

(Manuscript - Draft 1: 15, October 2015)

DESIGN FOR A NEW AGE:

Teaching the *Social Art of Architecture*

The Work of the BERKELEY PRIZE Teaching Fellows, 2013-2015

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Foreword by Raymond Lifchez

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FOREWORD

The Berkeley Perspective

Raymond Lifchez

(Forthcoming)

INTRODUCTION

Embracing the Social Art of Architecture

Benjamin Clavan

Human-centric/Human-centered Design? People-centered Architecture? Inclusive Design? Universal Design? Design for All? Whatever you call it, good architecture – and a *better* architecture - starts with a deep understanding of the people who will use a building or a place. If you fail to capture the living patterns of the family for whom you are designing a residence, your design for that house will merely be, and remain, a barren shell, regardless of how elaborate the geometry. If you do not have an idea about how seniors actually lead their lives or want to lead their lives, your design for a nursing home will fail, however handsome the structure. If you do not have an idea about how a town, or a city, or a region can integrate the lessons of environmental sustainability and public health into its building program, your design for that town or city or region will fail, however dramatic or visually astounding.

Addressing these demands and responding to their imperatives is the framework of the *social art of architecture*.

There is now a half-century of revealing studies investigating the boundaries of the *what* of this *social art of architecture*. This energy has, so far, not resulted in any new lasting architectural pedagogy. This actual *how* (not to mention the ever-present, *why*) of applying the findings and lessons of the social sciences to the teaching of architecture remains largely unanswered. There are signs that it is beginning to be addressed in a more systematic way. Whatever the results of these efforts, the over-riding objective must be to discover ways to

discharge the false dualism that has emerged in architecture between social concerns and creative design, and between people-driven design and object-driven design.

Part of the problem has been that, however committed to the goals of social justice, architects and architecture schools do not know what to do with the ever expanding theoretical, experimental, and/or practical social and behavioral information bubbling up, or more succinctly lying fallow, around them. Accepting the tenants of what is now called “evidence-based design” is one thing; qualifying that evidence and applying it to architectural design is another.

Why does it have to be this way? Eighteen years ago, a few of us led by Raymond Lifchez, Professor of Architecture, College of Environmental Design, University of California, Berkeley, Berkeley, U.S.A., gathered to try to do something about it. Since most of us were academics or practicing architects nurtured in the academic tradition, we decided that first and foremost, the critical issue – and the one we were best prepared to tackle - was how to assist students in enabling them to make decisions about what value means in architecture. Was it just the outward appearance or the technology of its component parts or was it something more? If it was something more, then it made the most sense that it had to be about the people who use the buildings we design. And if it was about the people, then by definition, it had to be about the *social art of architecture*.

The idea was an international essay competition on the subject aimed solely at undergraduate architecture students and conducted entirely online, the Berkeley Undergraduate Prize in Architectural Design Excellence (BERKELEY PRIZE). The format is straightforward. Each year we select a topic integral to the social art of architecture and pose a question, really a prompt, for students to respond to. From the first topic, “The Architect Meets the Nursing Home”, to this year’s topic “Sheltering Those in Need: Architects Confront Homelessness”, we have strived to encourage these young architects to go out into their communities and explore

the world in which they live in light of the topic and question.* A very healthy cash award is given for the best essays. It is often a mind-boggling task for the student, made all the more difficult by most schools of architecture reluctance to deal in any concrete way with the realities of the worlds in which their students must work.

The idea that you can *teach* another person anything is a conceit. The idea that you can train another person to mimic your behaviors or the behaviors of another model can appear to be more fruitful, but still, what's the point unless your goal is rote repetition? The pursuit of any liberal education is to help enable a student to *learn* and think for themselves. Learning can mean many different things. At its highest level, it is a free-flowing awakening of the brain's neurons in ways yet unclear to us that allows the individual to make untold mental connections, both old and new, that result in a deep understanding of the world around them and a glimpse of the world that could be.

The evolution of professional knowledge is based on exactly this kind of learning. Whether or not it should be "professional" and not the common knowledge shared by everyone is another question for another forum. Medicine, the law, engineering...and, yes, architecture thrive on the system of education that we have developed over the past few hundred years. Too often it is nine parts (or more often, ninety-nine parts) repetition and memorization and one part innovation and creativity. It is, however, that one part that interests us here.

As the world's population explodes exponentially, the number of minds looking at one subject also increases at unfathomable rates. To this ferment of exploration you must also add the super reality of exploding sources of information. In such a hotbed of potential learning, that single portion of creativity suddenly becomes what is known in the trade as something really

*Students are given a further incentive to compete: each year the selected 25 or more semifinalists are given the opportunity to propose a study trip outside of their home country that is linked to that year's topic. This trip, the BERKELEY PRIZE Travel Fellowship, is hopefully part of a social service event or conference. Twenty-five students have been awarded Travel Fellowships over the last eleven years. Their travelogues speak to the extent to which on-site, face-to-face investigations transform the landscape of architectural inquiry.

important. Important to us as individuals, important to those around us as part of our community, and important to the world at large which will thrive on just such knowledge or backslide without it.

Knowledge in architecture has always been highly suspect. Knowledge means that one thing is right and its opposite is wrong. Or, one thing is good and its opposite is bad. Placing a stint in an artery and watching a damaged heart begin pumping blood again is pretty non-controversial proof that what was done was correct and is good. Whether or not a hundred years from now this procedure will be seen as archaic or even medieval is not the point – for now it works. Setting aside issues of building technologies, most people do not believe that architecture ever has, can, or should behave or be evaluated in this manner.

We have heard all the excuses. From the side of commodity: Architecture is about providing a specific solution for a specific use. From the side of firmness: Architecture is about harnessing technology to create constructible solutions. From the side of delight: Architecture is about creating pleasure. Depending on the times, depending on the practitioner, depending on the wider real-world context – the product of architecture bends one way or the other against the head winds of these seemingly often conflicting demands. The golden prize: an architecture which succeeds brilliantly when examined from the lofty heights of all three pillars of wisdom.

Except, it does not seem to work that way. That shiny amalgam is seen so infrequently and is so difficult to duplicate that it becomes a seemingly unobtainable and excessive goal. The result is a vast majority of poorly conceived and even more poorly executed designs. But worse, the result is not just poor buildings, but whole populations inadequately served in their housing, in their offices, in their public facilities, and in the towns and regions in which they

spend their lives. None of the results is based on values. On good and bad. On right or wrong. Or even, more acceptable/less acceptable.

And here, we must look back at a little history. The proponents of modern architecture as it developed at the close of the nineteenth century and through the first half of the 20th century looked around them and saw need. Need for basic housing for vast portions of their populations. Need for altogether new and hugely expanded architectural components of public services. Need for re-organization of the urban landscape to facilitate the enormous growth in cities. Need for individuals at whatever social stratum to be able to express and experience pleasure in their built environment.

Thus started a vast experiment in re-making architecture: Transforming the artisan basis of architecture into a profession. The supposed harnessing of science and technology to aid the building process. Stripping the visible portions of buildings bare of centuries of accumulated – and to many, useless – ornament and debris. Talking in new ways not just about form, and to some extent function, but about the place of people in architecture.

This experiment was, in many ways, a failure. At worst, it was simply an excuse to exercise creativity in the name of a new style. At best, it was a well-intentioned mash-up of dozens of new intellectual currents swirling in the atmosphere of the *fin-de-siecle* of one stage of human social development and the beginnings of another. People still suffered even in the new(er) built world, perhaps in less outwardly visceral ways, but certainly inwardly, in their minds and their souls. We make the world; the world makes us. And, if the world is damaged, we are damaged.

Fast-forward to the worldwide social turmoil of the 1960s. In a combination of a rising tide of prosperity, more thoughtful education leading to new levels of social investigation and awareness, actual new breakthroughs in science and technology, and the overall expansion of human population (more minds looking at more questions producing more answers), every intellectual discipline was re-examined for its relevancy, productivity, and contribution to the

human good. Many were found lacking. Re-organization, re-thinking, re-creating was the task of the day and of the time. Experiments in living were matched with experiments in building; architecture reportedly re-found its social roots.

This time around, things would be different. Architectural theorists scrambled to apply the lessons and findings of sociologists, psychologists, anthropologists, and the religious (notably the Buddhists and their special awareness of the power of the *thoughtful mind*) to the production of building. Evidence-based design – a phrase that actually did not gain traction for another 30 years – was the goal. Learn not only from the lessons of the past, but from the burgeoning data fields being created by armies of social investigators going out into the world, asking questions, recording answers and, yes, stirring up the pot. “Architecture for People” seemed to be not only an actual possibility, but became a mantra for a new generation of students...and faculty wanting to explore the outer dimensions of the new discipline of architecture.

To date, there is no new discipline. There are glimpses of such a thing. Students majoring in architecture AND sociology, anthropology, all of the “gy’s”. Professors of Architecture who had never built a building except as a fictional social experiment. Urbanologists shifting their focus to process, rather than product. Joint degree programs: Architecture and religion. Architecture and musicology. Architecture and journalism. Expanded Ph.D. programs and fields of investigation: “Experiential Architecture”; “Architecture and Mysticism”; Fractal Architecture as Applied to the Architecture of Architecture. Much written material. (So much written material...) And lots of fostering of community meetings. Lots. Really, an entire new industry. The public was going to become part of the process, even if many had to be dragged, kicking and screaming (figuratively speaking) into the meeting rooms.

Regardless of to whom you talk, the architecture of our new millennium – despite all of the above – is barely different from decades past. The edges have been blurred a bit, there is

acknowledgement that there is something else out there that needs to be addressed, but if anything, architecture today is more form-driven and less people-driven than even at the beginning of the 1970s.

What makes this state of affairs even more perplexing is the growing list of colleges and universities who sponsor socially-conscious projects outside the campus, whether it be housing for the poor, experiments in sustainable design, or attempts at positing radical changes in traditional building types. These enterprises are matched in the profession by a small, but growing number of those who, as in the titles of the most widely received recent books on the subject, provide their services *pro bono*, and design as if they *give a damn*. If they have their way – if we have our way – what comes next in the history of architecture is “Design for a New Age.”

Clearly and unfortunately, however, the idea that architecture is open to the application of theory – and testing – is still suspect in many quarters. This also clearly makes the practice of architecture, not to mention the teaching of architecture, both of which are already difficult enough, that much more complex. The fall-back position is that architecture has always been about form, it will always be about form, and anyway, form is fun to manipulate and play with and, since you have to go to school anyway to get your credentials (part of the scheme of professionalism), you might as well learn about it. Study form long enough and you can develop theories about form itself. Architecture is replete with them. So many, in fact, that most of these theories amount to little more than a new or new/old style. Style is usually easy to duplicate and even if it is not, today you can digitize it and create a simulacrum. Theory is for the (suspect) scientists: be gone with them!

This was the academic and professional environment we found ourselves facing nearly two decades ago in fostering the study of the social art of architecture. In many ways, it still is. The question then and now is how to interest young architecture students in exploring all of these questions for themselves. It could not be done from within the essentially moribund

structure of the schools themselves. And, it could not be done using the same static models of architectural education. Nearly 2000 participating students from 62 countries later and the task is no less difficult and no less fascinating.

In 2013 we decided to mount an experiment and expand our focus to those who teach architecture. The primary goal of the BERKELEY PRIZE Teaching Fellowship was to support innovative thinking by architecture faculty as they work to focus their students' attention on the social, behavioral, and physical characteristics of the *users* of the buildings and spaces they design. More than this, the Teaching Fellowship presented a unique opportunity to investigate how to teach the *social art of architecture* and to explore why it is overwhelmingly *not* taught.

A Request for Proposals was sent to a good portion of the world's architecture schools. The architecture blogs were alerted. Our extensive mailing list was deeply mined. We loudly advertised the opportunity on our extensive, archival website: www.BerkeleyPrize.org. The response was good for the first year of a prize program: not great, but reasonable. From those proposals we selected a first cohort of five Fellows and an Associate Fellow.

The selected Faculty were asked simply to overlay a social art of architecture perspective over one or more of their existing courses for a full year of classes. What this meant and how it was to be accomplished was left mostly to the inventiveness of the individuals. At first, we were mainly interested in seeing only the results. As the year progressed, we realized that the issues of process required more attention and for the second Fellowship year we reduced the number of appointed Fellows and took much more care in discussing the *how* of what they were doing.

As day-to-day Coordinator for the BERKELEY PRIZE, I undertook the administrative and oversight responsibilities for the project. Since the first Teaching Fellowship coincided with the 2013 PRIZE topic of the *Architect and the Accessible City*, we elicited the help of Elaine Ostroff, a renowned figure in the Universal Design movement and the creator of the term, *user/expert*, to coordinate the work of the Fellows themselves. We both continued with our roles into the

second year of the experiment. Much of what we did was talk – long conversations among ourselves, Ray Lifchez, and other PRIZE Committee members. We also scheduled monthly conference calls with all of the year’s Fellows as a group. Interim and Final reports for the Semester were requested. The Chapters and Commentary in this book are an outgrowth of those initial reports from all nine Fellowship faculty.

The Chapters are divided into two sections: the first dealing with the question of *what* it is we are trying to accomplish; the second deals with the *how* of achieving those goals. The work of the two years of Fellows crosses over the years. The Chapters are separated by two commentaries. One is by a Fellow who, for personal reasons, could not participate in this book project. That commentary, the Fellow’s Final Report is, nevertheless, a significant addition to the overall theme of this book. The other Commentary is by the Fellowship Coordinator and deals with one of the main issues of transforming the teaching of architecture and the architecture studio: the inclusion of user/experts into the teaching process.

The first appointed Fellows agree on one principle: accessibility is first and foremost about an inclusive architecture that does not develop special, code-related responses for one client group or another, but that creates a built environment in which everyone is equal. This is, at heart, a definition for the *social art of architecture*. As you will see from their writing, within this community of agreement is a great range of perspectives, all of which are informed by the special context in which their specific courses are taught.

The second Teaching Fellowship reflected the 2014 PRIZE topic of the *Architect and the Healthful Environment*. All three Fellows and their students show how, when faced with talking about architecture in non-traditional ways, not only does the process of teaching change, but the interests and motivations of the teachers and students themselves change. The subject of the “Healthful Environment” puts these issues in stark relief, but they point to the same conclusion: the attitudes of students about what is important in design and what is merely style can readily and rightly be changed by faculty who are equally motivated.

What was accomplished during the two years is both exemplary in its breadth and its depth. From Hong Kong to India to Palestine to Serbia to Scotland to Singapore to Uganda, and yes, to the United States, faculty from around the world showed identical interest in far more than just form, more than just geometries, but in the exploration of the *meaning* of architecture itself through its social roots. While doing so, they confronted both larger-scale issues of proving relevance and gaining acceptance from their peers while simultaneously attempting to generate interest among students, to seemingly smaller-scale issues of how exactly, for instance, to identify, utilize, and maintain the services of user/experts.

There is much in the writing about “Universal Design.” This is partially a function of both the specific year in which the first Fellowship took place and the *curriculum vitae* of the people involved in undertaking and running the experiment. There was much discussion about the potential larger misinterpretation of the meaning of the *social art of architecture* and/or a bias to more prosaic questions of accessibility. In the United States, Universal Design still has a certain stigma of supposedly being reflective of one particular interest group: those with disabilities. In Europe, and Asia particularly, the term has been widely accepted as having a much broader meaning and purpose.

My own reaction to this issue was to (re-)stress the idea that what was being implied by the use of any of the collective terms: Universal Design, Human-Centered Design, etc., was actually part of the larger study of the *social art of architecture*. It is, at heart, about us as people and how we maneuver our way not only through the built world, but through life itself. Creating wonderful architecture is only a (thankful) by-product of this journey. The very fact that we are able to talk about architecture in this way, which is partially a result of all the academic research and studies that have led up to it, is in itself a proud accomplishment.

In teaching this “*Design for a New Age*,” especially interesting is the introspective nature of the faculty that is reflected in these chapters. The focus is not the student work and the student achievement, although that is significant and holds lessons of its own. It is about how

the lives of the faculty themselves changes when faced with talking about architecture in non-traditional ways. The specific subject matters puts these issues in more stark relief, but they are the same issues that can be asked in any human-centered design process. By supporting investigations into these teaching changes in diverse settings and situations, the PRIZE both augments other more rigorous academic research efforts, but also opens new avenues of study.

Rather than (only) dealing with metrics and three-dimensional form, the *new* faculty – prominent among them the BERKELEY PRIZE Teaching Fellows - are asking questions about everyday life and its interaction with the buildings we use and inhabit: Where is the entrance and how does it provide a beacon for all those looking for it. Once inside, how does the building *greet* the owner or visitor. How are the occupant's everyday activities served and enhanced by the design of the building? Where is the window-seat in which you can retire to quietly read a book? How is a place best designed to accommodate such moments of human life?

The two-year experiment of awarding Teaching Fellowships and tracking the progress of the faculty points to the need to more systematically investigate a series of large-scale changes that would be required to fully implement the teaching of the *social art of architecture*. I have previously reported on five that remain most apparent (Clavan, B. 2014 & 2015). They are:

1. The emphasis must be on place, not studio;
2. User/experts must become an integral part of the learning environment;
3. Different standards must be adopted for course outcomes;
4. Social scientists must be (re-)integrated into the design process; and
5. The idea of empathy must be consciously incorporated into the work of the architecture studio and classroom.

These sorts of responses require a completely different approach to the teaching of architecture and the preparation of teachers of architecture. First and foremost, it opens the door to the question of value, of what works and what does not, of what is good and bad. Inside the academy, it questions the accepted dogma of subjectivity and neutrality in traditional

teaching, particularly as it applies to subjects of taste and perception in architecture. Outside the academy, it requires a willingness to engage with the community in ways much different than traditional observation and recordation. The result is a much different and much more sensitive relationship between the teacher and the student, and between the student and their peers, and yes, between the teacher and their peers. It requires a seminal change in the way we look at the production of architecture as a whole.

These are not new ideas. They are, perhaps, newer ideas to this generation of teachers and students. What was hinted at the turn of the 20th century, demanded in the 1960's, and now re-awaken at the start of the 21st century is an architecture based on theory, tested and proven in the field, and with rules and ways of doing things that can be shared and constantly re-tested to obtain the best possible outcome. Nothing is lost: not beauty, not individuality, not academic freedom, nor the necessity and willingness to experiment. The wonder of it all is that there is everything to gain. The book that follows proves this.

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How can we enable skilled students to learn how best to serve their clients and future communities? This chapter explores how such a goal can be given meaning and weight within the constraints of traditional academic timetables and curricula. A hands-on community design project in Edinburgh, Scotland provides the context to address various related issues, such as the effects of bringing clients as “unknown quantities” into the studio; encouraging social discourse; and evaluating and rewarding social conscience as part of student achievement. Everyday concerns collide head-on with loftier design goals. The result is less about the results, than the beginnings of an understanding about what a new social art of architecture design process implies.

CHAPTER 1

Architecture as a Service Industry

Alex MacLaren

“...institutions in the future will be judged not by what they claim for themselves, but by what they contribute to others; not by what they have come to expect, but by what they commit to.”

(Paul Morrell, Edge Commission Report on the Future of Professionalism, April 2015)

“Imagination is the core of our education and needs to be stimulated wherever it can. I fully defend the right to speculation, but do not accept the imagination is unable to address reality and the here and now.”

(Sarah Wigglesworth, RIBA Journal, 26 February 2015)

INTRODUCTION

Buildings are constructed for clients, and the client is seldom the Architect. In the narrowest sense, the client may be an individual or an organisation; in the wider sense, anyone who is to come into contact with the built edifice may be considered a client. Good architecture meets the client brief; great architecture enhances the client experience. To my mind the success of the architectural proposal can be judged only after construction, when it is in use; but

so often this seems an extremist view to express in architectural education, when the drawing or the model, the 'representation' of an architectural proposal, is the end in and of itself.

The target of much pedagogy in current architectural education seems to be focussed on achieving the perfect representation of an idea. This places an unassailable value on the project's success within arbitrary parameters and systems of logic, set up within the studio. Guest critics and tutors, invited by the studio leader because of their known viewpoints, reinforce the internal rationality of the studio, helping to achieve a sense of wider relevance. The student learns a myopic language of reasoning and justification, a stylistic palette of representation, and a mistaken sense that architecture can be validated and understood, only by other architects. The judgement of those outside the studio is regarded as peripheral; likely mistaken, ignorant and irrelevant.

This drastically misleading representation of the role of the architect in society is damaging to the future professionals in our schools. To judge architectural projects only from inside the profession is to shield the students from reality, and prevent them learning the skills they need to understand and synthesise the needs and aspirations of others, expressed in non-specialist languages and often not articulated clearly. This a key skill of the successful architect, and yet we do not facilitate the learning of this skill in architecture schools. Neither do we bring in our co-professionals and user-experts, to allow students to develop an understanding of wider viewpoints and motivations. Even some of the most well-meaning and theoretically socially-motivated tutors labour under the misapprehension that they can 'teach' their students what it is to consider the views of others, without actually allowing them to engage those 'others' directly to gauge their views. We can talk about 'the social art of architecture' but in practice we are teaching a version of architecture without any of the 'social art'.

