples. We find two different ways to approach the introduction of such devices.

1.1 City sewing

The 'city sewing' concept consists of locating those particular points -empty plots or existing buildings- that are strategically located when they are connecting two streets or more at different levels. In these spaces it is convenient to install a lift for a public use; thus, a difference in level of about 10 to 30m, depending the circumstances, will be compensated in an easy and relaxed way. In mobility terms, these kinds of interventions sew the city up because they are repairing interruptions along the pedestrian paths. In other words, installing a lift in a strategic point can work as "urban acupuncture" [Casagrande, 2009], because "it revitalizes a 'sick' or 'worn out' area and its surroundings through a simple touch of a key point" [Lerner, 2011].

In relation to this 'city sewing' concept, it is worth to briefly present the winning projects on the internal competition held in LOCUS workshop in Ibiza, proposal that greatly developed this approach: Ibiza, similarly to the other cities studied by LOCUS, has its historic centre located up in a hill, surrounded by defensive walls, generating a notable difficult mobility due to the steep sloping streets and to the arduous connection between the old and new part of the city. It is worth to mention that the historic centre of Ibiza is mainly uninhabited surely due to the difficulty of accessing the upper area, thus many unoccupied buildings are found. The first and second prize winner projects (see figures 1a and 1b respectively) proposed a similar strategy of installing a system of interconnected lifts integrated into the existing unused buildings. The project awarded with the first prize presented a brilliant dialogue with the constructed environment: the facades were conserved while the lifts raised inside, like ancient towers did, with the aim of letting the new 'accessibility layer' appear as a sign of modernity, ensuring conditions of mobility and orientation within the city.

1. City sewing: Installation of lifts strategically as accessible path



1a. 1st prize LOCUS -Ibiza

1b. 2nd prize LOCUS -Ibiza

As a matter of fact, many different students workgroups when studying a particular city coincided in the same location where a lift or another system of mechanical transportation was needed; a coincidence that pointed out, without any doubt, the necessity for such an intervention. For instance, the main 'dark point' detected during the LOCUS workshop in Tarragona by almost all workgroups is located between the levels of the ancient Roman Circus and Provincial Forum [Macias, 2007], in the street called Baixada de la Misericòrdia (it is worth noticing its English meaning: Mercy Descent!). The slope of this street is above 20% of inclination; the road is paved with pebble stones while the sidewalks have become steps on both sides. Analysis of the site confirmed the impossibility of adjusting the slope to the ideal stated by the regulations, thus the most repeated solution was to use an existing building strategically located, to install a lift in its interior. Hence, in this case study appears, with no doubt, the dark point where a mechanical vertical communication is needed, as the reader might see if comparing the different proposals of the students.

2. Location of a strategic point: coincidence of proposals



Several LOCUS-Tarragona proposals coinciding in Baixada de la Misericòrdia St. to install a lift. From left to right: group 6, group 5, group 3

1.2 New entrance

In contraposition to the 'city sewing' strategy, some other students worked on the hypothesis of creating a 'new entrance' point to the city, instead of solving the access through the narrow historic paths. The aim is to locate a strategic entrance point in order to reach the highest level quickly and easily, and then allow facilitating downhill routes, notably easier for everybody. It is important to highlight a common

situation detected whilst analysing the cities studied by LOCUS: inhabitants - especially tourists, with a high incidence of elderly visitors- usually get tired when wandering around the old city, mainly due to the high slopes and steep steps on the way. For instance, the Cathedral, which is an indispensable visit for most visitors, is usually located at the highest point of the city and it is common to see tourists arduously climbing up to it, and then having to walk all the way back down again.

Hence, the objective is to bring people directly to the upper part by means of mechanical communication, such as a funicular or a panoramic lift, as a big intervention of new centrality, becoming a touristic attraction and offering new activities equipped with leisure services, green areas to rest, etc. This type of 'new entrance' strategy has the potential of becoming a node of new activity for the city, with renewed functionality and services offered to the public, and it must be complemented, simultaneously, with public transport stops and parking areas in its immediate surroundings, to establish a permanent mobility connection between all entrances and ending points of the main routes; which leads us to the second main strategy on the urban context:

2. Transport systems and pedestrian circulation

The reality is that historical cities present steep topography, mostly non-modifiable, where it is not always possible to guarantee autonomous mobility for all users. For this reason, public transportation becomes an essential tool in counteracting the lack of accessibility. The aim is to locate the main entrances to the city, points with higher demand on means of transport, and to identify the main touristic routes of important cultural and historic value, in order to study the mobility conditions, which becomes fundamental for an inclusive urban understanding. Nevertheless, not all standard transport systems can be used in some streets and urban environments, especially the ancient and irregular paths present in historic sites. Researching in this direction, LOCUS students have proposed designing innovative smart transport systems, capable of circulating around narrow streets and carrying people with additional technical aids such as wheelchairs, prams or trolleys.

