End-user driven architectural studies in Belgium through student participation in real multi-stakeholder projects and the development of a training programme for user-experts

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ABSTRACT

This paper reports on the exploration of the ‘Universal Design’ concept as a more human-oriented design paradigm and teaching tool at the Sint-Lucas School of Architecture, Belgium. Acknowledging the plea for an interdisciplinary approach, the UD programme at centres around the key issue of ‘user-orientation’. The important contribution of user/experts and the recognition of consumers with disabilities as experts is thoroughly demonstrated by UD specialists Laurie Ringaert and Elaine Ostroff. Indeed, one does not need an expert’s eye to see that there is still a big gap between the imaginary world of the designer and the experiential world of the end-user. Focusing on Government-planned urban projects such as KOBRA and STAM, the authors’ ‘Designing in the Dark’, an intensive programme involving ‘external’ disabling and enabling end-users as accessibility experts, is an important means of exposing designers to the impact of their design attitude. Rethinking educational strategies and tools with inclusion of the ‘end-user’ not only as a sounding board but also as a trainer at an early stage of any design process is not only considered among experts in the field as a major breakthrough in architectural education but makes the Universal Design paradigm highly appealing among students of architecture.

KEYWORDS

Universal Design, user orientation, handicap, multi-sensorial, accessibility, inclusion

INTRODUCTION

The issue of ‘Universal Design’ or ‘Design for All’ is more of an ethical and socio-cultural attitude towards designing than yet another technological approach to address the needs of a steadily growing social group. There is no reason to assume that the UD concept is the exclusive study and work field of ‘designers’. On the contrary, the design process loses credibility if not enhanced by interdisciplinary input from all professionals associated with Design for All. In our UD studio and in the theoretical seminars and workshops, it is more responsive, inspiring and enlightening to reconnect the designer with the enabled and/or disabled end-user by directly involving the latter as the key actor. More important than revisiting some of the definitions of Universal Design and its seven Principles, a number of statements may elaborate the identity of the Universal Design concept and in so doing contribute to a better understanding of its scope and nature, but above all, to its user oriented intent.

First of all, UD is a contextually integrated universal matter. ‘Contextual’ because dealing with the concept requires a full understanding of the spatial and cultural context of the place where it is being introduced and adopted. In other words, approaching the UD concept in relation to issues of integrated accessibility in the West might be entirely different from the approach in the Eastern Himalayas where for instance the wheelchair and elevator is not a designed product for special needs at all but a human being who provides for the horizontal and vertical needs of a disabled person. ‘Universal’ because UD is truly a human-centred concept and applicable to each one of us, both the disabled and non-disabled. Indeed, everyone of us might end up in a ‘handicap situation’ without being physically and mentally disabled. For
instance, if a mother of twins gets stranded with her double child buggy at the door of an elevator that was dimensioned for a simple wheelchair, she and her non-disabled children are ‘situationally’ handicapped.

Secondly, UD as a design tool places the term handicap in a perspective whereby the inaccessibility of the built environment is no longer attributed to the disabled but to the designer himself. In other words, architects and planners should be aware of the fact that their designs ‘create’ or ‘eliminate’ handicap situations.

Thirdly, the term Universal Design is no euphemism for the term accessibility. Accessibility and accessible design are dated terms with a mere focus on ‘design for special needs’. The idea behind this thinking is: whatever is designed for the disabled may well be beneficial for the non-disabled too. For instance, it is commonly acknowledged that rattle tickers, designed to guide persons with a visual impairment at traffic points, serve a diversity of users. Persons who are easily distracted or who suffer from light reflection spontaneously make use of them. For safety purposes, mothers teach their children to rely exclusively on the rattle ticker and not on the traffic light.

Fourthly, UD reveals that accessibility has to do with braking away ‘barriers’ and ‘thresholds’. We can distinguish two types of thresholds: spatial or physical barriers/thresholds and temporal or mental barriers/thresholds. The first is easy to understand but the latter is often neglected by designers. For instance, if a wheelchair user has to sit all by himself in front of the first row in a lecture theatre, the designer is responsible for creating embarrassment for the user.

To problematise some of the above statements from the perspective of architectural education, the Universal Design paradigm offers the conceptual framework to provide any design exercise with an often-neglected parameter: the diversity of usabilities.