This chapter reports on a scheme that brought non-architects and user-experts into the studio, with the aim of facilitating direct engagement between student and 'client' at several points throughout the genesis of the project. The structure of the programme gave weight and

value to the direct input of non-professionals to the course; a relatively radical practice in the University. Academic demands on the course (time commitment, content and deliverables) were frequently in conflict with the direction suggested by this 'real-world'-centred pedagogy. This resulting account is a discussion of this friction between the demands of the academe and the pedagogy of a socially-integrated design unit promoting Universal Design. In this case, Universal Design is defined by us as "Social Inclusivity."

Part 1 of this chapter first explains the scenario and the two syllabi. It narrates the author's experience of delivering these courses and the reported student experience. In Part 2, we reflect on this experience and offer critique related to other pedagogic research, draw conclusions and make some recommendations for future practitioners. The successes and failures of this experience are documented in the hope that this may offer assistance to others planning similar courses in future.

Part 1:

COURSE STRUCTURE, DELIVERY AND STUDENT EXPERIENCE

What follows is a review of two design studio courses, each 11-12 weeks in duration. In each, steps were taken to engage students in Universal Design (UD); in particular, the notion of "social inclusivity." The first, pre-Christmas 2013, semester engaged a group of 31 second-year students and asked them to design social housing. This was the students' main design project and a 20-credit unit. The second semester in early 2014 engaged 28 final-year MA students in a 40-credit design studio which comprised the principal design thesis project of their degrees.

In each case students met individually with tutors once a week over 11-12 weeks, and attended a further weekly group seminar or lecture. Students worked in designated studio

space hosted by the university and were encouraged to work there habitually every day in addition to the mandatory twice-weekly studio meetings.



Figure 1. Studio space. (Shown at final exhibition: pictured is workspace for four students)

The first semester, entitled 'SOCIAL Housing', asked second-year students to design a housing block of 24-30 units of mixed tenure over four floors. Two part-time practitioners, myself and Andy Stoane, RIBA, led the studio engaged in Dalmarnock. Our studio need to respond to the constraints of another 60+ students following similar programmatic briefs in different locations and with different staff members, and was required to match the planning scope and formal agenda of these studios, in addition to the core ambition of social inclusivity with which we led the brief. This arrangement had been agreed in advance with the year leader, and the syllabus adapted in order to specifically support the concerns of Universal Design.

These students were only one year into their architectural education, and for most this was their first consideration of the social responsibility (and also opportunity) afforded to architects. Their architectural education to date had mainly informed them of drafting skills and

building components, with some statement of regulations regarding designing for those with physical disabilities. The semester 1 course asked the students specifically to analyse the social context within which their proposal would sit, and secondly to take an attitude to this situation. This in itself was a shock to some students, who prior to this point did not consider the role of an architect to cover this scope of ethical practice. Initial attempts to engage students in discussion of the ethical practice of architects in relationship to the architect's responsibilities to client; developer; council; or end-user did not provoke any discussion. Students seemed unwilling to offer opinion.

Students were able to visit the site, in part toured in a coach by the local developer, a large public-private conglomerate. I presented the opportunity of this tour to students by explaining the role and importance of the developer and the millions of pounds of regeneration money entrusted to the developer by the council. I also explained to the students that their tour would in part fulfil a requirement on the developer to engage in educational initiatives, and that they would likely be 'sold' a success story which might be different to the lived reality of those resident in the area. I suggested to students that they ask questions of the developer. On the tour, although the students showed every sign of being engaged, they asked few questions and did not critique the story told them by the developer. In retrospect this was probably too much to expect of such young students.

The students' research showed up significant political and social divides in the existing community, in addition to statistics on low employment, life expectancy and mental ill-health, which many found really shocking. Initially the tutorial focus was on skills: discovering and presenting this information. This involved group conversations and plenary discussions that allowed the student group to get to know each other and to become more comfortable. At this point (2.5 weeks into the project), I was able to broach again the subject of the role of the architect in such situations and conversation was much more forthcoming. Students discussed the detrimental impact of old age; isolation; overcrowding, feelings of impotence, lack of identity,

and the attraction of drugs and alcohol. With prompting, they began to suggest ways in which their designs might mitigate each of these potential issues; shared spaces, overlooking windows, consideration about how to best arrange flat typology to prompt harmony between neighbours but also encourage social mixing. This could have been due to students' increased familiarity with the area and issues following their research; or to students having reflected and considered after the initial questions were posed; or, I suspect, to do with their growing confidence and trust in their tutorial group.

In refining their architectural proposals, I pointed students in the direction of research articles from NGOs and the Scottish government linking health, mental health and wellbeing, and social engagement with the built environment. This included work from a small government-funded charitable group, "Go Well", who are midway through a 5-year research project engaged specifically in the local area. Researchers there expressed delight that their work had been accessed and was being used in this way. I would not have found this link had I not had additional time to research and make contact with potential partners due to the BERKELEY PRIZE funding.

We were able to invite external critics at mid-way and end of Semester, in part funded through BERKELEY PRIZE Fellowship award. In each case this was a representative of the developer, and a local small architect who worked mainly in community engagement and was undertaking work for the council in this area on planned re-housing of residents. At the mid-semester review, the comments from these parties engendered a full-room discussion of architects' ethics regarding working for a community vs. working for funders or shareholders, and argued directly the commercial practice of separating accommodation for public rental and private sale; the size requirements of social vs private housing; and maintenance of common areas. Some students engaged, but most listened quietly and worked their way through the issues in their own projects following the review.

The 31 students whom I taught directly with fellow tutor Andy Stoane received the bulk of this additional input: my colleagues teaching the other tutorial groups were aware of the focus on inclusive design and social impact, but were themselves less engaged with these matters. This was clear when the final student portfolios were received: those from our students presented their work very differently, for example explaining their design concepts in terms of the end user, and presenting the stakeholders and discussing their impact on the scheme.

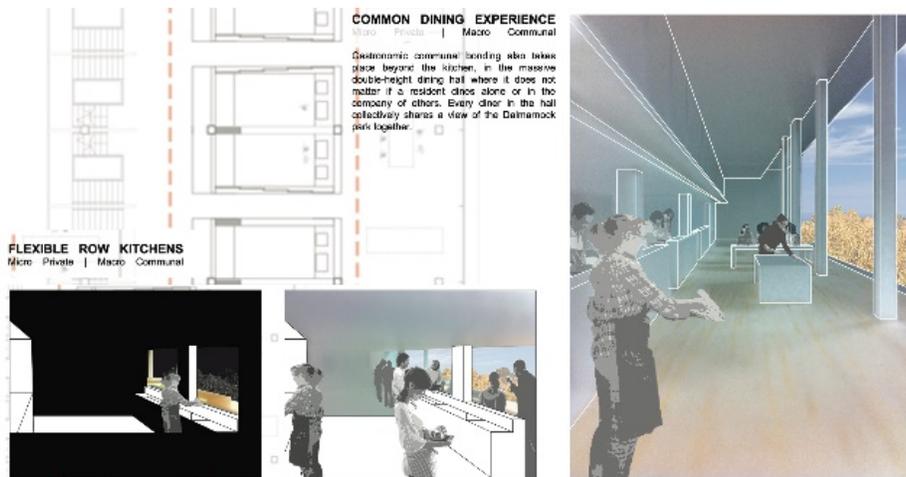


Figure 2. Second-year student work: Row dwellings with communal cooking and dining facilities, Brandon Mak

I feel that at the end of the semester that the students were much more confident in their abilities to navigate ethical issues arising in architectural design. The students did not all agree on the issues raised: for example, at the final review (with the same guests attending), some presented clearly “to” the developer, seeking to impress, and others looked for approval from the community engagement architect.

At second-year level, the programmatic complexity and resulting challenge of strategic planning of this brief was considerable: this was the first major building project tackled by this cohort, who had previously completed single houses, pavilions and small gallery projects. Over a period of only 11 weeks it was found that the social questions, initially dominant, fell away in later stages as students as students grappled with these problems and the tandem challenge of learning CAD software (Rhinoceros, taught to students alongside this brief). The resulting projects start from a position of social design ambition, but most, except those from the highest-achieving students, become a standard exercise in assimilating planning and form. This was a lesson in understanding achievable scope in relation to student skill level and time available.

The visitors to the studio responded to my requests that they bring up any issues that concerned them in non-confrontational ways, and effectively engendered wide-ranging discussion about finances, ownerships and identity. Some students engaged vociferously in this debate, but most lacked the ability to develop designs that addressed these issues effectively in the limited time available. Several students were struggling with representing this complex building proposal in a way which our non-academic visitors could easily understand. The ambition of the brief was too great to allow most second-year students to succeed on all points.

Despite tutors reaching this conclusion, it is noted that student feedback from this studio was extremely positive. Students were invited to feed-back anonymously to the university, and several reported being energised by the visitors to the studio and the social engagement of the

brief. Interestingly, though student performance was neither higher nor lower in academic terms, the students in this unit reported a significant increase in confidence in their design skills in relation to their peers. It is hoped that inviting them to engage with non-architects and to consider social issues of such scope has given them purpose, and a belief in the opportunities offered by design.

The second-semester studio was entitled “*Civic Fabrication: [Per]Forming Communities*”, and was one of three design units operating under the umbrella of “Tectonics”, a mandatory course offered in the final semester of a four-year MA Architecture course¹. This course is the final thesis design project for a graduating cohort. These students were more than two years further through their architectural education and so had a significantly increased arsenal of skills and experience, and the design studio was relieved from teaching *skills*, and able to focus more on design. The unit challenged students to understand and design the *civic* - that is, an architecture of spaces which encouraged people to engage in meaningful community interaction, to create a sense of place, identity and belonging; to be inclusive and inviting; and in so doing to foster an increase in the health and happiness of the community they serve.

Semester 2 began by introducing students to the local environment, and most importantly, introducing them to members of the local community living or working in that environment. We asked students first to imagine a future for this area, (working up to the year 2100) and then to design a piece of architecture to be constructed now, that would support civic development in that future. Usual academic *crits* were replaced by design review seminars where we asked students to present their proposals (we called these hypothetical masterplans *stories*) back to the community members at the middle- and end- of the semester.

It was required to produce detailed technical drawings for a final building at the end of this semester and in some ways, our unit’s engagement in the wider urban fabric (in terms of both physical area, social community and projected time) were taking valuable teaching time

¹ Link to course documents online

away from this core aim. As a result we made the decision to very strictly prescribe the building brief, requiring them to design a Community Theatre of approximately 5,000sqm. This constrained the students from significantly innovating in programme, but allowed them to focus more time on issues of “social sustainability”, from the urban scale to the occupied building and construction detail. The programme was not interrogated; it was a vehicle for the wider investigation, a short-cut made necessary by the brevity of the academic semester.

At the start of the Semester, final-year students are offered all three design units in a “beauty pageant” presentation, and are asked to sign up for whichever unit most appeals to them. It was made clear at initial presentations that *Civic Fabrication* would engage with a brief of social architecture, would require commitment to researching a difficult, deprived area, and would invite non-architect *user/experts* into the studio. This proved to be the most popular unit.

The site is approximately 90-minute journey by car or train from the university, adding some logistical complexity to engaging the student cohort with their site and community clients. The university hosted the mid-term and final- review sessions in which the *user/experts* joined the group, alongside academic professors and professional architects. Student briefing commenced with one day-long organised visit to the site, meeting the *user/experts* and a representative from the major local developer, and incorporating a building tour and coach tour. Students were also briefed on ‘contextual research’ by a group of volunteer second-year students, (two years their junior) who had completed the housing design projects in the area in the previous semester. This initial exercise in briefing across years offered a ‘soft’ start to the challenges of communicating between different groups, which became a core demand of the students throughout the semester.



Figure 3. Unit coach tour. Robert Kennedy local playworker, has the microphone.

As this was a final design studio leading to graduation at either BA or MA level, there were stringent requirements placed on the output from this unit. Students were required to evidence relevant research, to produce complete plans, sections and elevations of a building of moderate complexity, offer a sustainability strategy for their built proposal, and demonstrate resolution in planning and detailing of this building. The Learning Outcomes demand **investigation** (of structural, constructional, environmental and contextual matters), **resolution** (of a coherent design proposal) and skills in **communication** (utilizing accepted architectural conventions). Students at this level are under great pressure to graduate well and so are understandably focussed on results, leading to a pressure for the unit to similarly focus on delivering work geared towards these learning outcomes. Whilst not diametrically opposed to the interests of our *user/experts*, the tension between the social values of the studio and the academic assessment values increased as the semester went on.

The outcomes of this studio were more clearly successful than those of the first semester course. From an academic point of view, the students' portfolios were beautiful, varied and showcased their skills effectively. From the point of view of social pedagogy, students of all abilities produced work that effectively grappled with the social issues they were asked to address, and succeeded to greater or lesser extent in proposing inclusive design

solutions. All students managed to produce work that was legible to our *user-experts*, and (after some guidance), succeeded in verbally presenting this effectively in a way that invited *user-experts* to respond.

The initial visits and interim seminars were extremely effective, enjoyed by both students and *user/experts*, each of whom gained much from the experience. The end-of-semester seminars were less rewarding: the contrasting requirements of demonstrating technical academic ability versus effectively communicating with community members had polarised, meaning that a substantial amount of work produced was at cross-purposes to the interest of the audience. This was frustrating for both the students and the visitors.

Post-graduation, all students were offered the opportunity to re-work their projects voluntarily for inclusion in a community exhibition in an 'event space' in the area, also to be built and staffed by students. Students received no academic reward for their participation this summer activity. However, there was significant student support for this initiative, perhaps in part because re-presenting their work in this is a way of addressing that frustration of the conflicting demands of the *user/expert* and the academe. It has been a source of great personal pride for me to watch students engaging local visitors to their exhibition in conversation, and to hear them carefully exploring with an often cynical, defensive, poorly-educated audience, the potential they see in the area and why they have proposed what they have; and most importantly, listening closely and responding to the views of these visitors with interest and sincerity.



Figure 4. Street frontage of student pavilion on Dalmarnock Road, Glasgow



Figure 5. Activity over successive July weekends at the 'Destination Dalmarnock' Pavilion

The academic conclusion to this semester was similarly gratifying; in final assessment, students from this unit performed well alongside their peers. In addition, two of our students were awarded prizes for their work by external bodies outside the university but within the discipline of architecture: Håkon Heie-Ellingsen was awarded the J R Mackay Medal (awarded by the Edinburgh Association of Architects), and Rebecca Goodson was awarded the A+DS / RIAS overall prize for best degree-level scheme in Scotland, was commended in the 'Sust'

Award for Sustainable Design, and also won the RIAS Drawing Prize. This is a significant achievement for our graduates, and it is hoped that that as a by-product of these individual successes, the agenda of Universal Design may gain stature within the school. I am particularly encouraged by the commendation in sustainable design as, not to dismiss the very great importance of environmentally-positive design, this suggests a currency for our argument of the great importance of considering 'social sustainability' in a deprived and rapidly-changing community.

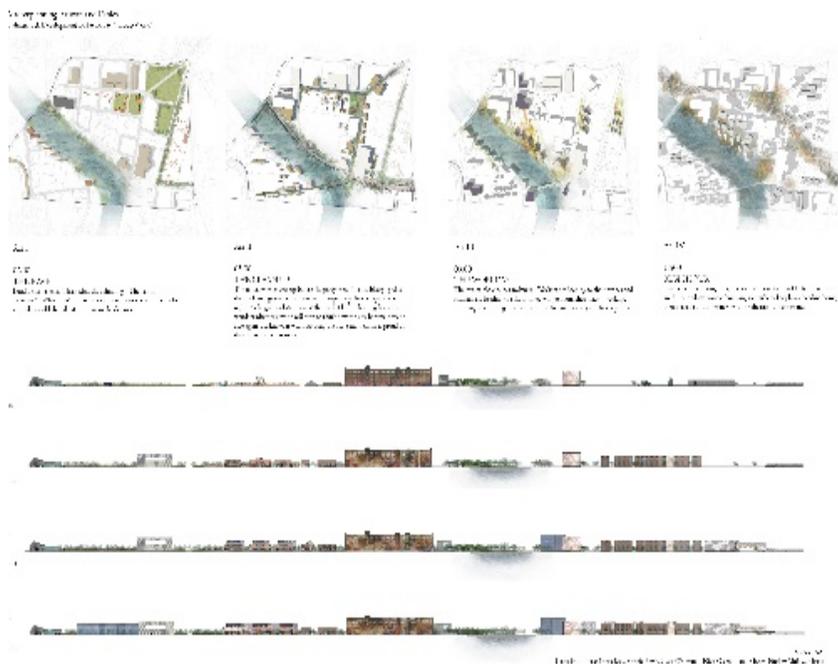




Figure 1: Sketch of a cafe interior

Figure 1: Sketch of a cafe interior
 This sketch illustrates a conceptual design for a cafe interior. The space is characterized by a curved wall structure and a series of tables and chairs. The drawing uses a combination of fine lines and soft washes to create a sense of atmosphere and depth. The overall aesthetic is modern and minimalist.



Figure 2: 3D model of a desk structure
 This 3D model shows a complex, multi-level structure made of cardboard or wood. The structure is composed of several interconnected components, including a central desk area and a series of vertical supports. The design is functional and modular, allowing for customization and flexibility in use.

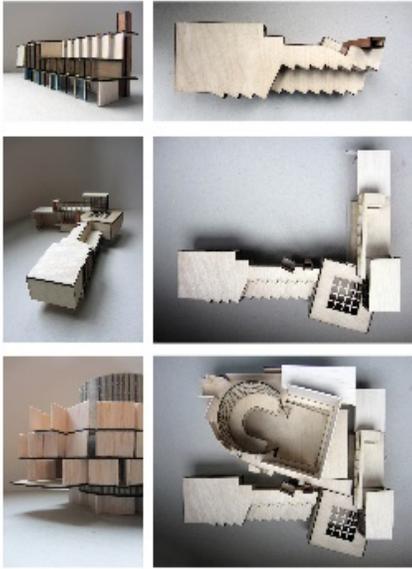


Figure 6: Prize-winning portfolio examples from Rebecca Goodson, Civic Fabrication unit, Semester 2

* * *

Part 2:

**ENGAGING THE SOCIAL ART OF ARCHITECTURE IN HIGHER EDUCATION
CURRICULA**

The experience of writing and tutoring these briefs has been hugely informative in improving my understanding of a social pedagogy, and how to best deliver value to both students and to *user-experts* as they engage in academic architectural projects teaching Universal Design. This year provoked me into a re-reading of several core pedagogic texts, finding a new understanding of Berryman/Bailey (1992), Savin-Baden (2000), Till (2009) and Meyer/Land (2003). The notes below form the basis of suggested pedagogic techniques which may be considered to improve delivery of similar courses in future.

Briefing/Creating a Syllabus

The brief must not be too directed. My initial brief was carefully structured and controlled. It contained specific points for the students to tackle, which would address the social situation as I perceived it. For example, I underlined a specific concern about a rift between two parts of the community, and stated the need for active street frontage for community groups within the main theatre building. Both of these points were my own conclusions drawn from research and my own limited experience- and proved to be incorrect assumptions, when our *user/experts* came to visit the studio. My biggest mistaken assumption was in identifying areas of research for the students: in effectively narrowing the scope of enquiry before fully interrogating our visitors, I misdirected our initial research. My conclusion is to retain scope in the brief until after a significant session of user-input: briefs should be open enough to allow unforeseen input by *user/experts*: do not pre-suppose user requirements or perceptions in the

brief. For instance, leaving the word “space” in the brief as an open-ended concept, the requirements reflected contradictions inherent in real-world situations.

Berryman and Bailey in their paper, “The Double-Helix of Education and the Economy” (1992) identified the values of real-world situations in the classroom, encouraging a learning experience they coined as *cognitive apprenticeships*. Savin-Baden (2000) expands this in proposing increased *experiential learning* and problem-solving in higher education in order to increase the efficacy of the learning experience, and of information retention by the learner. Finally, Till in “Architecture Depends” (2009) recognises that the profession and application of architecture is contingent on so many other inputs, and suggests that these inter-relationships and complexities must be explored in the academic environment in order to best train our future architects.

Recognise the pedagogic value of ambiguity and the risks attached. A looser teaching method applies when engaging with real socio-political context within the learning environment. Students’ self-awareness and confidence as a designer was ultimately improved by offering them divergent critique, but in Semester 1, with younger students, their portfolio outcomes suffered from the resulting periods of uncertainty and misdirection. However at the end of the semester these students reported increased self-confidence and pride in their abilities. I believe this is an example of students acquiring a *‘threshold concept’* and *‘transformative, integrative knowledge’* as defined by Meyer/Land in their paper ‘Threshold Concepts and Troublesome Knowledge’ (2003). Acquiring such knowledge is difficult, challenging, and changes the basis on which the student views their discipline. In facilitating this through assembling contradictory or inconclusive, messy stimuli, the learning experience was enhanced, but practically the immediate academic product suffered.