It is important to pay special attention to the delimitation of vehicle circulation, to guarantee pedestrian safety and ensure that the sidewalks and the road are wide enough for both pedestrian and vehicles circulations. Normally, we find sidewalks at a different level from the road, generating difficulties in ensuring accessible connections between both sidewalks. It is also important to notice that the streets width in historic areas is often irregular, where in determined circumstances the sidewalks become narrower and narrower, even to the point of almost disappearing. On such occasions, when streets are 5m wide or less, the proposal is to raise the road level to the same height as the sidewalk; in doing so, it is possible to ensure a permanent comfortable pedestrian circulation and it becomes, simultaneously, a dissuasive measure for vehicles, because drivers feel they are invading a 'forbidden' area where they have to reduce speed and drive more carefully.

This solution, however, generates an added difficulty in ensuring citizens safety due to the coexistence of traffic and pedestrian circulation at the same level, especially for visually impaired people, who are used to having a step in order to know when they are on the sidewalk or the road. It is essential, therefore, to delimit the 'safe

space' for pedestrians only, from the 'shared space' with vehicles, by combining different textured pavements and/or urban furniture, both easily detectable with the hand or the cane. In relation to the search on guide-lines suitable for the navigation of the visually impaired people, it is worth mentioning different proposals made by students, such as: installing lights into the pavement as a guide-line, especially at night time; using streams of water as a basic guidance element to easily identify the accessible paths; or introducing flowers and other aromatic plants with vivid colours and easily recognizable smells along determined paths to accompany the way.

The aim is to strengthen other senses like smelling fragrances or hearing the water, rather than only using the sense sight. In this way, an 'architecture of the senses' is promoted: the introduction of water as an element of design, works not only as a guidance element for aesthetic and/or environmental reasons, but also for the body's pleasure. Running a stream of water along the top of the wall next to the stairs, for instance, serves for the hand to touch -without the need of bending down to do so- refreshing the body with the feeling and sound of water, which is especially pleasant in hot summer days. All the human senses must be taking into account in every design process, because in architecture design, the form and spaces generated directly affect all our senses, not only seeing, but also touching, hearing and smelling [Franck, K., Lepori, B., 2000]

Finally, to conclude this section, it is important not to forget other significant elements than can be used to improve the well being of a city in global terms. The winner project of LOCUS-Évora becomes a relevant example in redesigning the urban space by combining four different tools: green areas, pergolas, water, and green facades. The aim is to achieve a 'city for all', where is not only important to ensure accessible paths, but it is also being able to enjoy and peacefully rest in green places, with water points and shadow areas available along the routes -especially having the elderly, children or pregnant women in mind- and green facades to cheer up the city and its citizens.

DISCUSSION

A certain sort of 'museumization' is detected in patrimonial cities, where the desire to preserve the heritage at all costs seems to prevail upon the right of free mobility and enjoyment of the people, minimizing urban daily life and transforming the environment into a kind of frozen heritage in the form of a great sculpture. It is important to point out that the concept of heritage emerged on the late 18th century, when the first law for the preservation of heritage was passed in 1790, during the French Revolution. Prior to that date, the notion of heritage conservation did not exist: all that was still used was naturally kept, or appropriately modified to suit better changing needs; whilst everything that was unused or fallen in oblivion, was simply discarded [Garcia-Fuentes, 2010]. Architecture must keep its natural process of transformation in time, to respond to its original purpose of serving society and its current needs. As Rasmussen states, it is important to be aware of:

"That which may be quite right and natural in one cultural environment can easily be wrong in another; what is fitting and proper in one generation becomes ridiculous in the next when people have acquired new tastes and habits. (...) In the same way, it is impossible to take over the beautiful

architecture of a past era; it becomes false and pretentious when people can no longer live up to it." [Rasmussen, 1964]

This way of thinking should guide us on how to approach the matter of heritage, because we must be conscious that, only when the preserved historic features are rectified and made accessible, only then the site will be used and its history and identity will be passed down through generations. Thus, only when we get rid of certain excessively conservationist attitudes and allow the transformation of our built environment to suit our current needs, is when a higher quality and a sense of a good life in our cities and buildings is achieved. As a matter of fact, thus it has always been and thus it will always be, we just need to take a look at our old buildings as candles and/or oil lamps once lighted them, whilst now they are lit by electrical installations. Or how, at that time, residents had no other choice than do their business outdoors, whilst now -thankfully!- all buildings have indoor plumbing and sanitary facilities. Furthermore, we have accepted the existence of modern elements -and not aesthetic ones- like fire extinguishers in historical dwellings, without any regret due to safety reasons. Why, then, the public opinion seems to hinder the installation of a lift or the modification of an entrance by a suitable ramp in determined patrimonial environments?