TEACHING UD AT SINT LUCAS ARCHITECTURE: THE AUTHOR'S FOURFOLD TEACHING TOOL

Since the initiation of the Universal Design Education Project (UDEP.be) in September 2001 by three Flemish schools of Architecture, Sint Lucas Architecture has been continually developing educational strategies to mainstream the concept and principles of Universal Design in its curriculum. According to Froyen, common design exercises, such as ‘Universal Hotel’ and experiments such as ‘Designing in the Dark’ function as incubators of a new human-centred approach. He argues that there is an apparent contradiction between, on the one hand, the propagated principles of ‘Universal Design’ or inclusive and integral ‘Design for All’ and, on the other hand, a specific design exercise targeting people with visual impairments, which tends toward the more exclusive and categorical ‘Design for Special Needs’.

Situated within the institute's research project "Universal Design Education Project" (UDEP.be), the design studio, the related seminars and the workshop are primarily concerned with the current theory and practice of user-centred and user-built concepts of architecture and associated developments in an urban context. Students are expected to develop a theoretical stance on current issues with particular emphasis on how aspects of universal design may contribute to the development of an inclusive society sustained by a user-friendly built environment. The concept and objectives of the Universal Design Paradigm are translated into four interacting and user-oriented teaching tools: a. Awareness training based on bibliographical study; b. Subjective experiencing of the (disabling) man-made environment through simulation exercises (DID workshop), c. Learning from practice through Post-Occupancy Evaluation (POE) case studies, and d. Research by Design studio work.

a. Awareness training based on bibliographical study:

By loading up key words and expressions such as accessibility, affordability, inclusive, equity, user involvement, adjustable, user friendly, handicap creation, etc, a shift from mere awareness to attitude was
nurtured and fostered. Within the group of x number of students, X/2 articles are selected from the current UD bibliography. Each article is critically studied and summarised in a PowerPoint format and presented to the plenum. For instance, for my UD course, the students critically review articles, among others, from Jon Christophersen’s book ‘Universal design: 17 ways of teaching’ (2002). For the DID workshop the book ‘Blindness and the Multi-Sensorial city’ of Patrick Devlieger (2006) serves as the main bibliographical source. Upon completion of the theoretical course and workshop, every student is made familiar with the essence of a good selection of key publications. More important to me was that both the quality and digital format made it possible to upgrade the student outputs to potential didactic UD tools for further educational purposes.

b. Subjective experiencing of the man-made environment:

As suggested earlier, the reconnecting of the designer with both Design-for-All professionals and the end-user is ensured by activities organised within the framework of the course module. If scheduled within the academic year, the students may attend an (inter)national conference on ‘Design for All’. Students are not only introduced to the agenda and duties of professionals and organisations actively involved in the field, they actually participate in various discussion sessions together with the professionals. For the participating students, such events enable them to position their UD training course modules within an educational framework that extends far beyond a mere academic intent. From the same perspective and within the framework of the DID workshop, students and teachers take part in the senso-motoric workshop components directed by the Blind League. Here, the students experience the discomfort of the dis-abling built environment by simulating some sensorial and motorical impairments in the presence of both accessibility experts and impaired end-users. The urban situations chosen for the simulation and walk-through experiences form the spatial and cultural context in which the design tasks usually take place.

c. Learning from practice: Post Occupancy Evaluation (POE):

According to Corry, POE is about measuring satisfaction with the workplaces and anticipating what people might complain about later. The principles of Universal Design can be included in a POE not only as guidelines in developing a general evaluation instrument, but also as a separate UD-focused POE. Universal Design in tandem with post-occupancy evaluation, as Corry argues, is one answer to these questions that can positively influence the design process and the resulting building. If POE’s were incorporated into the design process as the last phase in the design/build cycle, problems in existing and future buildings could be decreased. When combined, POE and Universal Design are powerful tools in influencing the quality of the built environment. Individually, both can enhance the function and aesthetics of a building. Together, following Corry, they can begin to provide environments that are supportive, safe, appealing and equal. The focus of our experience-centred courses and workshop concern Belgian design projects that recently became headline news in architectural magazines. Students prepare for a critical review of the project site on the basis of a personal ‘haptic’ experience (through body movement) and by involving the user/experts as consultants. Aspects of accessibility are not the only objects of study. Factors such as ‘handicap creation’ versus ‘handicap elimination’ or architecture as a medium of stigmatisation are of primary concern. Each experience-centred investigation results in a case study documentation that allows for lively discussions about the designer’s state of mind. In our search for ‘best practice’ examples of Universal Design, it needs to be said that the results of our case studies are sobering.

d. Research by Design:

According to Paulsson, good inclusive design (as all good sustainable design) is unobtrusive. By means of goal-oriented design programmes, the student was stimulated to think inclusively throughout each and every design process, no matter what the product might be: an object, an interior space, a private or public
building, a neighbourhood or a townscape. A shift from design for special needs towards a design-for-all attitude was explicitly promoted.