Clearly define the scope of engagement. This includes what can realistically be achieved and how that outcome is understood by all involved. A successful academic outcome is not a successful community outcome, and to satisfy one may impinge upon the other. Poor achievement in an academic forum can be catastrophic for a student, but failure to deliver a promised outcome to a vulnerable user-expert can be extremely damaging to trust and welfare. This was the most important and also the most difficult point to manage.

Practical Considerations

The physical safety of participants was addressed through routine risk assessments, but I had not adequately considered the mental impact of this experience on students and on *user-experts*. In the event, both students and *user-experts* assimilated effectively, and there was no requirement for extra support in this area, but at points during the courses this gave me more concern than had been anticipated. Some students found the local environment to the site unnerving, and found communication difficult, leading to embarrassment that manifested itself in defensive behaviour, almost to the point of perceived aggression. One of the *user-experts* was similarly uncomfortable and intimidated by their initial visit to the university, and reacted initially with a surprisingly forceful critique. These feelings caused some individuals to behave unpredictably, and with different individuals might have concerns over physical safety, had the situation not been effectively managed. I realised I had under-estimated the impact of the intended friction between cultures I was enabling, and would resolve in future to be more consciously aware of individual behaviour and opportunities to mitigate any individual discomfort.

Part of managing this was solved by making space for communication between students and *user-experts*, and specifically allocating time for non-confrontational communication, and orchestrating this, prior to any direct review of work. Asking both parties to comment on the

work of a third party was useful be that a physical site visit, lecture, or drawn work of others. In the post-semester work, shared food and drink, and shared enabling of activities with young children, provided effective and natural ways to negotiate a shared stance. I would recommend specifically timetabling such sessions into any programme.

Essential Communication

The space of engagement should:

- Avoid didactic situations and formal presentations if possible. This reduces the possibility of embarrassment or direct confrontation, and also a collaborative, non-didactic environment maximises opportunities for learning in received pedagogy (vis. Berryman/Bailey)
- Create, discuss and agree a shared endeavour in order to make introductions. Discussion and agreement on a relatively simple point- for example bathroom facilities within the home, or the need and location for a local shop, gets participants talking and agreed on at least one point.
- Allow, wherever possible, return or repeat visits. This was most apparent in the summer exhibition events; the best communication occurred when visitors returned after an initial conversations with photos, stories or documents of their own to share, and a week's or evening's reflections on what they had been discussing the previous occasion. This equalised the 'show and tell' aspect of our community events and provided the best exchange of ideas and knowledge.

Developing a common language takes time and is best achieved by shared experiences.

Though discussion is clearly important in developing a shared frame of reference, shared

experiences worked best in forming a common language and frame of reference. Remembering a character visited on the site visits, or a particular event during the day, helped in facilitating conversation, and ensured a shared memory. Referencing past discussions was less effective as memories of group conversations seemed to be different. In this case there was also a useful television documentary which both students and use-experts were dismissive of: this provided a shared target for their mirth!



Figure 7: Shared Experiences with the User/Experts

The use of a model and of perspective views were invaluable in communicating design ideas to community members where orthogonal drawings failed to engage. However, such models take time and effort to be effective, and the cost (in basic materials) to our student

cohort was not insignificant. I would recommend a budget is included for model-making in projects of this type in future, as it was extremely engaging, but required funds.

In Semester 1, the students were tasked with a simple 1:200-scale area model as a group project. They were optimistic about their abilities and planned a complex, pristine laser-cut base with surrounding buildings. Unfortunately, in part due to students' inexperience, mistakes were made in manufacture (mistakenly disregarding material thicknesses etc), and in addition the students generalised some elements, which turned out to be key distinctive urban elements to the local community. As a result the model ended up not showing some of the key landmarks, but also made in such a way that the students were precious about returning to it to make these changes after feedback from *user-experts*. The model performed a basic role in orientating the projects on the site but at some further level also confused both students and visitors by mis-representing the actual situation.

In Semester 2, we learned from this in two ways: the students made a *proposal* model, thereby integrating the design process with this time-consuming task so that the model became an active participant in the design process; and also we were very clear in telling students from the start that it would be made, re-made, painted, cut and generally changed as their designs developed. Finally we made it big- see figure below- encouraging those without fine motor skills or who might be nervous of touching small, perfect details, to fully engage with the making and re-making.

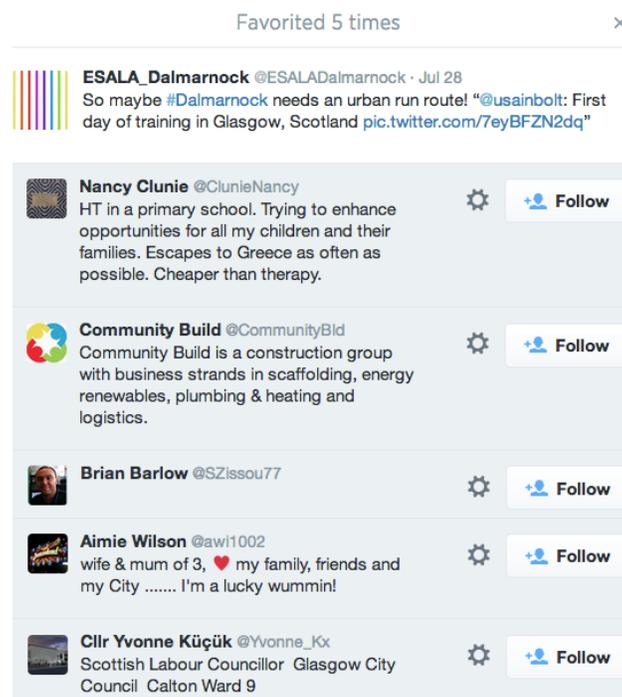


Figure 8: Models are preferable to orthogonal and cartographic drawings

It is this model that has formed the backbone of our post-graduation exhibition and consultation in the community. Proposing a gallery of student images did not excite local partners, but photographs of people engaging with this large tabletop model got people interested. Children particularly have enjoyed engaging with this model. The model also formed the centrepiece of our group display at the end-of-year show. Enabling this has required additional logistical planning to store, transport and reassemble the model- but the very significant time and expense of creating this has proved worthwhile. We are now hopeful that the model will be taken to a local primary school and incorporated into arts lessons until it reaches the end of its life.

A note should be made of the use of social media. This was not used in any formal way throughout the academic semester, though students often share links to research, articles and group work on Facebook/Pinterest. However as the students began to set up the summer event, they realised the value of having a web presence, and set up an email account, twitter handle and a Pinterest page in the name 'ESALA Dalmarnock'. This generated immediate interest and was immediately 'followed' on twitter by our local contacts, leading us eventually to further local connections: the local councillors; a slot in a local exhibition; the scaffolding company who built

the majority of the students' event structure, the small local 'par course' free-running group who visited us; the urban cycle champions who loaned us some bikes. At the close of the project this account had 80 followers. It was a colourful, active and gratifying way for the students to engage with the project as it allowed quick-feedback and gave a sense of action on the quieter, colder days, or during midweek when the event space was unmanned. In some ways this was a false sense of success: twitter is a self-selecting group and those who engage with it tend to be those for whom communication is not difficult; not our target audience for this project. But it provided a forum in which the students could achieve positive feedback- though also (see below) evidenced the mistrust of some of the community in 'outsiders' coming in and offering ideas



ESALA_Dalmarnock @ESALADalmarnock · Aug 3
opening later today after most of the ☔ we're on #Dalmarnock rd
frm 11am. Brave the rain this afternoon! Come Help us eat leftover
scones!



ESALA_Dalmarnock @ESALADalmarnock · Aug 2
@mikaelpatrick rainy day! But hey, all the best tea parties are in the
rain, right?! pic.twitter.com/cCA6nTcwYQ



[View more photos and videos](#)

ESALA_Dalmarnock @ESALADalmarnock · Aug 2
@MichaelaCMunro @pidginperfect @PEEK_Project @VickyFox2011
@BalticAp great to see you guys!



[View conversation](#)

 · Aug 3
@ESALADalmarnock what is it that your actually doing for dalmarnock ?
Reply Retweet Favorite More
4:39 AM - 3 Aug 2014 · Details

ESALA_Dalmarnock
@ESALADalmarnock

[@ESALADalmarnock](#) just sharing ideas about
what might be-Looking to future, hoping
community can control Dev't rather than
private co's. Pop in!



4:41 AM - 3 Aug 2014

Reply to [@ESALADalmarnock](#)

 · Aug 3
@ESALADalmarnock so are you a group of local people and is the ideas your
sharing from local people ? Or are u front outside the community?
Reply Retweet Favorite More
8:23 AM - 3 Aug 2014 · Details

Figure 9: Twitter stream excerpts, from top to bottom: useful contacts;
immediate feedback; and some resistance

Community Input

Giving our experts comfort and confidence in the academic arena took significant time, persuasion and diplomacy. I have never been so keenly aware of the adopted language of the design studio review as when introducing unconfident non-architects to that forum. The use of certain phrases or language clearly baffled and potentially confused our visitors, and in this situation it was necessary to directly request their opinion, and reinforce the value of their contribution in this environment. This hesitancy was only a problem on visits to the university, and disappeared completely when back in the site location- but this remained a concern throughout the semester.

Some cultural responses to material were unpredicted by tutors. This caused some misunderstanding and misdirection, increasing the learning experience for all but requiring students to deal with further unexpected conflict and ambiguity. The meaning of football colours in the local area was incredibly emotive and potentially toxic. The 'Yes/No' campaign for Scottish Independence was also in full sway throughout this period, and some projects suggested a political slant in this argument to some of our visitors.

Inviting comment on discipline-specific technical proposals of significant complexity (e.g., technical sections) is near-impossible for *user/experts*. However, at the end-of-year presentations, much of the work was technical detail, and students sought opinions on these drawings. Putting *user-experts* in this situation caused them to lose confidence and was detrimental to the growing relationship between student and user/expert.



Figure 10: Design Charette investigation 1-to-1 drawings

Deliverables, and evaluating “Success”

It was essential to completely understand the criteria set down by the Academe (and particularly their interpretation). Two particular examples that caused difficulty:

- The course outcomes dictated that each student must produce detailed technical drawings. The technical drawings, whilst relevant, were not communicating to our *user-experts*, and the students on this course fell behind in this area. We addressed this through two ‘one-to-one’ drawing workshops, making drawings through a façade, which were later assimilated into 1:20-scale sections. However, this area remained a weak part of our students’ portfolios in comparison to their peers in other studios. It would not be possible to integrate the technical assembly requirements with the *user-expert* requirements, and so they must be balanced within the course without making the tasks incoherent for students. This was, and will continue to be, a challenge. However I feel it is a necessary one: in real practice, students will similarly have to learn that

different types of drawings are required for different audiences, and that there is value in both communication and in specialist technical skill. Again this returns to the themes from Till and Savin-Baden, of the value of real-world, contradictory experiences and contingent design.

- Each project must address Sustainability. This was initially understood by external examiners as a purely ecological/environmental ambition, and the core brief of 'social sustainability' was not seen as part of the solution- this must be more clearly articulated, and not at the expense of other sustainable ideologies. 'Sustainability' is a current buzzword and much has been written in an effort to merely define the scope of the subject: it became clear that the word had to be defined to include the social impact of design as part of our initial project brief.

Despite the tutors agreeing privately after the semester, that sustainability had been a weak point in the course, we later found that one student project was chosen as a 'commended' entry in the national student design awards: on the basis of the 'social sustainability' of the project. This was contrary to other signals we had received from faculty throughout the assessment period and gave us further courage to pursue this agenda again next year.

The requirements of the academic criteria were frequently divergent from the social direction suggested by the project. To give another example; the scope and content of a 'valid' design response was in fact extremely constrained by criteria. Simple solutions to a design task are not considered sufficiently complex to meet established rigorous syllabus criteria and merit graduation. For example, a high-achieving student astutely identified that the most effective immediate architectural intervention in the community would be to reorganise their refuse collection: this project would not satisfy the academic learning outcomes and could not easily be given credit.

Students' growing empathy with individuals from the community led to departures from the brief, which again took the students' projects without academic recognition. This caused an ethical dilemma for the student. They were taking on the role of architect, learning about and practising ethical professionalism, and found themselves in a situation where the requirements of their degree course pushed them to abdicate their newfound professional responsibility to their 'client'. This was not a positive situation for the students, and should be prevented by management by the tutor whenever possible.

As touched on above, as the project progressed, a keen awareness developed of the difference between Learning and Achievement (- or perhaps 'evolution' and 'resolution' of a project or design.) The best learning opportunities and experiences often did not create then best portfolio product. As the learning experience of undertaking the design process was evidentially so great, as evidenced by student feedback, it is proposed that 'process' be recognised as a specific, academically-rewarded part of the course for similar units.

This pedagogy underlines the differences between providing opportunities for learning and growth, and in producing results- and highlights the value of the former.

The material outcomes of the unit were: the students' individual portfolios; the large-scale urban model; a combined unit 'blurb' publication; and a sandpit in the local adventure playground. The latter two were voluntary activities carried out by the student cohort outwith the academic semester. The urban model has been well-used: after being worked on 'live' by students and children at the event space during the Commonwealth games, it was exhibited for a month in a local church hall / food bank, and now we hope it will finish its days as an arts exercise for children at Dalmarnock Primary. The value of this model outside the academic environment, as evidenced by continued exhibition and use, has been rewarding to see.

Finally, success (or failure) must also, crucially, be measured in the public domain, or the project site. A project which fails in the public domain can provide extremely valuable learning for the student, but also that failure can damage real sites and lives. Our means of

measuring public success has been limited to direct feedback from our main site contacts, visiting *user-experts*, and local visitors to the event space during July and August. It is the latter of these that caused me most concern, as I was worried the project might seem an unwanted casual intrusion into a defensive, embattled community. In the event, I was delighted: we met and formed ongoing relationships with members of the show-people community, local shop-owners, elderly community members who had been active in the community in past decades, and even new residents proposing to move into the nascent athlete's village. This enriched the project hugely and has given us a great basis on which to build next year's course.

Certainly we did encounter suspicion and resistance in some visitors, an attitude that said "you aren't from around here, and so you are an intruder and you have no right to comment on our area". (See figure 9, above). In the vast majority of cases, human contact and communication broke down that resistance immediately, but not in all cases. There remained a mindset that we heard from a small core of local people over the month we were on the site: we were not from Dalmarnock, and had no right to be involved. In the view of these people, our *user-experts* were also not from Dalmarnock: one had moved to the area less than a year ago, another worked in the area for 5 or more years, the third lived 100m north of our main sites, which was considered a different and entirely separate area. It is possible to dismiss this attitude as recalcitrant and unreasonable, but these feelings are deep-held, and by those this project most seeks to enfranchise.

I am hopeful that continued engagement on this site over a period of several years will build trust and allow this group to engage. I hope that the new contacts we have made will allow me to tailor a brief for next semester which responds more directly to residents' concerns, and leaves areas open for specific input from our new contacts.

This situation is complicated by the fact that residents' wishes seemed almost always at odds with academic ambition. This poses an unanswered question: recognising the diverging audiences, constraints, and timeframes we experience in bringing an academic project to the

community, can we effectively measure or reward 'success' in the community sphere within academic assessment?

Pedagogic and Pastoral Responsibility

It could be argued that the above reflections recommend an abdication of the traditional "teacher" role, in expounding the values of open-ended questions, complex and contradictory problems, and liberated guest-input. The established role of the Professor as superior, fount of knowledge, is eroded to that of facilitator and guide. This is absolutely not an abdication of responsibility, and in fact the "light touch" role proposed requires a much more complex management of risk. It must not be considered an 'easier' tutorial position. The tutor in the above pedagogic role is relinquishing tight control of the studio, which has the impact of drastically increasing risk in expectations, process and deliverables. The tutor is challenged and trusted with providing a 'safe' environment for students and *user-experts*, and must manage to steer the project effectively, when required, to control the risk. The tutor has a significant responsibility to the *user-experts*, before, during, and most importantly, after the course. The tutor has a clear and palpable responsibility to the students throughout the project and final assessment.

The user/expert has been asked to participate in an academic arena usually outside of their experience. They will be exposed to attitudes, references and language unfamiliar to them. Particular effort must be made by the tutor to be sure that the *user-experts* understand the terms of reference of the project, the achievable deliverables, and that they feel able to query the proposals on their own terms. *User/experts* may not be aware of the different demands on the student projects and may themselves make demands which are unusual in the academic environment. They may have unrealistic ideas about what can be achieved by the students

(either in live project building or in influencing policy), which must be explained and clearly controlled during briefing.

Failure to recognise and control these demands of the user/expert can result in the visitor having a bad experience, either internalised or expressed publicly, leading to disenchantment in the project and little chance of future engagement. If the *user-experts* involved are themselves vulnerable persons, this risk is all the more serious. A well-intentioned socially-orientated project, mismanaged, may have a detrimental or damaging social outcome.

Students in the proposed scenario are being put into situations of confusion and ambiguity, described above as fertile learning environments. However these situations are also likely to be stressful for students, academically and socially. Students seeking a phantom 'right answer' will be concerned and discouraged by contradictions, and whilst assimilating the understanding and design maturity to manage this themselves, will be dependent on the tutor for support and reassurance. In particular, given the pressures on modern students, concerns about achievement and assessment will be at the forefront of students' minds. Tutors must be confident of the progress of students and be ready to step in, direct or lead a student if they seem to be falling irredeemably behind. Particularly in group work, tutors need to give enough space to allow students to make mistakes and learn from each other, but also to redirect a group if the focus or path of their work veers too far from the academic requirements. Finally, students may become unexpectedly involved in the very 'real' story they have been thrown into, and it is the role of the tutor to balance the engagement of students between personal, human engagement and the required academic objectivity. The students will be moving on to their next challenge after their work has been assessed; they must not feel in any way that they are 'abandoning' a client / user-expert. I have found it extremely difficult to balance this and leave both students and community feeling proud of a positive outcome and also that the project has a resolved conclusion.

Feedback

This was the second year of running the 'Dalmarnock' unit. In year one, student feedback was extremely positive, perhaps contributing to the popularity of the unit when offered in years two and three (2014 and 2015). Students praised the real-world connections, studio visitors, and the learning experience of presenting to non- architects and non-academics. The negative points were similar to those noted by the tutors; that there was a friction between academic requirements and *user-expert* communication, and the nature of the project did not quite fit the academic template for technical architectural outcomes.

Feedback from user-experts has been encouraging, and all local partners have expressed that they are keen to remain involved in the university work, and look forward to further engagement next year.



Figure 11. Student team on the final day of the summer event

* * *

CONCLUSION

Students at degree level have experienced, at most, only a few months of architectural practice. Their formative years in architectural education have taught them to mimic, present to, and seek approval from other architects. These courses have sought to offer a different pedagogy: to bring untamed non-architects into the studio, to ask students to grapple with wider social problems, and to then present these to an unpredictable audience whose responses may be contradictory. It is hoped that these students will take this experience with them into practice and become architects with social design and effective communication at their core.

The experience to date suggests that this approach has huge pedagogic value and enhances the learning experience, but at the risk of diminishing the traditional academic achievement of students when compared against standard assessment benchmarks. Whatever the long-term benefits of educating future architectural professionals in this way, this methodology may reap far greater long-term societal benefits.

We conclude that it is inevitable that the demands generated by a Universal Design brief will diverge from the constraints of traditional course outcomes in architectural education. It follows that students joining such a course will be asked to deliver on more fronts than their peers, and this broader scope may impact on their overall achievement. However, the extremely positive experience of this cohort in assessment and achievement in external awards, suggests that this 'traditional' view of what constitutes best achievement in architectural education may be changing in the UK.

Finally, whilst the learning value of these courses seems to be evidentially greater, much of that learning is in areas often termed dismissively as 'soft skills'. The development of students awareness of self and others; of the potential social impact of architecture; of their ability to effectively communicate with others outside their professional expertise, both verbally and using

drawings and models; these essential skills are not explicitly assessed nor rewarded; and yet they demand a lot of time and energy of the student engaged in a universal design brief. It is in fact extremely difficult to effectively evaluate learning of this type in any formal examination or submission. The fair academic assessment of community-engaged projects continues to be a challenge for those tutors engaged in Universal Design.

The pedagogic aim of these two projects was to allow students to engage first-hand with members of the public and with contemporary social issues, giving them an opportunity to assimilate this input on their own terms and begin to position their design practice in relation to real world problems. It is hoped that students educated in this way may embark on their careers emancipated, agents of a new understanding of the professional role and responsibilities of the Architect.

References

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Diverse actors participate in the process of conceiving architectural spaces. In teaching/learning the social art of architecture we also learn to advocate different interests in the process. The roles of designers, users, investors, builders are different and often interchangeable. The initial decision makers' position of power in the process changes character as transition of power occurs. The interactions with users, sites and even with inner self changes the position of architect in the design process from the powerful mediator to the mediated facilitator.