At the same time, the suitability of some existing pavements needs to be questioned, evaluating the possibility of replacing them with more suitable ones. In different historic city centres, for instance, we find surfaces paved with pebble stones and the reason for that, most certainly, will be found going back in history, when the horse was a regular means of transport and pebble stones were used to prevent the animal from slipping. This solution made perfect sense then, but does it now? People tend to fall down when the surface is wet, high heeled shoes get easily broken, the front wheels of a wheelchair get stuck, sleeping babies in push-chairs start crying, blind people feel insecure and lose balance, and so on.

The most repeated proposal given by LOCUS students, most probably after the experience of the disability simulation, has been to replace the uneven cobblestones or pebble stones, with new accessible flagstones. A debate opened when discussing this pavement replacement, concerning the possible loss of the heritage value of the environment, and for this reason, some work-groups decided to repave just the minimum area necessary to allow an easy and accessible circulation. In contraposition to this proposal of repaving only a part of the street to ensure an accessible path within it, LOCUS wants to highlight the original solution proposed by some students, consisting in: repaving the main surface of the street with new accessible flagstones or similar (flat, hard and non-slippery) and, instead, leaving a narrow line of the original historic pavement with great heritage value as a reminiscence trace, with the added value that can be used, simultaneously, as a guide-line for the visually impaired.

CONCLUSION

Understanding that an inhospitable environment generates the condition of being or feeling handicapped is highly necessary: an inaccessible environment generates despair and impotence in a person with special needs, who feels helpless in such a

place. This situation entails an erroneous social awareness of the capacities of certain people, a fact that regrettably ends in prejudices and discrimination. The target must be promoting equally accessible environments, so those with different abilities won't be treated as 'not normal', differing from the rest and restricting them to segregated areas, or through special accesses and alternative itineraries to reach their destinations. It is about finding unique and unitary solutions for everybody equally, because we must be aware that only the real suppression of architectonic barriers will help to eliminate a great part of the disability's negative effects.

The suppression of architectonic barriers must be, therefore, our working tool and purpose of heritage transformation, comprehending accessibility as the new contemporary layer that coexists in harmony with earlier ones. It is important to insist: We have allowed the introduction of new elements in our buildings which have become indispensable for carrying out our contemporary daily activities -such as electrical installations, sanitary facilities and safety devices- without controversy; in just the same way we have allowed our cities to be transformed with new elements that did not exist in the past, such as electric cables and streetlights, traffic signs or recycling containers. These transformations have been accepted as normal, without controversy, and we must accept new technology to solve connection in our urban environments with the same normality.

However, we cannot forget that accessible designs will only be broadly accepted when they are both functionally usable and aesthetically pleasant. The requirement of designing an accessible solution cannot be imposed over certain aesthetic needs. Indeed, some accessible designs regrettably often have a hospital looking, bringing an emotion of sickness and discomfort and generating despair or sadness. The design of spaces can affect our mood, they interfere with human psychology to the point that in determined places "we may start to forget that we ever had ambitions or reasons to feel spirited and hopeful"; or how instead in a beautiful place we feel cheerful and more satisfied because "our sense of beauty and our understanding of the nature of a good life are intertwined" [De Botton, 2006]. It is about bringing into a balanced relation human values and needs, with forms and aesthetics in designs.

The aim is to achieve an unnoticed accessibility by integrated universal proposals and not by specific solutions for the handicapped. The British Professor of Architecture David Bonnett [2009] defines good accessibility as "not being evident because it is not obvious", or in words of the Spanish accessibility consultant Enrique Rovira-Beleta [2001], "good accessibility is the one that exists but goes unnoticed by the users". Besides, architecture usable by people with mobility and/or communication impairments will always be more comfortable for everybody; it is not about solutions for a few, but benefits and quality of life for all. An accessible architecture is highly and widely beneficial because when we achieve designs that are equally usable by all, we are achieving more sustainable and efficient constructions as well, with an outstanding increase in quality. Those designs that make sense for all users always work better and generate the best business opportunities, because the maximum number of people can use them.

People naturally tend towards an easy life, simplifying efforts and choosing what doesn't require excessive and repetitive actions. So that, when providing strategically located lifts in steep environments, we cannot say that is only for the handicapped, because the truth is that everyone takes advantage of them. The solution of installing

lifts in existing buildings or empty spots strategically located in historic city centres appears to be one of the best answers for solving mobility connections whilst respecting the integrity of the heritage to the maximum. To conclude, to restate that architecture will only be sustainable when its utilization is permitted, accessible architecture being the maximum guarantee of an inclusive society. Architects have the power to decide what buildings and cities are like, thus, how we inhabit them; therefore architects must be aware that they have the power, and the responsibility, to create the scenario for an inclusive society. The final goal is to improve the relationship between architecture and society: by means of an accessible architecture we can guarantee better comfort for all users and, consequently, an improvement in the quality of life, profitability and sustainability.

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