To expose our UD approach to an international learning platform, the Sint Lucas UD design studio’s participate in the European ‘Access for All’ competition for European architecture schools, organised by Schindler, Switzerland. Although easy access for all is central to the competition’s goal, the scope of the task is much broader. The urban and architectural qualities of internal, external, horizontal and vertical connections to and from all functions must be the same for handicapped and non-handicapped users. Architecture, truly accessible for all, is therefore not limited to adequate door width or ramps in front of public buildings. Obviously, the layout of access ways, individual room sizes, inclinations of ramps, etc. must meet the published building standards for handicapped people. But by simply offering mechanical transport to serve the disabled, the goals of the competition would not be accomplished.

USER ORIENTATION IN ARCHITECTURAL STUDIES: THE PIONEERING WORK CONTINUED

To introduce and integrate the concept of user orientation into architectural education (in both theory and design practice), inspiration was drawn from a number of UD pioneers.

As Ringaert (2001) argues, within the independent living paradigm, the person with a disability is defined as a consumer rather than a patient or client. According to De Jong (1979) this paradigm provides an alternative to the medical and rehabilitation models, which focus on the limitations of the individual and his/her inadequate performance of daily tasks. Within the independent living paradigm, problems are defined in terms of barriers in the environment, including economic, architectural, or support systems, rather than in terms of the consumer’s physical and/or mental disabilities.

Referring to the pioneering work of Ray Lifchez (1987) discussing the importance of having persons with disabilities in the design classroom, Ringaert (2001) argues that although there has been more recognition of user/experts providing input to design projects, very little has actually been documented in the literature about this process. This was a driving force for the author to embrace the concept of user orientation as a key element of the UD teaching approach at Sint Lucas Architecture starting in 2001 with the launch of the Belgian UDEP.be project. Raymond Lifchez, author of the book ‘Rethinking Architecture: design students and physically disabled people’ (1987), may well be considered as one of the pioneers of the introduction of user orientation in architectural studies. A video, A house Unlike Me (Bassett, 1984) illustrates the lively interactions of user-experts in the architectural design studio. For Lifchez, universal design “is not about access but about the relationships between all users – older people, people with disabilities, children. People with disabilities are ‘super professionals’ who in their everyday lives deal with the complexity of the physical environment. They have an enormous amount to teach the students.

In many cases the evidence of user/expert involvement when answering the calls for advice from designers to disability-specific groups is anecdotal (Ringaert 2001). Indeed, as Ringaert argues, such calls are often made to individuals known personally to the designers or contractors. The problem with this approach is the premise that anyone with a disability has expertise in all access or universal design issues, which is an incorrect assumption. The specific study of universal design is a complex subject that develops over a period of years and involves learning at a variety of levels. It is recognized that a diverse group of user/experts offers a wider range of perspectives as a means of understanding the responses of possible user populations (Ostroff, 1997). The major drawback to these personalized interventions is just as great. First there is the question of the unilateral dimension to universal design represented by disability-specific groups. For instance, the representative from a paraplegic association is an expert on wheelchair mobility needs only.
Furthermore, the lack of monetary recognition for the user/expert consultations is a problem that we solved by fixing rates for the user/expert’s interventions in the workshops and design studio’s. However, the fact that our UD programme provides a budget for user/expert consultations, does not imply a one-way knowledge transfer from user/expert to future designers. Referring to a pilot project through the Manitoba League of Persons with Disabilities, Ringaert claims that the organization of access consultant introductory workshops does more than recognize the wealth of knowledge and experience already available from these user/experts. The intent of such specific training projects is to provide broad-based training in universal design to persons with disabilities who already had experience in their own disability-specific access issues. They would then be able to provide consultation to designers, contractors, and others on broader universal design issues.

In our institute, we embrace the concept of training the trainers. This approach is characterized by the fact that we teach the user/experts what designing is all about. In this way academic and life experience based knowledge transfer is perfectly balanced and provides the workshops and design studio’s with a multi-disciplinary, socio-cultural and human-gearred dimension. Below, a brief outline is given of two real multi-stakeholder projects, KOBRA and STAM, in which the concept of end-user driven designing was tested.