Can the distribution of power in this process be predicted, orchestrated, and balanced to ensure the optimal outcome? The author explores specific methods and experiences in proposing some answers to this question, based on the work of two design studios based on opposite sides of the globe in Serbia and Singapore. The juxtaposition of these two venues provides clues as to what is universal about teaching the social art of architecture and what, perhaps, is not.

CHAPTER 2

Transferring Power in the Design Process

Ruzica Bozovic-Stamenovic

1. INTRODUCTION

When the 2014 BERKELEY PRIZE announced its main theme “Healthful Architecture,” it was a rare opportunity to check out viability of ideas and methods applied throughout the many years of teaching this very topic in Europe and Asia. Although it was never labeled throughout these years as *healthful architecture*, but as the topic of “Space and Health”, it implied healthfulness. Why skipping this attribute in the title of the modules and research projects? If the topic was set as literal sum of the two issues we investigated, than the outcomes of the juxtaposition of these two main themes could have been objectively presented and discussed. If we admitted we were discussing healthful architecture, the outcome should have been measured by levels of healthfulness achieved. That would have been a problem.

Healthfulness is hardly a definite state, but rather a process in which wellness-related circumstances and events lead towards a holistic state of contentment. Healthfulness is not a static state but rather an ideal target to be pursued but never reached. The critics of the widely acclaimed WHO definition of health (defined as the “complete physical, social and psychological wellbeing and not merely the absence of illness or infirmity”), state that this definition is picturing

the ideal that can never be reached, and even if it was theoretically possible to do so, it could not be preserved. In spite of the solid foundations of these claims. Regardless, the definition remains widely accepted, cited and used in academic circles for almost sixty years.

The reason for accepting and relying on it for such a long time in spite of its fallacies is that the definition is still in use for advocating the fundamentals – holism and man as trinity of body, soul and mind. Therefore, before moving to discussing the definition's accuracy, we must acknowledge that even the obvious first step in holistically understanding health has not been fully taken. Architecture applies double standards when dealing with health. It's treating physical health related issues with scientific rigor and social and psychological topics with inevitable elusiveness sometimes disguised as evidence-based science. Since accountability is sought for, dealings with the material aspects of space prevail, while the sensorial and intangible issues are suppressed if not entirely skipped.

The immediate implication of this scenario is the confusion regarding stakeholders. Who is benefitting from design due to healthfulness? Is it the immediate users, the property owners, the society as a whole? Who is to talk and investigate healthfulness: architects, doctors, environmentalists, politicians, all? Who is to measure levels of healthfulness assuming that the appropriate tools are set and that this action is even possible? Too complicated? Is it too serious to be considered with undeveloped tools? Too demanding? Or is it too loose to be approached with scientific rigor? Obviously too many questions and too much responsibility that the attribute healthful implies makes it better avoided than used in discourses on architecture and health.

Therefore, even if our profession is dealing with healthcare facilities, public health and healthy spaces, architecture as discipline avoids the trap of ambiguity and seldom takes positions regarding holistic healthfulness. Taking the two opposing poles are phenomenologists (Juhani Pallasmaa, Steven Holl, Peter Zumthor) who do; and the Derridian deconstructivists (Peter Eisenman, Bernard Tschumi, Coop Himmelblau, Daniel Libeskind) who decidedly don't.

The latter deliberately make a clear-cut distinction between the art of architecture and the plain realm of the quotidian in which it resides.

An anecdote from the 1984 IBA conference in Berlin: after lecturing on his, at that time, very avant-garde stands, Eisenman was confronted by an obviously frustrated audience member and asked if he would live in the architecture he designs. His answer was a straight *no*. “I live in a house with a fireplace; by the water...you must distinguish the philosophical discipline of architecture from common life”. As a very young architect I was astounded. Three decades later I evoked this anecdote while chatting with him after the *Architecture of Deconstruction / The Specter of Jacques Derrida* conference in Belgrade and he laughed “yes, I always answer this question like that!” This time I thought I understood better – it is not about denying the perceptive mind but about the concern that it might blur the pure reason.

In between these poles is our profession: architects, architecture students and their educators who mediate all influencers, torn between the needed, the obvious, the possible, the assumed, the wished for, the evident based, the elusive, the ethical and the most eclipsed –the right, whatever that might be. Unfortunately, the end result is that concerns are mainly concentrating on sanitation, accessibility and public health.

Healthful architecture is an intersection point of social (1), technical (2) and design (3) issues. The investigation of specific parts of this triad is important, however, the healthful effects of design rely on the harmonious coordination of the three parts throughout the entire design process. . The mediators in this process should be the architects. Still, in practice it is very common to see a different sequence - 3,2,1- and architects’ engagement being focused primarily on design issues and technical properties while turning attention to social aspects comes only much later (if it comes at all), in post occupancy evaluation exercises.

The other and less common situation in practice is the participation of users in the design process. Their engagement (if any) takes diverse modes and comes with uneven intensity and outcome. Burdening the users with design decisions in good faith but in

unpremeditated scenarios raises criticism. The architects in this case empower the users but also transfer some or all of their own responsibilities for design outcome (1, 1-2, 1-3).

Thus, architecture takes the position of power over the space, but assumes limited responsibility in regard to places it generates and consequently to effects these places have on users. The “power over” is implicit while the “power to” pursue healthfulness is not. This intriguing yet convenient relation of power and responsibility in regard to architectural spaces is very much present in practice: Architects design with humanistic ideals put ahead, with opportunistic manners regarding their artistic ego hidden behind and with the relentless awareness of partial responsibility regarding the result. Architects thus primarily act as mediators in this complex realm of influences and stakeholders’ objectives summarized as “value for money” where only the latter is precisely and plainly defined. The question of values, however, remains open for interpretations.

These very boldly put scenarios point to the importance of architects as mediators in the design process leading to healthful architecture. If architects are to be the major mediators of the integrative design processes than the question is how to instill this need for reliability and accountability in their perception of social art of architecture?

For educators influencing the architects-to-be in their formative years the main question is how to teach the students to take responsibility for the spaces they design together with attaining the power to make decisions, to equip them with appropriate knowledge, self-awareness of the necessity to do so and with self-confidence to pursue the goal in spite of all odds. The change, as we assumed, begins with changing the students’ perspective on issues, users and communication with actors in the design process, but also with changing their own attitudes, views and sensitivity to social topics.

2. THE PROGRAM

Under the overarching theme of healthful architecture the topic suggested in the curriculum for the 2014-2015 academic year was aging and modernist public housing and sites in Belgrade and Singapore. This year-long exploration of issues pertinent to healthful architecture for mega-mature society was taught in very diverse cultural and contextual circumstances which made us think of it as an experiment in teaching and learning. The curriculum was executed in two Design Studios, two elective modules, and one workshop with overall number of 112 students (72 full time + 40 part time) involved and in the course of one academic year: the first semester being taught at the University of Belgrade, Serbia and the second at the National University of Singapore.

The main theme for the entire year reflected the two burning issues that the south-east European and the south-east Asian country had in common: aging and housing. In both places, ageing population percentages are rising fast and generating similar social problems. Also, both societies are characteristic for post-World War II modernist public housing due for upgrading and social alienation trends.

Aging has implications on many levels: biological, psychological, social, etc. Social scientists far too often approach common problems of old age by isolating them and referring the discourse to each of these strata separately. The human, as the only point where all issues converge, is as often taken as a subject of almost anatomical dissection, followed by inventory of problems and respective needs and as an object of eventual repair. Simon de Beauvoir, the famous French existentialist philosopher and writer, in her 1970 seminal book "*La vieillesse*" (literally *old age*, translated as "*The becoming of age*"), analyzed old age and tackled the myths, ideologies, reality and ultimately silence that drives and surrounds it. She examined the subject by questioning the very existence of the person in this period of life and meticulously described the circumstances and the process of losing authority over one's life.

Almost fifty years later, life expectancy in the developed world is noticeably extended, research in telomere length announces the reversible prospects for old age, corporate “work, live and play” culture demean the idea of retirement, and turbulent political and economic global circumstances deny the luxury of calmness to old age. Loss of autonomy and dignity, gender inequality and economic impoverishment might still characterize the old age; however, the changed circumstances shed different light on these and many other interconnected issues too, and open new prospects.

The site chosen for Design Studio and Elective module exercises in Semester 1 was Block 28, one of the prominent modernist blocks in New Belgrade area and sound representative of social housing from the seventies – the prosperous socialist era in former Yugoslavia. The site selection matched in character the HDB (Housing Development Board) modernist social housing model in Singapore, investigated in Semester 2. However, with subsequent political and economic downturn the Belgrade estate - block 28- deteriorated to oblivion, unlike its Singapore counterparts. The analogous appearance of the two suggested sites was intentional. In our quest for the socially responsible healthful architecture it was essential to build the specific survey tools and apply them in similar circumstance in order to get compatible results.

The Objectives

Our main challenge was to test if a particularly tailored methodology would reveal certain differences, discrepancies and contextual influences affecting the mediators in the design teaching and learning process –the tutors, the architecture students and the user/experts. **Our driver in this quest were ten key words, chosen as generic representatives of the fundamental issues and notions regarding the old age in the Mega-mature society: *mobility, independence, memory, loneliness, fear, hope, respect, control, beauty,***

rejuvenation. These words were anchors in our survey tools for site analysis and our talking points for interaction with users. Our objective was to explore to the fullest the variety of interpretations and applications in design that the words might trigger and lead to the subsequent creative design as response.

The early decision was to diversify the range of approaches to the Design studio /Elective class theme with particular focus on on-site investigations, user/experts and engagement with social issues. This in return called for the development of different methods of investigation and inclusion of the user-experts, as well as adjustments in the studio dynamics. The main divergences from the usual design teaching methods we anticipated ahead of embarking on this yearlong experiment were:

- Much longer time than usual needed for preparations and development of the curriculum and the teaching methods + longer time needed for analysis and for revisiting the site and engaging with users in different stages of the design process)
- Sensitizing all participants in the design process (educators and students alike)
- Tracing and harvesting results of this change – noticing issues, discussing change in perception of the problems and in the approach to design, on the top of discussing the final design
- Returning the experiences back in the design process to drive the outcome – constantly refereeing to the experiences gathered through surveys.

3. THE MEDIATORS

The first question to be raised at the beginning of the discourse on mediators would probably not be who they are, or which of them is affecting the most the outcome of our design attempts-the built spaces, but which positions do the mediators hold in the process of conceiving, rethinking, creating, building and using the space. At each of these stages mediation is necessary, to a different extent and in a different way, for structuring the numerous influences and agents that play a role in the process of place-making.

In our profession we somehow unquestionably assume that the knowledge we acquire entitles us to certain rights and privileges, like the power to make decisions at all stages of the design process. We eagerly do so in our own name, in the name of those who delegated their right to us, like investors or governmental bodies, and in the name of those who often did not, like the users. The cumulative effect of these assignments generates the misconception that we are in control, and that we are entitled to it for being able to make the correct decisions.

The critical discourse on modernism acknowledged and explained how simplification and totalitarian empowerment of professionals impoverished the living experiences in the modernist housing estates. As late Philip Arctander, at that time Director of the Danish Building Research Institute told me half-joking, there are two major misunderstandings in architecture: that architects know what is good for people, and that architecture will help people live better. .

Regarding the mediators, the issue we wanted to check out was: are the mediators who they think they are, not undermining the fact that they might not know the right answer to begin with. Are the students as future professionals sensitive to their own motives and sentiments regarding architecture and find the soul-search useful in the design process? Are they aware or even able to comprehend different layers of the role they played and their own abilities to

embrace these complexities? Are these skills something we could learn with appropriate teaching methods? Or is it about engaging in nourishing the intrinsic seed buried deep into mediators' own personalities regardless of the architectural education, profession and the alleged empowerment?

Answering these questions required specific methodology. Throughout the academic year the series of small assignments-surveys always contained an element of duality addressing both the pragmatic and the emotional self of the respective student. Regardless of the main theme of the surveys and exercises sometimes directed towards the site, the program or to the users, there was always a hidden agenda behind: to see if the student-mediator is able to engage his/her personality in full, or partially if more appropriate, and/or specifically required, and if the student-mediator could be mediated in the process. Can the students distinguish their rational mind from its inherently embodied foundation? How is that revelation good for their architecture as the largely abstract and metaphorical concept?

The first step towards exploring possibilities for mediation was consolidating the programs for both semesters and for different modules; one being the Design Studio and the other the Elective class. The important thing, as we felt, was to provide the right frame for all the questions we asked. The program therefore could not just be some plainly put title depicting architectural typology, like for example "community center." The first semester Design Studio brief explored the community center as the place where the spectacle of the quotidian happens. The second semester variation of the community center was foremost the critic of the prevailing existing model with emphasis on space as support to day care for elderly and children. Both themes were meddling with the pragmatic and functional model for community centers and the bureaucratic understanding of ageing, the elderly and their needs.

In our year-long experiment we initially assumed three main categories of mediators: the teachers, the students and the users. Their apparently logical subordination is questioned as the teaching process progressed and their ability to embrace the loss of their privileged (or

underprivileged for that matter) positions tested. The professor who offered the curriculum had first to step back and purposely leave strategic parts of the program loose. Expecting others to strengthen it or fill in the gaps in representation of the topics we wanted to address, was not as straightforward as just opening this possibility. Constant interaction between mediators had to be established. The professor, as the main critic, was criticized in a way by students' unforeseen interpretations of the given program, and vice versa. The students designing for "spectacle of the quotidian" in semester one or the community center with day care for the elderly and children in semester two were supposed to take the program seed and grow it into what the user-experts, in their own view, might have needed.

Every expectation that the professor might have had was exceeded with the students' creative upgrades of the initial program in both semesters. The students mediated the mediator and required the teaching staff to adjust and follow their creative ideas instead of just monitoring their compliance with the brief.

One typical example: when the student realized the complexity of influences intersecting in the environment that the elderly user-experts occupy, he decided that nothing short of a "great event" as a destiny turning statement would suffice; he created a gigantic hole in the block supported by colossally complex story too. The teaching staff understood this severe break with the reality as sort of defense mechanism and reaction to the severity that the real situation, acknowledged through the analysis, imbued. The student was left to continue with his design idea and eventually overcome the rebelling phase by adjusting the search for "the event" to as creative yet manageable options.

The result turned out excellent in this case, but the point is that mediation in design process assumes risk-taking and even failing as an option. This in return requires changes on our system of assessment and change of criteria in Design Studio and emphasis on design process rather than on the resulting final architectural form.

Meddling with the positions of power in design process was interesting and fruitful in many ways. NUS students went through the mid semester accessibility exercise preceded by a lecture and discussion delivered by a fellow colleague who recently suffered a very bad injury.



Figure 1. The accessibility exercise, Singapore

The usual exercise requiring the students to depart from the University campus, take public transport to reach the site while taking turns in a wheelchair, apparently, according to their reported notes, turned into an experience mediated through different agents. Having heard a very personal story from a professor they know raised the levels of empathy in the group ahead of the exercise. Drizzle, humidity and heat made the physical effort while pushing the wheelchair in the hardly accessible campus quite a challenge. The otherwise known and thrillingly beautiful campus environment, turned hostile from the wheelchair perspective as they could not reach the usual bus stop and did not know the accessible way to the optional ones. They suddenly understood the discomfort of being lost, or even worse, of being the only ones

who are lost. They noticed the face expression of the bus driver who had to get out of the bus under the rain to pull down the ramp, the looks of the bus commuters who were annoyed with the delay, compassionate looks in the train and along the long way they had to take just to cross the street to reach their destination. They felt on their palms tired from pushing the wheelchair, the distance between their site where the community center was planned and the nearby HDB housing estates where the users resided.

The embodied and sensorial experience of movement turned their initial design concepts into a discourse on relations between the space, the mental and physical distances and the time. The form and composition of their half-cooked design was referred to those too and questioned in the course of the experiments. During the two sessions of this experiment on two different sites we used the local Starbucks for design *crits*. Being out of the safe school studio space was conducive as the students set and mingled with the commuters potentially relevant for their center. Would they be interested to trespass and interact with the elderly was the question that wouldn't have popped out if we were in school. Thus, even the place where the studio *crit* took place mediated the course of discussions.

In both semesters the initial site visits and interviews with users were expected, from students' perspective. However, being asked to often revisit the sites and talk again with user-experts in the later stages of the respective semesters came as a surprise. Nevertheless, the students did understand the value of repeated interactions with user-experts and admitted that the issues raised and the type of questions they asked later in semester were much different than in the early phases of interactions.

It was mainly the stronger students that embraced the repeated exchanges with users and thought it was helpful for fine-tuning the right direction of their design. The weakest students took it as a chore at first, but eventually got to the point when they admitted that it makes sense and at least points to the weaknesses in their design approaches if not directly helping with the outcomes. Some of the design decision actually changed based on the mid-semester feedback

from users (like: “building any tall building on this spot would be terrible” – student shifted the position of his design, “we don’t want to lose the football field although it is seldom used” – student incorporated the field into his design).

The program was therefore not set as a target to be reached or chore to be finished, but as a mediator, a pretext for interaction and discussion with results that would influence the next steps in the process. Every output along the way was inspected in different formations, individually, or in informal/formal groups or settings, and the conclusions purposefully put back in the design process contributing towards the end result. When we tried to shift the students’ early literal reasoning on program and sites towards the metaphorical and imaginative we pored a few kilograms of flour on the site plan and asked them to check out their initial concepts. The soft and loos material poured onto the precise technical plan was the apotheosis of *hapticity* and triggered joyful playfulness rather than the professional expertise. Again, the stronger students enjoyed more in immersing into the sense of embodiment and the unleashed cognitive unconscious reasoning, while a few others were reluctant to leave their safe professional code of behavior.

The social aspect of the quotidian life was also investigated through exposing the students to the artistic interpretations of the topic (theatre, conceptual and performance art exhibition) to help them understand art as mediator in dealing with user-experts and their life. One studio session was conducted in the spaces of the October Salon of art (international modern and performance art exhibition); a number of works was documentary, informative and applicable to students’ design process. On a separate occasion all Studio members attended the performance of Eugène Ionesco’s avant-garde play *The Bold Soprano*. It raised discussion on real-surreal in the quotidian experiences and the position of common people in between these two poles.

Overall, we just hoped those phenomenological introspections could be sustained throughout the design process, so therefore we needed to monitor what ensued from expectations.

The www Blog (<http://desetreci.tumblr.com>) set by Belgrade students in semester one was opened as the self-edited web platform for selection and showcase of work in progress. Students individually decided when, how and what to expose their work on this platform. The benefits were two-fold. For the students the feedback from their peers and viewers was informative and relevant in terms of legibility and interpretation of their design ideas. For their tutors it was an invaluable indicator of changes in their thinking and shift in attitude towards the users and the theme throughout the semester. Interestingly, the students showcased their best results, but much more their dilemmas and points of controversy as if they needed this platform to justify why their design decisions are built upon such unreliable foundations. Transcripts of the interviews with elderly user/experts were particularly interesting as the statements selected for the blog were the ones with most imbuing effects on students' design.

The exaggeratedly simplistic description of the typical design process is: program imposed by higher authority (school, investors, and governments), encounter with rigid bureaucratic requirements (rules, guidelines, codes) and designer's creative ego. In practice the building process follows, sometimes with the ensuing *post festum* survey of end results and their effects on users. On all of these stages the users' wellbeing is assumed, but seldom really embraced with deeper understanding.

As shown, in our experiment the design process started with blurring the boundaries between these typical stages and checking out if this looseness was possible, manageable and beneficial for the final outcome – the projects and the mediated mediators. Also we questioned the linearity of the process assuming that the mediated mediators return to the process to affect both the previous stages by revisiting them and the next stages. The main project theme was also imposed by higher authority –the professor, and presented in a similar way in both

universities However, further development of the generic theme was expected at all stages where mediation occurred. Therefore, the theme matured along the way together with the students as mediators. The position of certainty and stability did not exist in many ways. The initial knowledge of the site for example, sufficient in the early analytic phase, was not enough in the subsequent phases when other influences changed the perspective on the site conditions. Thus, the design process became the continuous interplay of mediators and the theme with the ambiguous end result in sight.

The point raised in our discussions with students was the level of compliance with user needs and other influences on their design, or how much mediation should or could the mediators accept. The paradoxical historic case of the autocratic architecture later completely changed by the empowered users is worth discussing in regard of the intriguing idea of the mediated mediators. When sugar factory owner Henry Frugès commissioned in 1924 a housing estate for his workers in Pessac, Le Corbusier was entirely led by his enormous geniality and new ideas that, as he thought, would improve the workers' existence.

.Le Corbusier's 127 avant-garde houses built according to seven types were dramatically transformed over time by generations of tenants to the point that the French government had to purchase a few and turn them back to their original state in order to preserve the memory of these early masterpieces of the modernism. Even though initially the power over the space might have been fully executed, it was indirectly, through enduring in time that the mediation of the mediator-the architect and his idea, took place. The paradox lies in the fact that the architecture created through the authority of one person is now considered more valuable than the one generated through the empowerment of many, or of the life itself.

The Belgrade site had many traces of tenants' intervention and adjustments of the environment that took place over a few decades, even though the estate was very progressive at the time it was built. Those interventions were of great value for the students as they could read the trends and guessed the users expectations. However, in Singapore, understanding

what the users expected by observations only was much harder. Therefore, the students as mediators had to rely more on all the signs embedded in their interviews with the elderly users. Students in both semesters talked to two groups of elderly, the ones unknown to them residing in the respective area, and those who they knew better, through family ties, neighbors, or close friends. Although it was not the structured interview, we call it so because the students had the ten words as the guiding agenda for the chat. Later, the transcripts were also adapted to follow the “ten words” template. The mediation happened already at that point. The previously sensitized students were now analyzing the responses comparing them to what they made of the “ten words”. They figured out that out of pride elderly, even the close ones, seldom admit weaknesses or complaints. The interview transcripts and their subsequent analysis revealed that what the user-experts think or need is never plainly expressed, even if it might have looked like it. Reading the clues between the lines, capturing the tone and face expressions sometimes meant more than the words used, as reported. After these interactions the students realized that the reality and what was sought for were at odds with each other. They now valued the hidden more than the plain images. The mediators were thus constantly mediated by the outcomes of their mediation.

4. THE MISSING PARTS - or the concealed mediators

The words

All along this experiment we were aware that mediators are not just people. The briefs, the “ten words” as their skeleton, even other site agents carrying semantic meanings and detected in the analytic phase of the projects, acted as mediators throughout the design process.

Although the students were fully aware of the theme and the BERKELEY PRIZE framework, we initially encountered in both Schools this sense of wonder and even resentment regarding the repeated emphasis on readings, social issues, site re-visits and communication with users. Students seemed surprised to be asked to participate in literature review exercises as part of the Design Studio. However, the readings and reporting proved valuable. Students adopted the vocabulary, became aware of the new theories and got the needed sense of confidence in dealing with the issues ahead. In later discussion we insisted that they cite and rely upon theories and readings in verbally describing their design and they did so making their presentations different than they usually are - focused only on design concept, form, function, materials, etc.

The ten words, initially meant to be our technical tool, turned out to be the powerful mediator at all levels and all along this journey in an unexpected way. The selection of the ten words pictured a cocktail of pragmatic and metaphysical issues. Each of them apparently also had its practical and conceptual meanings. Since the interviews were set to explain the nature of the old age, the words came as a handy tool for classifying the answers and on-site observations.

Although we do have the statistical analysis of the frequency and ranking of the ten words as they appeared in the interviews, we consider the statistics irrelevant. More interesting is that the word "control" and its derivative, "self-control," came as the most important one for the elderly in both Belgrade and Singapore. "Mobility" followed, then the order became different in respective places. Interestingly enough, in the brainstorming exercise in both schools, performed under uncomfortable circumstances, the students' subliminal reaction to the word "control" was also "self-control". Students learned that the sense of "ego" of "self" is very powerful and remains such regardless of the fading of the other senses.

Also, "loneliness" and "fear" were mentioned more often in interviews with the known elderly person, as if the intimate connection with the interviewer was a prerequisite for admitting

certain very private feelings and vulnerability. The previously unknown interviewees rather talked about care and "hopes" for the next, young generation (in Belgrade) and "respect" they expected (in Singapore). This result is very culture specific; in Serbian culture caring for the offspring comes before caring for oneself, while ancestral respect is deeply rooted in Asian cultures. As one Singapore student stated in his "comments chapter" we asked for after the interviews and on-site analysis:

"It is interesting to note that respect is linked to loneliness in our local culture. Part 1 frames loneliness as a lack of meaningful interaction. This is understood to be family interactions in all interviews. Loneliness isn't faced by interviewees perhaps due to the presence or frequent visitation of family members"

Some of the ten words, however, turned out ambiguous like "rejuvenation", "memory", "beauty". Assigning the meaning to these words required making semantic sense of the context as a whole. One comment from Singapore student was:

"It was revealed that beauty unexpectedly links to mobility and hope as well, due to the fact that beauty for the elderly seems to also be found in travel and experiences of new places"

In the Belgrade urban context devastated over many troublesome decades, "rejuvenation" and "beauty" were more subjected to metaphorical interpretations, while in prosperous Singapore they obviously had a prevailing denotative character picturing a reachable better future.

The expressions we use in architecture rarely reflect the care for semantic implications. For example, when explaining their projects students often use the expression: “I want the users to....” The words, “*I want*” and not “*I expect*”, for example, denote the already instilled sense of power over the situation. The word “*user*” denotes the trivial position of consumer whose purpose and satisfaction should come from “*using*” whatever is offered and pre-packed for them. Architecture understood as assemblage of specific assortment of design features to be “*used*” in a certain format to fulfill function is as common as it is dangerous, particularly in architecture schools. The extension “*expert*” added to the word “*user*”, as suggested by Fellowship Coordinator, Elaine Ostroff, made the subtle but grand difference. Insistence on using this expression at first annoyed the students. However, later into the semester and particularly at the semester end they used the term “*user/expert*” quite effortlessly, with persistence and confidence. It came very naturally to them as the design process persuaded them to acknowledge the nature, the resilience, the value scale and immense potentials that the users they encountered expressed in regard to spaces. The students understood that they design *with* the user/experts, not *for* them. The transfer of power was obvious even in the rhetoric descriptions of the projects, as shown in two typical citations:

“1. Enabling the user/experts to move about the area without the threat of physical pain and discomfort from heat and traffic would give them the ability to treat the urban-scape as open and thus relive some memories.

2. An initial aim of this project could be to restore control to the elderly by making a salutogenic space where they are able to spend time in, whether recovering or maintaining their current physical state.”

Even though the meaning of the *ten words* was somewhat differently perceived in the

two dissimilar places and cultures, their impact on the design process was strikingly similar. As if the words triggered some hidden and autonomous system in which the key words, once considered, just pull out a very regular and even predictable sequence of thoughts and actions.

For example, the word "fear" instigated this typical sequence: 1) "loneliness", in response to the word "fear", 2) functions moderating "loneliness": socializing-sharing-participating-supportive places for social encounters, 3) programmatic responses: gardens, walking decks, ponds, library, etc. Therefore, functions like community gardens, halls or libraries were not justified by the explicit need to have these particular functions, but by this sequence of thoughts rooted in the word "fear".

Speaking of sequence of thought, one student who connected the word "respect" to "independence" and "control" added in a self-critical tone his empathic observation:

"In an era where the young expect a medal for giving up a seat on the bus to the elderly, one can only imagine how disappointed our elders must feel" (Eugene Long)

This is what the same student wrote under "respect" after his site readings while acting as an old man:

*"Pragmatic: Allowed rushing people to walk first by stepping to the side.
Walking with other elderly people was easier.
Emotional: Irritated"*

Another characteristic word was "mobility". Although our initial intention was to refer to physical aspects of moving in space, the word raised responses closer to "mobilization" and support to engage in the act of moving. Design features driven by the word "mobility" tackled

issues like motivation to move, the sense of being in control, resting, the reflective and escape nodes, connections, distances, length, safety, etc.

The time

The mediator we unexpectedly encountered was the time. Relevance of the length of intervals needed in different stages of the project was not predicted well, even though it was clear that the usual semestral sequence of events could hardly be followed. Time to do things was calculated, time to process the change was not. The initially assumed dynamics regarding the design process had to be adjusted along the way. Program preparations and development of survey tools, the recurrent on-site visits, the surveys, compilation and analysis of survey results required more time spread over the whole semester. The design studio process was constantly out of balance due to special requirements and subsequent discussions. However, it was the act of mediation of the mindset that required extensive time, not the hassle with activities.

Even though the time related considerations seem as technicalities, they actually are not. The common introductory few weeks with site and program analysis are reflecting the already formed and rigid preconceptions about the design process. In this scenario all information about the theme, the site and the users are gathered first, taken as neutral sum of facts, photos and numbers. Only then the professionals, architecture students in this case, are supposed to take over, interpret the analytical data and choose the driver for their design. This simplified scenario did not work for us as we wanted to establish the synergy between all stakeholders very early and thus share the power over decision making and responsibility for the final design.

Change in perception that we were looking for needed time to develop in different stages of the design process. Both teachers and students eagerly faced the challenge, but also

suffered under the hectic circumstances. Students visited the site numerous times over the semester and engaged with the users repeatedly. None of the apparently same visits and confrontations with user-experts was actually even similar. The elapsed time added new layers to students' understanding of the subjects they were dealing with as the time mediated students' perception and abilities to tackle the important issues. Initial stands melted under the recognition of social responsibilities, and sometimes returned back into the process changed and matured. Transcripts of the interviews are a valuable evidence of this change in sensibility towards user-experts:

“She emphasized that she fears of getting older since it would be sitting on the bench in front of the building as the only choice. After a long conversation, we walked towards her building and stopped in front of the stairs to say goodbye. Then she did something I never expected - she asked me whether I could sometimes come to have a cup of coffee with her and her daughter...I wrote my phone number on the clean side of her bill from the supermarket. Her name was Slavka. I was left speechless by her appeal. I even forgot to help her make her bags from the store to the house, and forgot to make a picture of her... But there is hope that we will see each other one day.” (Belgrade student Aleksandra Vusurevic)

Time was mediating the routine and prolonging the influences of otherness on design outcomes. Mid-semester encounters with user-experts had a more profound impact on design, And it was not about the linear time only, but also about *pre* and *post*, past and future that apparently emerged as important for design considerations. Power over the design decisions was in a way shared with past and future stakeholders as the students immersed into speculative juxtaposing of facts and influences gathered as the design progressed.

The interesting influence of time is however not in the fact that more information and user-experts' feedback could be gathered over the extended period and multiple encounters. It was rather in the fact that the students were changed as the time passed and therefore faced the site, the issues and users with different mindset. Although this change was obvious to the experienced teacher's eye, more importantly it was self-reported too. Even though the students, torn between diverse and recurrent influences and their design credo and ideas, might have felt that their loss of control over their project is at times immense, the ensuing moments of clarity often led to content and refreshed enthusiasm. Paradoxically, the complexity of the design process, its challenging dynamics and the often chaotic outcomes of ongoing analysis and exercises, ultimately led to, if not aesthetically better, at least more reflective results.

The guidelines

Empowerment through legislation is a common strategy in design. Misconceptions that sheer conforming to rules regulating design assures its healthfulness is unfortunately as common. Application of criteria referring to sanitation, safety and accessibility as ways of addressing health in design has been preferred for simplicity, effectiveness and accountability. Those and the more developed Universal Design principles were presented to students as a minimum requirement they have to conform to, but asked to look beyond their limits. More relevant criteria of healthfulness rely on nature and architecture combined with their symbolic and social values necessary to achieve complete healing effects (Gesler, 2003, Lawrence, 2011). Once again, change of attitude was required.

However, the students treated the guidelines either as a task, or as the safe way out of the design maze, or even as an obstacle worth avoiding. Therefore, we adjusted the teaching method. Any mention of accessibility was met with the "so what?" question, and then discussed in connection to social, psychological, political, historic and other sides of healthfulness.

The result we got in some instances was thrilling. The students' projects contained system of nodes and paths for the user-experts to explore based on interests. The linearity that the common "follow the guidelines to fulfil the function" model imposes was superseded by the network model with dynamic interchanges of congested and loose activities, and connecting paths and surfaces that completed the haptic realm. The efforts to apply the guidelines and yet overcome their autocratic nature fueled the creativity in some cases, but remained fruitless in the others suggesting that the change regarding empowerment in the design process is not automatic. However, the criticality regarding the rigidly governed urban spaces, void decks in this case cited below, was evident in many comments on interviews:

"Interview Reflections 7:

The physical permutations of the dominant power and their explicit rules of exclusion and governance were evident in the void decks. The overtly programmed spaces that corresponded to particular socio-cultural functions tended to be the least occupied, with the spaces that were the least programmed (i.e having the weaker frame strength and classifications) being the most occupied, given their ability to allow for unplanned and spontaneous. However, the explicit rules of governance (such as the banning of running, smoking, ball games, speaking loudly, to name a few), that were applied to the void decks with the weaker frame strengths, created either a sterility of space, or in extreme cases the contesting of the space between resident (sub-servient) and municipality (dominant). The continued correspondent and homogeneous approach to the design of the housing blocks saw the Void deck become a more classified public space under the explicit rules of governance, compared

with that of its 5-foot way predecessor. However, such explicit and specific functionality of the spaces, coupled with rules of exclusion and appropriation, created sterile environments that, when challenged by the tenants in their own spontaneous appropriation, created power struggles between dominant (State) and sub-servient (Tenant), which largely resulted in ambivalence and dis-ownership of their assumed territory.”



Figure 2. Void deck, seen as unfriendly for elderly users

Knowledge

In order to manipulate with empowerment in design, the constant upgrade of the students' knowledge base was needed too. Building the students' integrity and enabling their

credible performance was closely connected to the knowledge they obtained along the design process.

For doing it fast and continuously students embarked on reading and individually reporting on literature annotations, but also on “collectively reading” a selected book during studio sessions. The “collective reading” required each student to read one book chapter over 20 minutes during studio session and later report the essence of the text to all. The point was to cover as many as possible of the useful literature excerpts, digest them in portions, summarize and report to their peers. The intention was also to get the students interested in reading the entire book later. Besides being informed students learned how to process the important points and briefly report them. The skill was later useful in reporting on interviews and surveys and for final verbal presentations of their projects.

Students also used the web-gathered information creatively. While cutting and pasting to visually illustrate their views on the “ten words”, for example, they transformed the images, citations, and other data taken from the www into their own imaginative statements. The entire process of finding, selecting, collaging and reusing the www info is considered as new knowledge acquired through sources that they are most familiar with.

Therefore, through the concealed mediators, the students loosened their autocratic attitudes and balanced their acquired pragmatism and inherent intuitiveness while gaining confidence in the process.

5. METHODS OF MEDIATION

Transferring power in the design process is not necessarily directed towards de-authorizing the designer in order to empower user-experts or other interested stakeholders. The architect is too the object of power-plays since the duality imminent to our rational and creative minds never cease to affect our actions. Thus, the discourse regarding transfer of power might

be directed to the empowerment of either our pragmatic or emotional self in different stages of the design process. The question is if this task is the necessary one in the context of social art of architecture and if so, is it manageable?

Social art of architecture requires change of position in design thinking. This might seem easy, but actually is not since it implies alterations in nature of the subjects who are involved in the metamorphosis. The “higher” (Steiner...) senses and instincts, particularly the sense of ego make the spontaneous change hardly imaginable. The truth is that even though ethics is in the core of aesthetics (Kant...) issues of empathy and compassion more often occur in relation to the already formed and inhabited built environments, than along the conceptual design processes. The affective basis of architectural thinking (Pérez-Gómez, ...) is irreplaceable in dealings with the fallacies of the pragmatic Euclidian spaces. To relate to spaces on a subliminal level the spaces need to have embedded attributes that could be intuitively detected and read.

Developing new design methodologies is imminent if we intend to shift from the consumerist towards socially responsible art of architecture. Architects as mediators need mediation too. The first step would be departing from the comfort of our respective intellectual niches and looking for what lies beyond the obvious, regardless of the expected consequences. This is not an easy task. Assuming that the motivation for such a radical shift is justified and the move embraced, the method for its execution still has to be structured.

To be able to step ahead and see the true nature of all agents that constitute the design problem, one should feel the instability of the pedestal that architects, as the main manipulators of facts in what we consider a reality, maintain.

“Feeling” as prerequisite to “seeing” is an interesting concept as it insinuates that what “I see”, or the reality perceived through photographic vision, could be subjected to different interpretations before it becomes the “I see”, meaning I understand. In the process of

interpreting the seen the students embarked onto techniques involving embodied experiences and emotional readings of architecture and its context.

The ten key-words were engaged in several scenarios in our experiments and in survey tools:

1. Brainstorming exercise: academic staff and later the students too, were asked to respond in extremely limited time (5 seconds) to the 10 key words pronounced one by one. They were asked to perform this task in extremely uncomfortable circumstances, including dimmed lights, survey form hardly accessible being too high or too low or too close to other objects in space, students had to write with the hand they usually do not use, and without any prior explanation on why this is done.

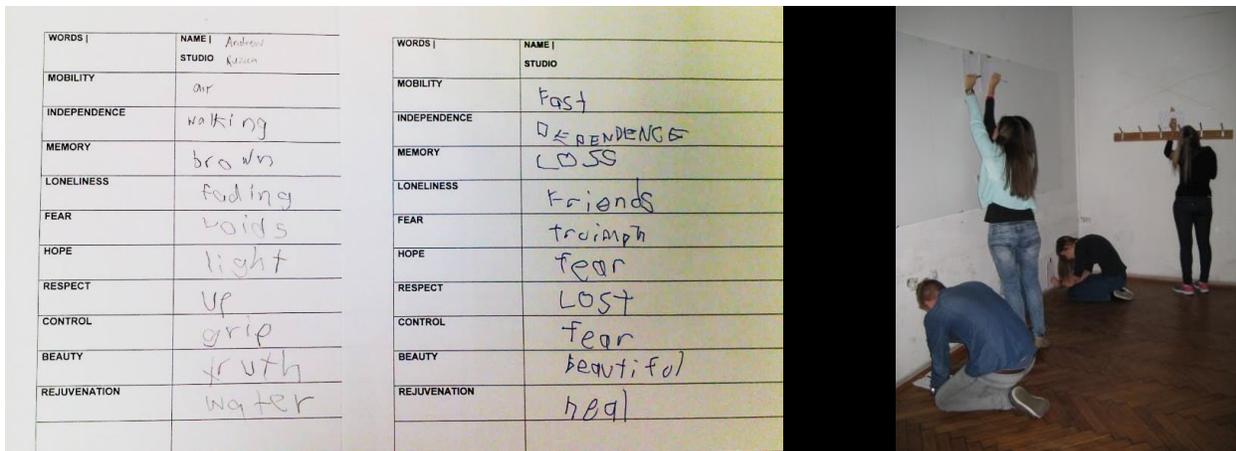


Figure 3. The Brainstorming exercise

The idea behind was to put the students in the position of the elderly who often find themselves being lost in alien situations, confused, uncomfortable and compelled to

poorly perform in non-familiar and unpleasant circumstances, losing self-respect, credibility and confidence in the process.

The students' immediate and intuitive responses and the way they were written in an incompetent child-like manner were then analyzed and commented as well as their feelings and thoughts during this short experiment. This exercise initiated discussion with students on subtle difference between sympathy and empathy.

2. The early literature review exercise required the students to read, write annotations and report on their readings in a discussion session with their peers. Tutor also lectured on main theories and examples regarding healthful spaces.

3. The students were encouraged to use different techniques to capture/express both the phenomenological and Euclidian aspects of space in site analysis. The key words were used as template for **pragmatic** and **sensorial** analysis of the respective sites through both the key words and the non-verbal illustrations of findings (photos, sound track, film). The key words helped with structuring the students' findings and with classifying the observed behavior of people on the site. The subsequent analysis through discussion in studio compared this visual examination with responses gathered from interviews with users and led to conclusion that emotional and sensorial bonds with the place rates much higher than the presence of amenities.

4. The ten key words were used as template for understanding the broadness of the overarching theme "*Mega-mature society and social implications for the New Old Age*". A few tutorial sessions in the elective class were dedicated to explaining the on-site investigation methods. Mock up surveys were staged. Students played the role of user-experts of different age (young and old) and from these positions performed the analysis of the respective School of Architecture premises to learn the method before applying it on site. Students were asked to perform in two separate tasks on site, acting as a young person and subsequently as an older adult suffering of at least

two chronic conditions that could affect their performance in the environment. Students had first to predetermine the walking path that connects major focal points relevant for everyday routines. The distance had to be equal to a 30 minute long walk for a young person. In this experiment each student walked the distance according to these two different scenarios and along the way collected pragmatic and emotional/sensorial impressions regarding the space (key-words and photos). The subsequent analysis revealed existence of very different, parallel views and perspectives regarding the same space even though the viewer was the same and just performing in two different roles. It raised issues like relateness of distance, time, wayfinding, etc. and taught the students to acknowledge that it is the users who are the interface that makes the space real and brings it to its existence.

5. The ten key words were also used as drivers for design and template for analysis of design ideas and for the assessments of the achievements Students were engaged in self and peer evaluation in a mid-term contemplative exercise when they were asked to review their design in relation to the key word or words they selected as drivers.

6. The ten key words were used as anchors for the interviews with user-experts. Students performed several rounds of interviews: the initial group interview with randomly selected users-experts on site; individual interviews with the familiar elderly person (family member, neighbor); repeated individual interviews later in semester with strategically selected user-experts to check precise points regarding respective design (users were recruited based on issues the student wanted to investigate, mainly in spaces where the users congregate). Example of second round interview :

(Question:)

If a new object or complex had a few floors, would that represent a

psychological barrier? Would it be a problem to walk to the garden if it meant taking the lift and going six or seven floors above the ground?