**KOBRA AND THE DESIGNING IN THE DARK (DID3) WORKSHOP: DEVELOPING A MULTI-SENSORY EXHIBITION ABOUT A REDESIGNED CITY CENTRE**

Today, the historical city centre of Ghent (300,000 inhabitants) seems one big construction site. Planned as a competition, the KOBRA project concerns the redesign of the main squares that make up the identity of Ghent’s medieval township. The term KOBRA is derived from the names of the squares ‘KOrenmarkt’ and ‘BRAunplein’. These squares are lined up together with the three towers of Ghent (Sint Niklaas church, the belfry and Sint Baafs cathedral). The competition was won by Robbrecht and Daem architects, in cooperation with Van Hee and Technum. Getting away from the old surface of cobblestones, the master plan provides a maximum continuity of the surfacing between the two rivers Schelde and Leie. For this extended area a light grey-beige natural stone pavement was chosen to integrate the heart of Ghent’s pedestrian area – with its 32 hectares, the largest of Belgium. In a subtle way, by means of different colour nuances, reference is made to the existence of earlier smaller squares such as Grote Korenmarkt, Gouden Leeuwplein, Poeljemarkt and Botermarkt.

A major concern of the plan was to redesign the connection between the pedestrian zone and the public transport. A complex infrastructure of tramways, stopping places and safety zones was carefully planned. Urban provisions such as shelters in wood and glass and small light dots in the pavement create a specific atmosphere. In contrast with the stone pavement of the Korenmarkt, the designers opted to turn the Braunplein into an urban green area. Surrounded by a strong wall in dark natural stone, incorporating various stairways, ramps and rest facilities, a counter movement in the inclined site allowed for the creation of an extra level under the public square facing the south and with a view on the park. Here, a Grand Café, public sanitary facilities and a bicycle park complete the urban programme. On top of the Grand Café, the square will be crowned by an open but architecturally dominant town market hall.\(^\text{13}\)
From the perspective of accessibility, the ongoing KOBRA project is the first large-scale project with tangible influences of Universal Designing. To a large extent the concept and design were already developed before adding accessibility as a key element of planning and design. It is therefore a compromise between theory (approach) and practice (implementation). To address the question of accessibility while implementing the reconstruction process (2009-2012) ATO, the accessibility office of the Province of East Flanders, was involved as a consultant.

To expand the communication circle to include the public, an exhibition was set up consisting of posters and an architectural model. The public building were the exhibition took place, however, was not accessible for wheelchair users nor was it made understandable for other disability-specific groups such as persons with various visual impairments. This is how my international workshop ‘Designing in the Dark’ became linked up with the KOBRA project. Our main task was to make the communication between the City Council, the designers and the general public more effective. To analyse the design, we used the chain of accessibility as a reference tool. To measure whether a site and/or public building is fully accessible, four levels of accessibility are distinguished in the following order:

1. Reach (how to reach the area, the site and the building)
2. Enter (how to enter the building and its parts)
3. Use (how to read the plan logic and design concept)
4. Understand (how to avoid mental barriers and stigma)

It is my personal view and experience that applying the ‘chain of accessibility’ as a reference tool for existing infrastructures, buildings and new designs is more effective than a mere screening following the seven principles of Universal Design. A combination of the two reference tools (principles and chain of accessibility) seems indeed a more rewarding research and design strategy.

For the participating students and user-experts, ‘Designing in the Dark’ certainly became a concrete experience. The case-based design experience of students working hand-in-hand with the visually impaired experts was unprecedented. In DID1 the design aspect was limited to the re-design of existing problematic handicap situations. The focus of DID2 was on the actual ‘designing’.

Figure 1: Render of the redesigned Braunplein; Figure 2: Scale model of the proposed town market hall; Figure 3: render of the redesigned KorenMarkt (Renders by Robbrecht & Daem Project team, photo credit fig.2 by Kristien Daem)

Figure 4: Visually impaired user-experts testing the tactile model of KOBRA; Figure 5: tactile model exhibited at Day of the Architecture, University Forum Building, Ghent, October 10, 2010; Figure 6: teachers, students and user-experts at work in de UD studio, Sint Lucas Department of Architecture, campus Ghent. (Photo credits: DID-project team)
With DID3, however, we went one step further: to involve, besides the architectural institution and external user-experts, the City of Ghent as a third key actor. The idea was to (1) investigate the city’s KOBRA master plan project from the perspective of visually impaired end-users, and (2) to design a multi-sensorial info centre, a missing component of the master plan. The incorporation of the design assignment into the framework of the Designing-in-the-Dark workshop, proved to be innovative for all key actors: students, instructors and, not least, the visually impaired accessibility experts. The outputs of DID3 were unprecedented (an ‘accessible’ movie with subtitles and voice over, three types of tactile models, one with audio-visual sensors and others with communication and various other devices) were covered by the national written press and by the regional television broadcaster. To leverage the outputs, the local government is investigating the possibility of installing some of the models in durable materials for public display at strategic locations in the city.