(Answer:)

Yes, most people do not like changes; the thought of making some effort is repulsive. But on the other hand, we all live in skyscrapers ... No, as long as I can walk without assistance. Why not, I don't have a garden, and if it would be something that would be cultivated together and everyone benefits from it, and also drank coffee and exchanged few words now and then... As long as I don't have to climb the stairs-that would be a problem",

(Belgrade student, Danka Krstic)

7. Some of the user-experts were the same as in the initial rounds of interviews which made the comparison of the two interactions more interesting. The interviews were reported in the form of summaries and with full description of the interviewee and of the circumstance in which the interview was executed. The summary of the interview followed the "ten words" template, in other words students had to digest what was said and relate the answers to issues.

These techniques required special efforts from the students. They were explicitly expected to force themselves to act and react while engaging either their left or their right brain hemisphere. Eventually not all students succeeded in separating their pragmatic from their emotional self and adequately perform the tasks. Therefore, the shift of the authority that we were looking for was happening even in the frames of one and only mind, apparently not always

with success. The worrisome fact is that some students did not manage to look at the tasks ahead of them from two very diverse stands: one pragmatic and the other emotional. It suggests their personal and radical rupture with phenomena in architecture and inability to grasp what is incomprehensible through “techne”.

As Derrida claimed the pre-language of senses and the sensual pre-linguistic experience gives people the sense of wellbeing. For the students, the early dismissal of affective basis of satisfaction in architecture might be an incurable fallacy in later professional life. Some consolation is that this insensitivity occurred more often in our youngest students, and also more often in Singapore, as a consequence of the Confucian learning culture where teachers’ guidance is strictly obeyed and deviations from it discouraged. Therefore, extra efforts had to be engaged to loosen the “following the leader” atmosphere. We even engaged the students in a typical body and mimics exercise from the actors’ studio called “catching the imaginary fly”: from an attentive immobile position students had to react in fractal of a second by simultaneously using their voice, glaze and hands, Therefore, the students learned that between command, obedience, action and execution it is still their own body and mind that matters the most. Apart from having great fun doing it, the students understood that engagement and coordination of both their rational and autonomous self is needed to successfully execute the tasks in architecture.

In dealings with space, relations are established on parallel and gradually more complex levels of comprehension. We talked to the students about the cognitive continuum in architecture and often expected them to explain the on-site findings and later their own design by referring to different levels of comprehension: the perceptual (similarities), the synesthetic (identities), the metaphoric and finally the abstract language. The poster design we demanded in one of the exercises, as a mobilizing call for residents to improve the block, was referring to the abstract language of architecture as way to motivate the user-experts to action.

The methods of mediation were the same in both semesters so that the expected context and culture specific variations could be monitored. Even though we might assume that inexperienced students would be easily affected and attuned to our new ways in teaching social art of architecture it was not so. In both semesters the stiffness detected in students' behavior was not easily cracked as they tended to firmly stick to the little experience and knowledge they had.

Shifting the students from their design thinking routine required adjustments in communication as students' characteristics were very different in both places reflecting their culture and attitudes. For example, the idea of privateness and publicness was very different. Asian subtlety was not conducive in a situation where students had to address the elderly interviewees or perform the accessibility exercise in public. Belgrade critical and sharp attitudes and inclination to bold statements did not help either with detecting the more intimate thoughts in interviews. Tweaking was required from both students and teachers. In design studio, our Belgrade students required the initial thrill to enter the story and enjoy the experience; however, as the work progressed their over-the-top creative ideas needed some curbing to meet the reality. Singapore students required just a slight push and encouragement to loosen up, take risks, experiment and free their creativity to reach the results.

The difference was also noticeable in the way the students acknowledged the results of surveys. Although the Singapore students were more reluctant to engage in unfamiliar methods of investigation, they were more eager to insert the results into their design, unlike Belgrade students who participated in surveys with enthusiasm, implemented results into their design programs and conceptual ideas, however, when it came to form making and functional issues they let their creativity fly uncurbed. Belgrade students' creative ego was already dominating their sensitivity, while for Singapore students their rational effectiveness was consuming the space that creativity needed to flourish.

6. *THE NEW SENSITIVITY - or the curious case of the fallen leaf*

Fallen leafs played a significant role in the emotional readings of the sites in both Belgrade and Singapore, considering the frequency of photos reappearing throughout the surveys. We could back this statement with statistics if the obsolescence of this action was not so sound. Obviously, it is not about frequency. The yellow leafs had a strong symbolic meaning being linked to the basic, yet ephemeral realms of time and nature. They were photographed as randomly scattered in the rigidly planned modernist urban settings and found in transient spots hinting the possible existence of some ephemeral realms that otherwise cannot be grasped.

The students in both semesters sensed the presence of this place-forming otherness, the surreal realm where architectural pragmatism cannot interfere. To be more precise, the students sensed the need for such a realm as the refuge and escape from the harshness of the built space that professionals design for the others. The curious paradox is that yellow leafs often reappeared even in the tropical and around-the-year green Singapore. It was the sound confirmation of this subliminal urge for mental escape, existing even in the most perfect of the built environments.

The problem of accurately sorting out the outcomes of the subjective surveys, that in their nature are not classifiable, was never solved throughout the entire process, partially because we anticipated it and did not consider it as a problem. The real setback in design research is the attempt to apply the rigor of the Cartesian scientific enquiry to architecture as a discipline that in its nature is not entirely objective, rational, quantifiable and straightforward.

Having said that, all the inconsistencies of the subjective explorations of spaces and people who use them might be soon overcome by relying on insights into brain function, perceptive and cognitive mechanisms and their physiological background and psychological consequences. The subjective can and will be objectified in architecture too, unless the force of

the human sense of self interferes. After all, terms like sunrise and sunset are still in use even though we know it is not the sun, but us moving around, as Zizek pointed out (Zizek, 2014). Should architecture retain its aura of subjectivity in spite of the scientific advancements into understanding perceptive and cognitive processes? This topic too was discussed, particularly in the elective class where the lectures on senses and post-occupancy evaluation tools problematized the syntagm “evidence based design”.

The inherent weakness of the survey tools we used, relying more on subjective than on objective accounts regarding the issues in question, might not have been a flaw actually. Ironically, dealing with vulnerabilities that this objectiveless position revealed, in return helped the students with gaining confidence to express their creativeness in a different, more personal and humane way.

“I have made a decision to create a fairy tale for old people wanting them to experience (one more time) the gratuitous joy and innocence only a child could feel. A location for the fairy tale would be where all fairy tales take place- in a land far, far away, outside the framework of reality- above the block 28. Since Televizorke, two long buildings, are the main characteristics of the block, they have to disappear, so the fairy tale could happen on their roofs “ (Milica Stojanovic)



Figure 5. The fairytale project

Christopher Alexander's statements regarding subjective intrusions in the objective reality sharpened the view on a number of issues tackled throughout this endeavor.

"...(the) union of system behavior with the subjective experience of the observer is fundamental to what I have to say, fundamental to the idea of wholeness as something not merely present in an objective material system, but also present in the judgment, feeling, and experience of the observer. In short, cognitive/subjective is affirmed by objective reality"
[\(reference\)](#)

It also revealed that not all students are ready or even able to juggle with their right and left brain spheres in the design process. Interestingly, it was sometimes the case that the hardworking students would still not dare to get out of his shell of common, expected behavior and change the design routine. Lack of self-confidence and integrity should not be, however, misplaced with cases of total inability to pick up the hints, pursue the surveys, ponder into their own professional personalities and embrace the results of this self-inspection. Such resistance to embrace the innate sensitivity is a sign of severe rupture with the emotional self at a very early stages of professional development, and very dangerous for future architects. Could this be prevented by continuous and early pedagogical intervention is a question to be examined further. This phenomenon should not be neglected as it would, over time, be detrimental for both the person in question and architecture at large.

7. TRANSFERRING POWER

In practice, the absolute power held by designers in the process of creating spaces calls for exact accounts of all actions and their justification through alignment with legislation, programs, funds, etc. Although empowerment might be seen as a question of liability, and thus worth addressing, insisting on it might be detrimental in the process of learning architecture. On the contrary “power to” create choices (do, or not do, to affect or not affect, to change, or not change, comply or not, etc.) leaves the spatial situation flexible and opened for future interventions to happen in an unpredictable way and in the unforeseen moment.

Transferring power from designers to all stakeholders over time exponentially elevates the level of indeterminacy of the spatial systems. Empowering the *others*, like user-experts in our case, to interfere with shaping their living environment ended up with projects as self-reproductive and vital spatial systems able to contain the future changes.

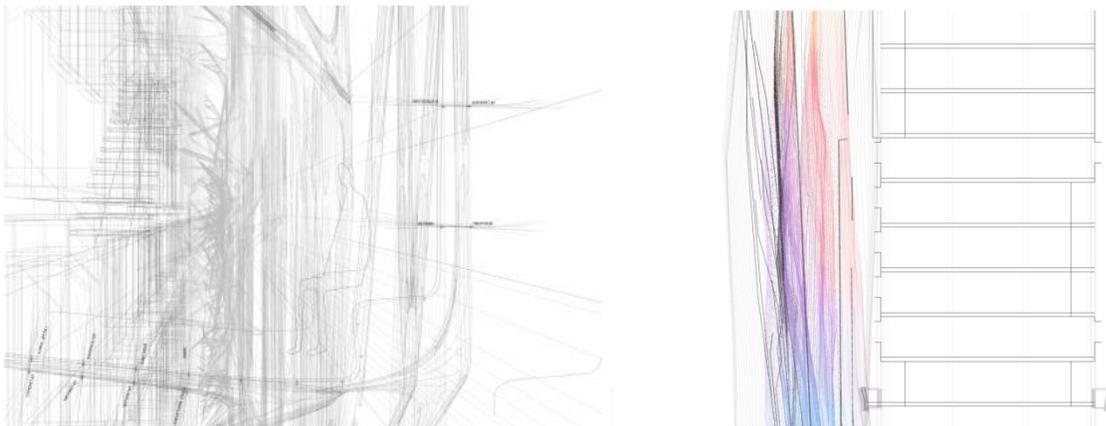


Figure 6. The façade as sensorial interface with changeable performances for elderly users' interactions, (Mihajlo Mandic)

From the bureaucratic point of view indeterminacy is not a manageable situation and the severe resistance from the profession is imminent. However, in the architecture schools where

we rather deal with developing our discipline, the power transfer exercises are possible and beneficial for nurturing creativeness of the future responsible and sensitive architects.

Architects ability to design the system able to generate many possible solutions rather than just one is also important in regard to the new parametric design processes. However, this perspective is seldom addressed in Design Studio environments. Obstacles are, as usual, connected to the difficult change of attitudes and mind-sets. Creativeness is still measured by the tangible result only– the form, regardless of how it is conceived – while the creative process, involvement of user-experts and responsibility for their wellbeing does not count much as relevant.

In the Design Studio environment this raises further questions. Is it necessary that students have the sense of accomplishment based on the straightforward form-making, or is the design process in itself worth debating and acknowledging as achievement? If the latter is an option it is obvious that we need the whole new set of methods for teaching/learning/grading.

Our students encountered the problem of rupture between the design idea and its execution through material and structural details. In some cases, particularly in semester one, with projects bursting with imagination but lacking technical resolution, this problem was obvious and insurmountable. Transferring power in design process to user-experts needed to be reversed to resolve technical issues, Therefore, in spite of the open design systems and the mediated actors in the design process that we advocate the position of the architect and his responsibilities in terms of technical details have to be discussed further and renegotiated.

8. CONCLUSION: THE FUTURE OF MEDIATION

The reason the WHO definition of health still remains valid in spite of the critics is that its basic holistic premises have not been achieved yet. The healthful environment is still the object

of considerations outside our discipline that remains exclusively centered on philosophy, essence and form of architecture and not necessarily on effects on people that inhabit it.

Even though we might discuss the stand that for the clarity of the theoretic discourses in architecture the rumors coming from social background need to be ignored, as Eisenman advocates, it certainly should not be the case in the course of learning architecture. Quite the opposite, juggling with architecture's complexities later in life, requires adjustments on a personal level at an early stage in professional training. Therefore, the very existence of architecture in the world that increasingly becomes fractal, multifold and cosmopolitan does not rely on its morphology but on flexibility of all its agents to drive this gigantic metamorph through constant changes.

In this constellation, the formation of an architect able to understand the system and able to become one of the agents influencing its operations is necessary. Empowering the architects to give up the absolute power in the process of conceiving architecture is hard but also thrilling as it requires the inmost changes and awakening of the holistic self. This transformation from "power over" to "power to" has to start early, in formative years and with requiring the young architects to unify their creative ego with social responsibility while benefiting both in the process.



Figure 7. Interview

An interesting question popped up at the end of a video conference with students and teachers involved in the 2014 BERKELEY PRIZE Teaching Fellowship. An Indian student pursuing the MAUD course at NUS, was eagerly waiting until the end of the conference to ask the BERKELEY PRIZE coordinator a question that, very obviously from her tone, was a crucial one for her: in short she said she appreciates very much the things she learned, she admits a huge change in her own thinking about healthfulness and the social art of architecture, she admits she has irrevocably changed after this semester, but she is returning to her practice in India aware that nothing has changed there and that she will not fit any more. She did not know how to initiate the change and what to do. The despair of isolation also has to be discussed with students once we manage to shift their views.

This question is a reminder that Pandora's box has just been opened and that in the aftermath of our intended change of the mindset of our young protégées, even more attention and help is needed. Just like in the political power wars when revolutions change the course of history, it is not about these cathartic events, but about what happens after. The inventive curriculums and teaching methodologies should thus incorporate the "survival toolkit", the steps and principles that enforce devotion, resilience and persistence in pursuing the social art of architecture.

Addressing it, however, might not be the same as in the sixties and seventies of the 20th century. Architecture, together with sciences, left the binary world where phenomena "are" or "are not" and stepped into the thrilling domain of probabilities, possibilities, agents and processes that undermine the relevance of the end product to the point where it actually diminishes. However, the people, architects included, will not diminish, but will remain to be mesmerized by looking for spaces and places they just love to inhabit.

Or, as another student honestly reported in his feedback: "I've learned a lot and the more I think I get more confused, but I feel good about it."

References

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The user-centric approach in architecture education empowers designers to address larger community issues and to practice social equity by design. It has tremendous application and potential in developing countries as most of their vulnerable populations do not have the power to influence the design and planning processes. This case-study of a year-long Universal Design studio project set in a traditional Indian city presents the results of translating goals from global to local within the specific, culturally diverse context of the country. The authors, writing from Bhopal, speculate on how this experience from India can be applied to other countries and other contexts.

CHAPTER 3

The *Glocalization* of Social Inclusion: Lessons from India

Ajay Khare and Rachna Khare

INTRODUCTION

Global+local=glocal

“Real education consists in drawing the best out of yourself. What better book can there be than the book of humanity” (Mahatma Gandhi)

“Where the mind is without fear and the head is held high; Where knowledge is free, Where the world has not been broken up into fragments; By narrow domestic walls; . . . Where the mind is led forward by thee; Into ever-widening thought and action; Into that heaven of freedom, my Father, let my country awake.” (Rabindranath Tagore, Nobel Laureate)

This chapter is a first attempt to present a *user-centric* approach in architectural education that would empower designers to address larger community issues and, as a result,

practice social inclusion by design in India and similar contexts. The chapter begins with a prologue on the Indian context and builds a global+local=*glocal* case in subsequent sections. Universal Design has its roots in the international movement for disability rights and social inclusion. It has evolved from accessibility to universal design and from a rehabilitation model to an empowerment model. India remained untouched during this movement mostly because of a gap in contextual interpretation of the concept.

The core of the chapter is divided in three sections to present global, local and the combined, *glocal* argument for social inclusion. In the first of these sections, we present the global trends of Universal Design evolution and the changing paradigm of a human-centric approach. In the second section, the paper presents the local perspective with current status of accessibility and universal design education and practice in India. In the third section, a case-study of a 'Universal Design' studio in a traditional city of Ujjain in India presents the journey of user-centric explorations, from global to local, within the culturally diverse context of India as revealed by a year-long project. In the Conclusion, we share a generalizable research and design process which is compatible with the existing pedagogy and that advocates the user-centric approach to investigate design problems and practice social equity in similar contexts.

The India Context: A brief overview discussing strengths and weaknesses

India is a country with many unique characteristics. It is the seventh-largest country by area of 3.3 million square kilometers. It is the second-most populous country with over 1.2 billion people. India's population represents a rich mosaic of ethnic, cultural, tribal and racial groups. With 22 official languages and several religious communities, India is a country with rich diversity. India is the most populous democracy in the world. India has as its political structure, a union of 29 states and seven centrally administered Union Territories. It is a secular democratic Republic with a parliamentary system of government. The Republic is governed by a

Constitution that came into effect in 1950 following Independence from British rule. The Constitution provides for uniform citizenship for the whole nation and ensures the Fundamental Rights of every Indian citizen, including freedom of speech, expression, belief, assembly, association, migration, choice of occupation or trade and protection from discrimination on the grounds of race, creed, sex and religion. Article 41 grants the Right to education and work and, Article 45 quotes free compulsory education for all children up to the age of 14 years (Alur, 2003).

India is also a land of contrasts and contradictions, an inclusive, diverse society in many ways but has its own exclusionary systems and barriers. In spite of all government efforts and planning initiatives since independence, poverty and large income disparity are dominant features of India. About 70% of the people still live in rural areas and plight of urban poor is heart breaking. Social exclusion as a phenomenon is also on the rise, through rich-poor, urban-rural, traditional-modern, regional-global divides. The diversity and disparity in this land of people is across the spectrum of social, economical and cultural parameters. This range is hierarchical and because of which some people are highly 'able' whereas some are disadvantaged or 'disabled' on the social and economic diversity spectrum. Though the country has a democratic set up and it is not impossible to break the hierarchy, the disadvantaged populations are increasingly becoming more vulnerable as they are entangled in the vicious circle of disability, poverty and un-equal opportunities in education and employment.

The land of Gandhi and Rabindranath Tagore, who fought for non-discrimination in the world, is still struggling with the 'basic rights' issues of the most 'vulnerable' amongst its majority population. The role of designers, architects and planners in the midst of such vulnerable populations is top-down in design education and practice. The design professionals are not trained to benefit the 'way of life' and rather suffer with unilateral dictatorial design thinking.

Inception of formal architectural education in the twentieth century

India has a very rich tradition of art, architecture and craft, its education was the responsibility of the master craftsmen, and this tradition was passed on from one generation to other. Despite rich traditions, the formal education of architecture has come to the country on the vehicle of British rule in 1913 (Deshpande, 2011). The architecture school education started with draftsman's class, so that the students can later be employed as draftsmen in architects' offices. Because of its origin, it had a clear disconnect with traditional values, practices, identity and people. The early schools were grounded in the nineteenth century European Beaux arts tradition till the middle of the 20th century, when the other forces changed the world. Later schools had a strong technical component, where engineering and construction courses took up the lion's share of the curriculum (Mehta, 2006).

The architecture curriculum is still in the influences of 'technology' whereas 'humanity' related subjects have a very little place in the education till date. Today, the five year undergraduate course of architecture is studio focused and theory courses are laterally connected in all semesters. The design studios are sequentially and incrementally arranged in 5 years course of architecture based on scale and technical complexities. The theory courses are mainly related with drawing, history, construction, structures, mechanical and electrical services etc. The subjects like sociology, environment, psychology has very little share in the theory courses and rarely practiced in design studios.

Need to have a community focus in architecture education in India

Over the years, the architecture education has gradually become "technical education" and designs are becoming exclusive 'complex machines' with almost no empathy to the user community. And of course the poor and vulnerable voices are not heard in the process of

providing these exclusive professional services. Moreover this exclusiveness is bringing more business to the professionals and thus they have oriented their moral compass to serve only those who pay them.

There are several unanswered big questions in front of Indian academia: Is the western-influenced architecture curricula appropriate in context of countries where communities are still struggling for basic rights and necessities? Why are the trained professionals unable to improve living conditions of lowest common denominators in the existing communities? Is it not important to train the professionals to respect the 'way of life' to make collaborative and sustainable contribution rather than attempting dictatorial and isolated solutions?

Today in India, it is important to have trained architects and planners who can lead a social change and connect with the majority population of the country. Globally as well, the definition of the term 'development' is questioned for its 'exclusive' approach in last few decades and seen with a people-centric lens. This is imperative as the country cannot develop with handful of powerful people leaving all else behind.

As India started much later than its international counterparts, there is a lot that India can learn from the international Universal Design movement and interpret it to suit its Indian needs. Equally, India offers tremendous opportunities for instituting Universal Design to serve its diverse population.

1. UNIVERSAL DESIGN: GLOBAL TRENDS

Evolution of the concept of ability/disability, accessibility and universal design

The evolution toward Universal Design across the globe began in the 1950s with a new focus and attention to design for people with disabilities. In Europe, Japan, and the United

States, barrier-free design developed to remove obstacles in the built environment for people with physical disabilities. It followed the companion social policy of moving people with disabilities from institutional settings to the community. Barrier-free design still tended to be segregated and special, pertinent to people with serious physical limitations, primarily mobility impairments. In the 1960s there were two other parallel movements those had far reaching consequences: the evolution of normalization principle in Sweden and civil rights movements in the United States (Sandhu, 2001). By the 1970s, parts of Europe and the United States moved beyond the emphasis on special solutions tailored to individuals and toward the idea of normalization and integration

In the United States, the disability rights movement of the mid-70s built upon the vision of civil rights articulated in the 1964 Civil Rights Act for racial minorities. People speaking for themselves argued for equality of opportunity and against paternalism and care-taking. Finally, design was recognized as a condition for achieving civil rights (Story, 1998). Universal design thus emerged in USA from 20 years experience with the “Barrier Free Design” movement in the United States. Through practical experience, Ron Mace and Ruth Hall Lusher, two experts in accessibility and both architects with disabilities conceptualized the idea of universal design in 1985 that would apply the concepts of barrier free design to benefit a wider population.

The accessibility movement in the Asia and the Pacific region gained momentum only after the adoption of the UN’s World Program of Action concerning Disabled persons in 1982 (UN-ENABLE, 1982) and the World Summit for Social Development held at the Copenhagen in 1995 (UN-ESD, 1995) where it was brought to notice that people with disabilities, one of the world’s largest minorities, are often forced into poverty, unemployment and social isolation. It recommended the promotion of the standard rules on the equalization of opportunities for persons with disabilities and the development of strategies for implementation of the rules. It was soon followed by the declaration of the Biwako Millennium Framework for Action towards

an Inclusive Barrier-free, Rights based Society for Persons with Disabilities in 2003, by the United Nations Economic and Social Council (UNESCAP, 2003).

The principle and direction outlined in the framework regarding accessibility was to adopt the concept of universal and inclusive design for all citizens, which is cost-effective, in the development of infrastructure and services in the areas of rural and urban development. The next milestone was the Convention on the Rights of Persons with Disabilities at the United Nations and the Optional Protocol in 2006, being maintained by a Secretariat which is the primary international organization that is responsible for accessibility (UNCRPD, 2006). The purpose of the Convention is 'to promote and ensure the full and equal enjoyment of all human rights and fundamental freedom by all persons with disabilities, and to promote respect for their inherent dignity.' In relation to buildings and accessibility, the Convention promotes the concept of 'universal design'. 153 countries have been signatory to this convention till now, India being one of them.

International definitions of Universal Design and principles

Universal Design is based on the premise that buildings and products must be designed to be usable by all intended users and offer greater independence, safety and usability by everyone (Steinfeld and Mullick, 1997; Story, 1998). Universal Design was originally defined by Ron Mace in the following way: "The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" (Mace, 1985). In the mid 1990's the concept of universal design was further elaborated by the development of the seven Principles of Universal Design (CUD, 1990). There are similar terms across the world to define the concept like Design for All was used in Europe or Inclusive Design in United Kingdom.

Since the original conception of Universal Design and the Principles were developed, however, the concept has been rethought and redefined by diverse writers around the world. Today, it is recognized that the goals of universal design must go beyond usability to address promotion of health and wellness and also the promotion of social participation for all citizens. The IDEA Center now uses the following definition: “Universal design is a process that enables and empowers a diverse population by improving human performance, health and wellness, and social participation (Steinfeld and Maisel, 2012).” The center has also modified the seven Universal Design Principles (Equitable Use, Flexibility in Use, Simple and Intuitive Use, Perceptible Information, Tolerance for Error, Low Physical Effort, Size and Space for Approach and Use) (CUD, 1990) to eight Universal Design Goals (Body Fit, Comfort, Awareness, Understanding, Health and Wellness, Social Integration, Personalization, Cultural Appropriateness) (Steinfeld and Maisel, 2012) to address changing needs.

Universal Design is often used as a synonym for accessible design, but it is vastly different and in a fundamental way. Universal Design is not a euphemism for assistive, adaptable, accessible and lifespan design; they are all different concepts and also different from Universal Design. While universal Design is none of these specialized approaches, it fuses the spirit of all of them (Story, 1998). Universal Design involves a fundamental shift in thinking about design, particularly with regard to designing for people with disabilities. It is based on the premise that buildings and products must be designed to be usable by all intended users, represent a broader segment of the population, and offer greater independence, safety and usability by everyone. It blurs the distinctions between, “me”, “them” and “us” and celebrates the differences between all these groups (Mullick, 2011). As a design approach, Universal Design requires incorporating flexibility, adaptability and modularity to achieve best fit and mass customization for everyone (Mullick and Khare 2012).

User-centric research for Universal Design practice: the changing paradigm:

Disability shift from medical to social model.

The earlier emphasis on medical rehabilitation has now been replaced by an emphasis on social rehabilitation and environmental intervention. According to ICIDH model (WHO, 1980), a handicap is not a synonym for disability. A disability refers to a physical, sensory or mental limitation that interferes with a person's ability to move, see, hear or learn, whereas the handicap refers to a condition or barrier imposed by the environment, society or oneself. Impairment, Disability and Handicap act as a linear cause and effect process; that is the impairment causes disability and disability in turn lead to limitation in societal participation or 'handicap'. Majority of researches, building regulations, guidelines and design standards based on ICIDH Model have been focusing on reducing handicap by ensuring societal participation through environmental design (Steinfeld & Danford, 1999).

The International Classification of Functioning, Disability and Health, known more commonly as ICF (WHO, 2001), is a classification of health and health-related domains and it includes a list of environmental factors. These domains are classified from body, individual and societal perspectives by means of two lists: a list of body functions and structure, and a list of domains of activity and participation. Since an individual's functioning and disability occurs in a context, the ICF recognizes the impact of the environment on the person's functioning. The International Classification of Functioning, Disability and Health (ICF), has established the role of environmental factors in the creation of disability and the relevance of associated health conditions and their effects (WHO, 2001).

The ICF, accepted as one of the United Nation's social classifications, provides an appropriate instrument for the implementation of international human rights mandates and a valuable framework for monitoring aspects of the UN Convention on the Rights of Persons with Disabilities (UNCRPD, 2006). In recent decades disability is no more seen as an individual condition which may be addressed by intervention at individual level through assistive devices etc. This brought a paradigm shift in understanding disability. It looks beyond a human's impairment and defines the problem as social barriers and empowers the disabled people to challenge the society to remove those barriers.

Universal Design connects with human-centered design

Usefulness or user functionality in design has always been a concern for architects and it still continues to be so. The concept of human-centered design was formulated over 50 years ago. Since that time, it has taken many forms. It originated with the problems of modernism in architecture in late 1960s and the architects, social scientists began advancing the idea that design could be human-centered and truly dedicated to usefulness. There were several similar parallel threads of environmental design movements which intersected with barrier free and civil rights movements of 1950s and 1960s. These parallel groups had practitioners, researchers of various disciplines like environmental design, community design, sociology, anthropology, psychology, human factors, environmental behavior studies, etc. (Alexander, 1964, 1977; Cronberg, 1975; Zeisel, 1975; Moore, 1976; Wandersman, Murday & Wadsworth, 1979; Moore, 1979; Stokols, 1981, 1987; Altman & Rogoff, 1987). Later, these threads converged to larger goal of sustainability, community health and overall well being with human centered design (Steinfeld and Maisel, 2012).

Interestingly, some recent works on design of environments for people with disabilities connect back with the idea of that some state of 'fit' is definable and attainable (Alexander,

1964). In some of the recent researches, fit has been conceptualized as an environment that matches the abilities of the user with an appropriate level of support (Khare, 2010). As key researchers have observed,

“Universal design married the ideals of human-centered design with the social goals of the civil rights movements. It has an important role to play in advancing human-centered design across a wide range of scales, from hand-held products to design of new cities, as well as many different social problems. We expect that, as the decade advances, more attention will be paid to a broader range of issues than disability rights. Developing initiatives that apply knowledge from universal design to these other issues is a particularly important direction for the continued evolution of the field.”

(Steinfeld and Maisel, 2012).

Today, the design culture is changing once again and the *user* is increasingly getting designers' attention. The issues related with usability, health, wellness, user participation are globally becoming important in design research and design development. Evidence based design research practices using social and ethnographic research methods are formalizing and gaining importance (Zeisel, 2005). The further evolution of user-centered approach to co-designing is changing the landscape of design practice and creating new domains of collective creativity (Elizabeth, Sanders & Stappers, 2008). In Universal Design, involving users with disabilities in the design development process is extremely important, as the designers may be unfamiliar with the needs and limitations of the people which are not 'known' to them.

In fact, some authors identify such *users* as *user/experts*, as they have natural experience in dealing with the challenges of the built environment. These authors also conclude that co-engaging user/experts is the most valuable strategy for Universal Design (Lifchez, 1986;

Welch, 1995; Ostroff, 1997). In developing countries, engaging user/experts has tremendous potential and application, as most of their vulnerable populations do not have the power to influence in design and planning processes.

2. UNIVERSAL DESIGN: LOCAL PERSPECTIVE

The status of social inclusion in India

India has 26.8 million persons with disabilities out of which 14.9 million are male and 11.8 million are female. This constitutes 2.21 per cent of its total population (Census India, 2011). Moreover, the elderly population in the country is second largest in the world with high family dependency, out of which half have at least one kind of disability (Kujur and Ekka, 2010). Other than people with disabilities and elderly there are small children, pregnant women and members with temporary and permanent ailments that are to be supported by families in India. Even after sixteen years of Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995, low literacy, few jobs and widespread social stigma are making disabled people amongst the most excluded in the country. Children with disabilities are less likely to be in school, disabled adults are more likely to be unemployed, disabled elderly are dependent on their caregivers, and families with a disabled member are often worse off than average. Seventy per cent of persons with disabilities live in rural areas, 49 per cent of disabled population have had no schooling and 66 per cent are unemployed (Census, 2001).

A great deal of suspicion has been voiced about the low percentage of Indians with disabilities and many people attribute this to the poor methods of the Census data collection. The unofficial estimate of Indians who have disability, according to United Nations, is over 10% (Abidi, 2002). It is estimated that these figures are increasing and in 2020, the total population

of persons with disabilities is projected to be 70 million and that of the elderly to be 177 million, and majority of them with multiple disability conditions. (Pandey, 2014)

The Parliament of India has on many occasions expressed its concern about persons with disabilities and enacted laws to deal with matters connected with disability. The first reference to disability was brought in the Constitution (though implicitly), which empowered the state government to make laws with respect to relief of the disabled and unemployable. The Parliament of India enacted first comprehensive legislation 'Persons with Disabilities-Equal Opportunities, Protection of Rights and Full Participation ACT' in 1995, which cast obligations on appropriate Governments and Local authorities for education, physical access, employment, health and safety of persons with disabilities. This Act is guided by the philosophy of empowering the persons with disability. It aims to introduce instruments for promoting equality and participation of persons with disability on the one hand, and eliminating discriminations of all kinds, on the other.

This Act was preceded by two other acts: The Rehabilitation Council of India Act, 1992, which was created to provide for the constitution of the rehabilitation council of India for regulating training of the rehabilitation professionals and the Mental Health Act, 1987, an Act related to the treatment and care of mentally ill persons. In 1999, Parliament enacted the National Trust Act for welfare of persons with mental retardation and cerebral palsy. The PwD Act 1995 is criticized for being a generic legislation and the National Policy for Persons with Disabilities was announced as late as in 2006. The policy recognizes that Persons with Disabilities are valuable human resource for the country and seeks to create an environment that provides them equal opportunities, protection of their rights and full participation in society. India is signatory to both UNCRPD (2007) and Biwako Millennium framework towards an Inclusive, Barrier-free and Rights-based Society in Asia and the Pacific (2002), which cast responsibility on respective Governments to provide equal participation to Persons with Disabilities in all aspects of life.

Government Services to Support Persons with Disabilities

The Ministry of Social Justice and Empowerment is the nodal ministry of the central government that promotes services for the persons with disabilities through its various schemes. The Ministry aims to promote services through government and non-government organizations, so that persons with disabilities become functionally independent and productive members of the nation through opportunities of education, vocational training, medical rehabilitation, and socio-economic rehabilitation. It also places emphasis on coordination of services and welfare programs through various government and non-government organizations and projects.

Immediately after independence in 1947, India had many daunting challenges to deal with, social equity and poverty alleviation is one of the major thrust areas since then. In spite of such great pronouncements in the national and international documents, the rights of disabled have remained in paper. The government policies, legislative actions, schemes, rehabilitation programs, etc. show that the government is committed to the rights of the disabled people, but in practice, all this is far from the reality. With growing population in India, even after sixty four years of independence, socio-economic disparity and social-cultural diversity are major issues in the development. The Ministry of Social Justice and Empowerment created various legislations, but the fact today is that even after twenty years of the first legislation, low literacy, few jobs and widespread social stigma are making disabled people excluded and captive in their homes. Leni Chaudhury in her paper 'Disabilities in India; Issues and Concerns' mentions that the governments' interventions for PwDs fail on various accounts like most of the rehabilitation programs have a welfare mode instead of a rights based approach. Also government programs are very medical oriented and do not address community based rehabilitation, inclusion and empowerment.

The practice and education of universal design in India: Accessibility and Universal Design in architecture practice

There are many reasons for the invisible disability in India. The hostile built-environment loaded with barriers is one the major reasons. The primary legislation The Persons with Disabilities ACT, 1995 casts obligations on appropriate governments and local authorities for creating barrier free facilities. To implement the provisions of the Act, three accessibility guidelines are referenced: the C.P.W.D. design guidelines by the Ministry of Urban Development; 'Planning a Barrier Free Environment' by the Office of the Chief Commissioner, Ministry of Social Justice and Empowerment; and the Accessibility chapter in the National Building Code by the Bureau of Indian Standards.

Further a reference was made to all state governments to make suitable amendments in their building bye-laws to respond to PwD Act. The planning commission report on the Tenth Five Year plan also stresses on issues connected with accessibility for disabled persons. But in reality, not even a handful of buildings in India are accessible to people with disabilities and they are not free of environmental barriers. In a survey conducted by Access Ability only 11% practicing architects were aware about accessibility regulations. There is a lot of ambiguity amongst designers about standards and guidelines, which are borrowed from the Western countries and lack contextual content necessary to reflect the Indian conditions (Shivani,2008). None of the guidelines are a result of empirical research involving Indian users and they are not validated to learn about implementation consequences (Mullick and Khare, 2012). In 2007 India has signed UNCRPD, and in 2010 Ministry of Social Justice and Empowerment started the process of making a National Center for Barrier Free Environment and Universal Design to deal with the related issues comprehensively

Accessibility and universal design in architecture education

Globally, Universal Design has become a worldwide movement and Universal Design courses are found in universities all over the world (Christophersen, 2002; Welch, 1995). To contrast, in India, Universal Design education finds little space in curriculum of design schools. There is lesser awareness, soft laws, weak government policies, and lesser career opportunities to back Universal Design (Balaram, 2002). There are only a few efforts in universal design education and research, in architecture and design schools of India. Most of these are limited to the accessibility training workshops done for the design professionals and students by a few proactive NGO's in India.

The architecture colleges in India have several models, some are faculty of a university, some are affiliated with engineering colleges or arts colleges, while a few are stand alone colleges of architecture. Out of these most are either state run or private funded colleges, whereas a few are central government funded with a status of institution of national importance. A regulatory body of called Council of Architecture was formed through Architects Act 1972, to control the quality of architecture education and practice in India. In 2006, the Council of Architecture made it compulsory to include accessibility in the existing curriculum, yet most of the schools still not have a full course on accessibility not to mention Universal Design. As per the norms of Council, most of the schools teach accessibility as a set of codes and guidelines developed by the Government of India. These guidelines are adopted from the western model and do not have any research base in the Indian context (Gupta, 2008). There is an acceptance by the regulatory bodies that it should exist in the existing architecture curriculum but the effort loses relevance without contextual understanding and application. There are only a small number of universal design initiatives, design studios and graduate researches in India, but

overall universal design education in the country still lacks significant presence in academia and research. (Khare, 2011, 2012, Mullick, 2015)

School of Planning and Architecture, Bhopal is an autonomous Institute of National importance of Government of India by SPA Act. It is committed to the cause of value based architecture education and house research centers for the purpose. Centre for Human Centric Research (CHCR) at SPA-Bhopal is one such multidisciplinary research centre established in 2010. The center aims to bring awareness amongst future architects and planners to respond to the needs of diverse human population otherwise marginalized in the past design practices, for collective socio-economic and socio-cultural development in the country. The center has organized user-centric studios, special lectures, workshops, exhibition on universal design and offers an elective on 'Enabling Environments'.

***The gaps between global trends and challenges embedded in the Indian context:
Challenges for Universal Design practice***

Unlike western countries where the concepts of accessibility and universal design originated, Indian disability is ingrained in poverty, rural life and social difference. Furthermore in multicultural India rapid growth has taken place within the lifespan of only one or two generations. This has resulted in diverse challenging conditions. Also the different concepts related with design and disability (accessibility, assistive technology, universal design etc.) have arrived almost together in India. For universal design to play an effective role, it needs to make itself relevant to diverse marginalized population in India, to be socially inclusive in Indian context. The existing Guidelines and Space Standards for Barrier free environment for disabled and elderly persons developed in 1999 have adopted a western model and hence failed to address the needs in Indian conditions. Majority of the population lives in rural areas where built

environment is either unplanned or underdeveloped. The high density urban places are also challenging for elderly, people with disabilities and children.

Universal Design is an emerging interest in India. Not backed by accessible environment for people by disabilities, it is devoid of environmental regulations, lacks legal support that lead to environmental access in USA, and is confronted by the social, economic, cultural and linguistic differences. However, it has the support of the Persons with Disabilities Act in 1995 (PwD Act) and the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) that India signed in 2007. It enjoys the public demand to create an inclusive society and the government's commitment to make a difference that few interests do. Universal design in India is also challenged by many competing national interests like poverty, illiteracy and unemployment, limited financial resources that can be devoted to address national problems, age-old cities with dense population and unpaved rural areas, and the shortage of universal design experts to direct inclusive initiatives.

Challenges for Universal Design education and research

Today there is an utmost need to develop an optimum physical environment for everyone including people with functional limitations, backed by laws, using cost-effective indigenous solutions, using local materials and skills. This can be realized only if there are trained professionals and researchers to develop innovative solutions to the problems. There is a tremendous need to have a holistic design education that addresses diversity and inclusiveness, and trained design teachers to teach these issues across the disciplines of Industrial Design, Architecture, Urban Design, Engineering, Transportation Planning, and Rural and Urban Planning (Mullick 2011). Also research in universal design is little known and research methods to study unique Indian problems are unknown. The universal design education in India should be backed by research that will help the Indian disability problems and

the develop research methods appropriate to study Indian problems. Universal design teaching, practice and research in India will bring innovation in designs of products, environments and systems to address the needs of Indian population suiting Indian context.

For Universal Design to play an effective role in India, it needs to redefine itself for the Indian context and develop integrated strategy to address issues related with training, research, implementation and legislation befitting the Indian challenge. To start with there should be trained teachers to infuse universal design thinking in the existing design curriculum, and conduct research in the current educational setup, to develop contextual and innovative design solutions that makes a visible impact in Indian academia and industry.

Glocalization of Universal Design principles to address Indian needs

India's economic boom has hardly touched people with disabilities. Consequently, universal design must lay emphasis on continuous improvement of environmental access and social inclusion so people with disabilities can participate in public life. In 2011, a group of designers and architects developed the 'Five Universal Design India Principles' with strong Indian idiom to design inclusive products and environments for the Indian audience (Mullick, 2011; Khare, 2011). These principles employ equity, usability, culture, economics and aesthetics to provide choices and further the social and equitable agenda of universal design in the Indian context. These principles are contextual derivation of famous 'Seven Universal Design Principles' already established internationally, to help people with functional limitations and facilitate participation in community living across the spectrum of ability, age, socio-economic strata and culture. Supported by the panel of Indian experts, Universal Design India is defined as a socially focused process that results in environmental designs responsive to inclusion, equity, usability, culture, affordability and aesthetics (Khare and Mullick, 2012).