THE STAM MUSEUM, TANGIBLE FOR THE VISUALLY IMPAIRED: A PROJECT BEYOND MERE ACCESSIBILITY

For our last international workshop ‘Designing in the Dark’ (DID4), November 2009, the City of Ghent asked us to revisit the plans for the new entrance of Ghent’s future city museum. The overall goal of the museum’s set up is to introduce the history of Ghent through a permanent exhibition, accommodated within the premises of the historical abbey of Bijloke. The hallways of the abbey serve as a timeline to be communicated by means of speaking objects. The dormitory and the refectory show the growth of Ghent as a medieval metropolis. It’s Baroque hall (1715) exhibits its achievements in the 17th and 18th century. The evolution of Ghent from an industrial city (1800-1950) to today’s network city and beyond forms a perfect introduction for both its citizens and for tourists.

Figure 7: Aerial view of the newly constructed welcome center of the STAM Museum, Ghent.(Photo credit STAM-museum)

Building on the positive experience of the KOBRA project, the DID4 workshop added one question to its extensive experience-based strategy: on condition that everything is made accessible so he can reach, enter and use the STAM museum, what would be the incentive for a visually impaired person to make the effort to take a train, tram and boat to visit the museum. To address this question from the viewpoint of user orientation, the students, guided by the accessibility experts, made a movie that is accessible for persons with a diversity of disorders, particularly the vision and hearing aspect. In high-contrast full colour, subtitled and with voice over techniques, the movie shows the trip of a blindfolded person from the central railway station to the museum by public transport (tram). From the museum a boat trip would bring the visitors of the museum to the historical city centre. The trip and the accessibility of the museum was also represented by means of tangible scale models, fitted with speech and light technology.
To address the question of ‘understanding’, all student teams had to design a part of the exhibition from a multi-sensorial perspective. The results were creative and inspiring; the response by all stakeholders was encouraging.

CONCLUDING REMARKS

To teach universal design, end-user involvement proves to be the most rewarding strategy to create self-awareness among future designers. The way the students take care of the user/experts during the workshop is marvellous. By studying real multi-stakeholder projects, initiated by the local government, we have given a voice to the user/experts, not only as specific groups but as consumers like everyone else. If one subscribes to the necessity of remunerating user/experts for the invaluable life experience and untrained teaching performance, we believe there is a strong argument to distinguish between the user/expertise that is usually generated from ‘participatory’ design processes and the teaching value of user/experts who are trained to deal with what designers do. The development of our programme of ‘training the trainers’ may serve as a step forward to further the concept of user orientation in architectural studies. Starting with the academic year 2010-2011, this end-user driven approach will form one of the cornerstones of our new international intensive programme “Designing the Multi-sensorial City” (DMC-workshop).

The fact that our series of DID workshops was nominated in 2009 for the Equal Opportunities Prize, awarded by the Provincial Government of East Flanders provided us with the confidence to further and fine tune our teaching and research programme in universal design.

REFERENCES

1 The three architectural schools are: Sint Lucas Departement of architecture, Hogeschool voor Wetenschap en Kunst (WENK); Departement architectuur, Provinciale Hogeschool Limburg (PHL); and Departement Ontwerpwetenschappen, Hogeschool Antwerpen (HA) In 2006, a digital Universal Design Toolkit was jointly published.


3 Reference is made to my paper for the Include 09 Conference, London, entitled ‘Designing in the Dark: Multi-sensorial workshop reconnecting designers with visually impaired end-users. For the proceedings refer to www.hhc.rca.uk/all/1/include_2009_.aspx.


8 The UD design studio of the international master programme ‘user-oriented & sustainable planning and design’ and the series of DID intensive programmes are organised by Marc Dujardin in close cooperation with Tomas Ooms.

9 For the Schindler competition’s goals, objectives and results, refer to www.schindleraward.com. Sint Lucas has been quite successful. Over its three editions, our design studio had one finalist nomination, four runners up and one special mention.


13 Reference is made to the website of Robbrecht & Daem architects (www.robbrechtendaem.com).