3. GLOBAL KNOWLEDGE AND LOCAL APPLICATION

Connecting the global trends of the user-centered approach to teach in an Indian architecture design studio: the BERKELEY PRIZE Fellowship experience

The School of Planning and Architecture (SPA), Bhopal, conducted a one-year-long design studio under the BERKELEY PRIZE 2013-2014 Teaching Fellowship, focused on *'Universal Design for Cultural Interface in the Sacred Site of Ujjain'*. The studio focused on equal access to achieve universal design for a culturally rich site in India. This section shares the journey of the universal design education, from global to local, in the architectural design studio within the culturally diverse context of India, as revealed by a year-long project set in the riverside town of Ujjain. The result of this project is a human centered research and design process, for teaching universal design as part of the everyday curriculum of architecture schools, both in India and around the world. The Teaching Fellowship was led by Dr. Ajay Khare, Chairperson of Center for Human Centric Research (CHCR) and then Director of SPA-Bhopal. The studio was supported by Dr. Rachna Khare, Coordinator, CHCR. Both are full time Professors in the Department of Architecture at the institute. This paper is co-authored by them and would hereby report in first person as 'we' and 'us' in the paper.

Ujjain is one of the seven sacred cities for Hindus and presents diversity in true Indian context. Apart from the rich tapestry of myths and legends, the city has witnessed a long and distinguished history with rich traditions. The city was called Ujjayini in ancient times (6th Century BC) and is referred to as Ozene by Ptolemy (2nd Century AD) (UMC, 2006). The city was a center of Buddhism and later Hinduism. It is also known for traditional astronomical sciences because of its unique geographical location at tropic of cancer. The city is a famous pilgrimage and visited by several people to pray for good health and well being, and a large

number of them are vulnerable and deprived. This is also a site of mass Hindu pilgrimage or bathing festival called Kumbh or Simhastha which is celebrated in a cycle of twelve year at a certain celestial composition with Hindu calendar (UMC, 2006; GoMP, 2016). It is the world's largest religious gathering and conglomeration of diverse population. Taking the opportunity of upcoming Kumbh in 2016 in this design studio, the students researched on the needs of diverse users, investigated heritage issues, explored site considerations and developed universal design solutions that offer equal opportunity to everyone at Ujjain.

The parent institute, School of Planning and Architecture (SPA), Bhopal, where the studio was held, is a stand-alone college of architecture and planning. As mentioned before, it is institution of national importance funded by Ministry of Human Resource Development, Government of India. It has undergraduate courses of architecture and planning, other than masters/postgraduate courses and PhD programme. The institute also has research centers. The Center for Human Centric Research (CHCR) is one of such centers at the institute. In accordance with its objectives, the CHCR conducted this design studio for the BERKELEY PRIZE Teaching Fellowship. The studio focused on equal access to achieve Universal Design for a culturally rich site.

Like other architecture schools in India, the undergraduate degree program of architecture at SPA-Bhopal has ten semesters of six months each. Every semester has core design studio with other theory courses running in-parallel. These design studios are based on architectural typology rather than contexts, as a result universal design is not part of the regular design studio in the institute. As academican and researcher in the area of universal design, we always struggled with the existing system and have attempted short term courses and students competitions to spread awareness and understanding about the concept (Khare, 2011). These short universal design courses were parallel optional courses, offered without interfering with the existing regular curriculum, and hence were acceptable to everyone including faculty, students and education administrators. This one year long Berkeley Prize Studio provided us an

opportunity to explore ourselves as universal design educators, and find a place in the existing architecture pedagogy.

In this one year long Berkeley Prize studio, four design projects (two every semester, one major and one minor) were conducted for Bachelor of Architecture degree students from July 2013-May 2014. The two minor design studio projects were done as two flagship events of SPA Bhopal called Integral Studio (2013) and National Student Design Competition (NSDC-2014). These flagship events are annual events of the institute, Integral studios are time bound intense inter-class studio where as NSDCs are national level student design competitions. For both the semesters we followed the B.Arch. curriculum of the Institute and Council of Architecture norms.

In the first semester, we worked with third year (fifth semester) undergraduate architecture students of the fellowship, for whom existing syllabus stated that they would work on large span structures. In the second semester, we worked with second year (fourth semester) students, and they were supposed to work on climate responsive buildings made up of repetitive units according to their syllabus. To comply with the syllabus requirements, we made our Universal Design problems accordingly. These students designed small buildings in their previous semesters and were aware of the design process with skills in ideation, experimentation, and evaluation. But in the previous semesters their exercise were mainly related with form development & functionality in spaces. Since the chosen students were midway through the five year undergraduate programme, we thought they would be best to experiment with their basic skills and yet, relatively fresh minds.

In the first semester, the first project was to design an 'Interpretation Centre' at Ujjain and was of twelve week long duration. It had 75 participating students of B. Arch. V semester. The second project was an intense interclass interdisciplinary studio of two weeks, in which students designed 'Temporary Shelters for Diverse Visitors' during Kumbh festival at Ujjain. The second project had 225 students of all Years of B. Arch. We also invited about 90 students

from undergraduate programme of planning to participate with the students of architecture. The first one was an Individual project and the other one was a group project.

In the second semester, the first project was for 75 students of IV semester with a brief to design a 'Dharmshala (a traditional place of stay for pilgrims)' at Ujjain and was of twelve week long duration. The second project in this semester 'Redevelopment of Shipra River Front (Ghats) for Universal Usability' was a two week studio was for the same students, but was extended as student design competition at national level. This was also extended to other faiths and other cities of India with a theme of 'Inclusive Design for Pilgrimage Sites'. We floated a national design competition and asked students of other colleges to attempt universal design for any one pilgrimage site in the country. We shared universal design resources with all of them and created virtual interaction forums for discussions and dissemination. We received registrations from about 200 student teams of about 600 students. The student competition culminated in March 2014, in which our 75 students of 2nd year also participated together with the students of other colleges on the same theme. We invited interested faculty members to make an in-house team. We made a full time core team with faculty of architecture with expertise in conservation, landscape, planning, environment and transport. We also had a user expert faculty as part of the core team. Other than them we had several multidisciplinary experts and user experts who visited us during the studio from time to time. As we adhered to the Council of Architecture norms, the senior administration permitted us; but nobody was sure about the consequences. They provided us with all kind of support during the entire year including funding for all four studio projects. We gratefully acknowledge the support of all other faculty members and administrative staff, which showed their faith in us.

Table 1 below provides an overview of the conduct of studios; Figure 1 below shows the location of four sites in the inner city of Ujjain:

Se mester	Design Exercise		D uration	No. of Students	C redits
1 st Semester From July 2013 to December 2013	Reg ular Studio Exercise-I	Project A: Interpretation Center at Ujjain with Universal Design (UD) Focus	1 2 weeks	75 students (B.Arch. Vth semester)	+1=3 Credits
	Inte gral Studio Exercise-II	Project B: Temporary Shelters for Diverse Visitors (<i>yatri</i>) during Kumbh Festival	2 weeks	225 students (of all B.Arch. semesters) + 90 students of B.Plan. = 315	
2 nd Semester From January 2014 to June 2014	Reg ular Studio Exercise-III	Project C: UD for <i>Dharmashala</i> (Traditional community mansions for Pilgrims)	1 2 weeks	75 students (of B.Arch. IVth Semester)	+1=3 Credits
	NS DC Studio Exercise-IV	Project D: Redevelopment of Shipra River Front (<i>ghats</i>) for Universal Usability	2 weeks	75 students (of B.Arch. IVth Semester) + National Competition	

Table-1: Overview of the Berkeley Prize studio

In India, our preferences in higher education are so 'science' and technology' focused, that it is difficult to motivate students to work with/for the community. The students look up to the academic projects which are technical, complex and physical, and they look-down the projects that focus on intangible human relationships (Balaram, 2002). When we started we had several apprehensions and larger questions in mind: Can universal design be taken up in an Undergraduate B. Arch. programme as a full semester course? If yes, then how it would blend with the existing curriculum and teaching practices? Where it would fall in our overall architectural design pedagogy which revolves around form, function & technology? How it would be taken up in a country where accessibility is just another theory subject and is not practiced by students as well as design practitioners? How it would be taken by the students and co-faculty members, education managers? How the studio would appear when seen in the national map of the architectural education?

We started with global concepts of universal design and focused on universal usability using human centered approach. We used internationally accepted environment–behavior research methods for inquiry, where 'user' remained in the center of the studio investigations and design developments. However, when applied in Indian context, we were also not sure how universal design would look like India? Would it be similar to our 'borrowed from west' accessibility guidelines or would be different in a totally different context? While universal design's 'independence for all' focus is well grounded in western lifestyle of people living independently, what role does universal design play in India's inter-dependent society where most people live with others? There are good examples of universal design in new construction; how can universal design be implemented in a culturally rich heritage site?

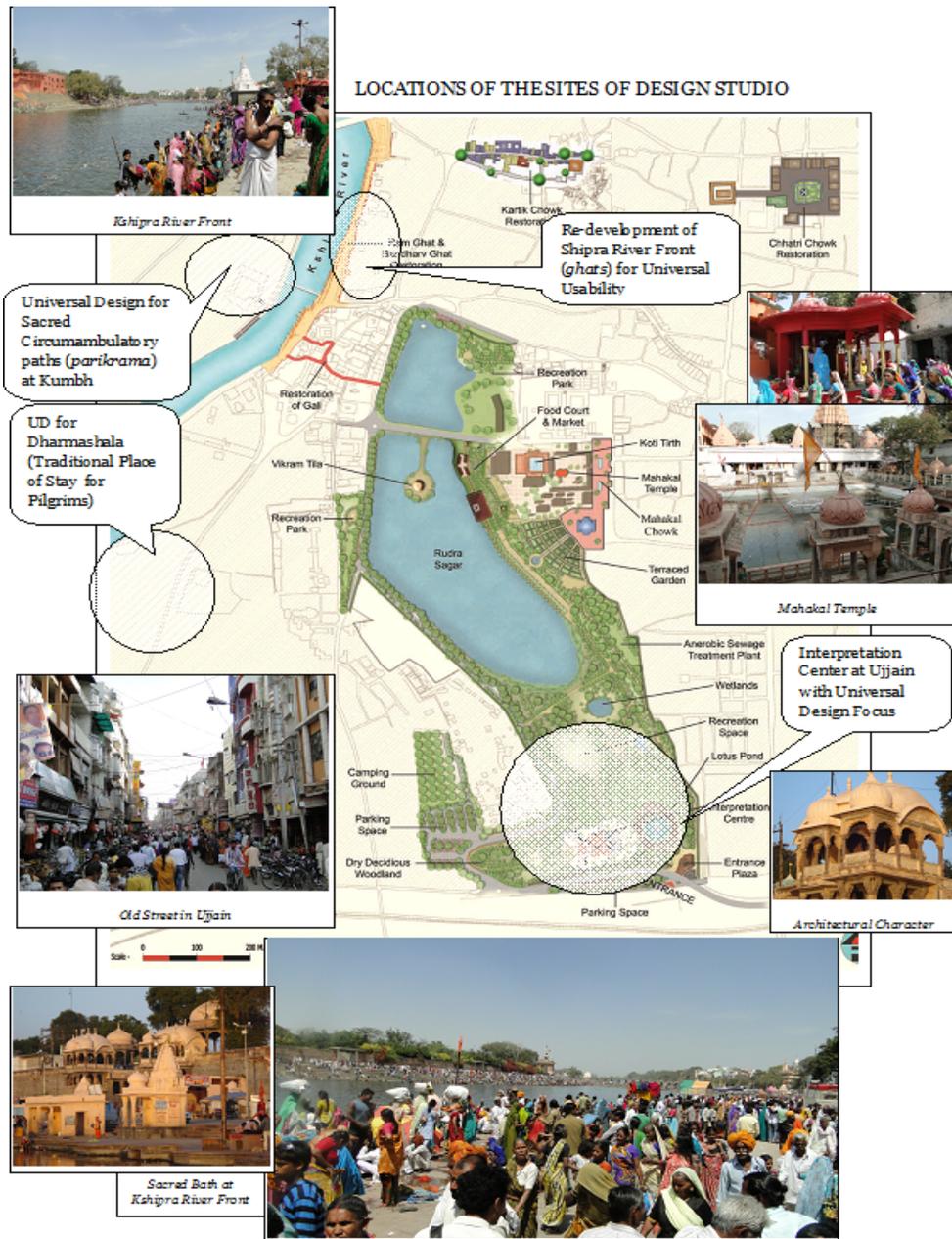


Figure 1: Location of the four project sites in the inner city of

With our questions, we formulated our overall teaching objectives other than objectives of the individual studio problems. These are:

- To explore teaching Universal Design within a regular studio course in undergraduate programme of architecture.
- To develop human-centered, innovative and contextual research tools to investigate UD in India.
- To produce culturally relevant examples of UD in India
- To share and disseminate UD in architectural education amongst co-faculty members, education administrators, and other architecture schools in the country.

Semester studio description

As a result of the activities of our Center for Human Centric Research (CHCR), Universal Design is not new to the SPA Bhopal students. But every time, designing for disabilities remained central to what they did. The BERKELEY PRIZE Teaching Fellowship provided us an opportunity to explore the possibility to teach universal design for complex diverse Indian context. The two main highlights of the studio were user-centered approach for investigation and design, and the engagement of user-experts and multidisciplinary experts in the studio. We engaged experts of history, ethnography, philosophy, theology, management, police officials, government officers, artists other than the core discipline experts, to interact with the students from time to time. These experts unfolded the mystery of the land and helped to understand the users. The studio also engaged persons with disabilities to help understand the diversity of ability in their design. The participating students were trained to conduct human subject research and also to analyze qualitative data from user study. They were also guided to connect the data to the design outcome.

1st Semester (July 2013 to December 2013)

In first semester, we introduced the concept of universal design as designing for 'others' who are different and are not known to us (Welch, 1995; Ostroff, 1997; Christophersen, 2002). We talked about diversity in Indian context and the unknown diversity that might be present in the rich cultural context of Ujjain. We also invited person with disabilities and elderly to interact with the students in initial weeks. This helped them to understand the major component of the 'diversity' in universal design. They talked, worked, laughed and spent time together, to better understand 'the other' (figure 2). Many of the students had never interacted with persons with disabilities before, and realized that other than the functional limitations they have, they are very much like them, or at times better than them. We also took the help of some movie clippings to do so. We did simulation exercises too and made them participate in fun filled games to experience disabling conditions. We then taught them tools of ethnographic research for behavioral mapping (Ziesel, 2006) and helped them to develop research tools for data collection. We also conducted a few lectures on Ujjain and its historic, religious and cultural context. For this we invited multi disciplinary experts from the field of history, philosophy, theology and city experts.

After initial weeks of knowing the city, we all went together to Ujjain, the city in which we were supposed to design our studio project. The students moved together in groups to understand the city fabric and to identify the social opportunities present in the fabric. They identified the diverse users visiting the city including the most vulnerable ones. They discovered that people visit for different purposes and there are several deep rooted beliefs which bring a lot of people with limitations to come and pray for good health and wellbeing. These people come irrespective of the hardships that they have to face when they visit. They interviewed the diverse users including persons with disabilities, elderly, women, children, poor,

non educated & rural populations, to understand these strong rooted beliefs, which bring them to the city (Figure 3, 4, 5, 6, 7). They tried to understand the associated rituals and different activities during the year. It was very overwhelming, when they realized that once in 12 years, approximately 100 times the size of population of city, visit for a holy dip in the Kumbh festival. The city fabric changes several times in a year for different activities and it transforms completely during Kumbh festival.



Figure 2: User expert with visual impairment interacting with students



Figure 3: Sacred landscape of Ujjain.



Figure 4: User interviews.



Figure 5: Students of project-A interacting with co-team members of project-B



Figure 6: Person with disability struggling with levels



Figure 7: Students and faculty on site

The students were initially disappointed and disheartened to see the condition of the city and its people. They wondered why people come here when there are so many wonderful tourist spots in the country. The plight of weak and vulnerable was all the more disheartening. Most of the students come from big cities and belong to an elite profession, and they always designed for 'life style'. The traditional Indian way of life was mystic and far too cluttered for them. With more time spent with people in the city, they gradually discovered the 'power of faith' embedded in their culture. They saw an amazing order in the city & its people, which appeared chaotic from a distance. They discovered the 'spiritual connect' which made people 'happy' in the city, which was unknown to the 'material world' that they come from. They also experienced the interdependent nature of Indian families, who brought their elders for a pilgrimage to the site.

They experienced the culture of helping people with limitation in such sites, and faith associated with 'punya' (blessings) that they earn while doing so. They also experienced beliefs associated with birth and death in the city of ruling deity 'Mahakaal' or 'Shiva'. It is believed that one gets 'salvation' from all sufferings in Ujjain; this brings a lot of people in distress to the city. This makes it all the more important to make it inclusive for all. People also come from different

regions of India, they speak different languages, wear different clothes, but are connected with a common thread of traditions/beliefs of the religion. The city also gets *sadhus* (saints), who belong to different sects and come to Ujjain to visit different temples or to take holy dip in the river Kshipra. During the exploration all of us realized that city has much more than what meets the eye. It existed for several centuries before, and has traces of the people and their beliefs living in the city since then. The city is a Hindu pilgrimage and we thought that it would be annoying for the other city inhabitants to have so many Hindu visitors during the year. The city also houses non-Hindus and the question that bothered all of us was - how they feel about the city as a pilgrimage site of another religion. When we spoke with people, we realized that they have so much respect for each other's beliefs; they appeared to be so much compassionate and adjusting for each other. The traditional Indian community may not be so rich, literate and sophisticated but more inclusive, happy and content.

Gradually the 'power of people' started driving the interest of students in the studio. They started appreciating the city, its people and saw scope for universal design interventions. They realized that though the city has existed in its current form for years, there is a need for making life better for all through design. The traditional communities and their precious values would be lost in the years to come, which they thought could also be addressed through design. The students could see 'Inclusive design' as a mode to achieve 'social sustenance' in the Indian context. From the design for 'life style', they inspired to design for the 'way of life'. As stated above they designed two projects; 'an interpretation center' and 'temporary shelter for pilgrims', in this semester. During pre-design research, the students interviewed about 40 people representing gender, age, abilities and socio-economic conditions. And later they made individual design solutions. The students produced innovative and empathetic solutions in both the design exercises. The solutions were people centric, contextual, inclusive and cultural, at the same time modern, futuristic and environmental friendly. We also realized that inputs from

ethnography research resulted in enriched design thinking in the studio. An example of the user interview (Figure 8) and a glimpse of the design (Figure 9, 10, 11) are shown below.



Figure 8: Example of user Interviews.

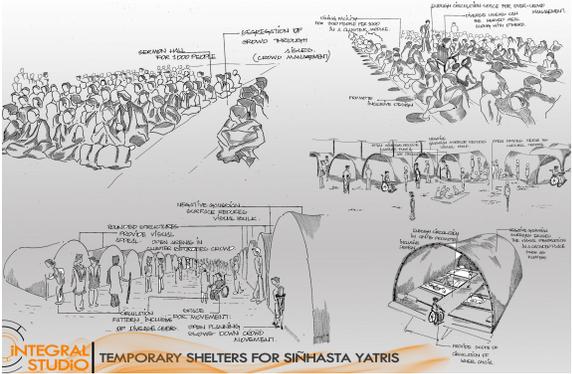
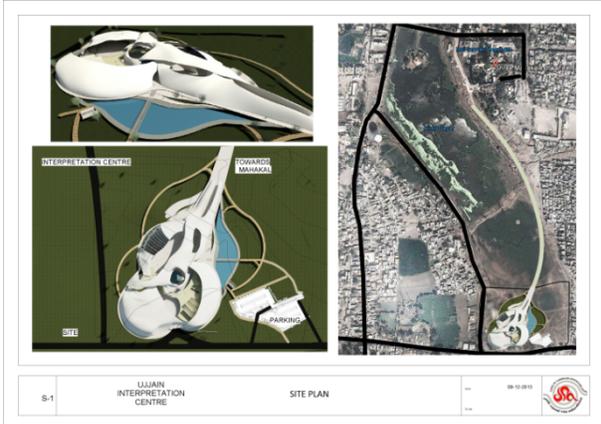


Figure 9: Glimpses of a design for the interpretation center.



Figure 10: Students with model and pin-up sheets

One of the biggest challenges for us was the number of students we targeted to reach in the second exercise of this semester which was floated as Integral Studio of the institute. We reached about 300 students through Integral Studio for the minor design exercise in this semester. For this we trained 75 students in the first exercise of this semester, and then trained 225 students through them. We did the second exercise of the semester in groups, in which we

distributed earlier trained seventy five students. This worked very well as the trained students interpreted and internalized the concept with the responsibility to explain it to their fellow students. They became our ambassador to reach a larger group of students. They were not very sure that how to achieve the universal design solution for a complex context in Ujjain, but were moved with the power of social opportunity. After they interacted with the user experts and the diverse visitors in Ujjain, they were very convinced for the cause and convinced their co-team members. We invited multidisciplinary experts, universal design experts and user experts from time to time and mentored them during the studio. We tried to look for answers together and helped translate their expressions to design solutions.

2nd Semester, January 2014 to June 2014

For this semester we had second-year students who were even younger than the ones in our earlier semester. It was further more challenging to teach the concept to them. We simplified and connected with them in much more informal way than the previous semester. There were several unanswered questions from the previous semester that we explored together in this semester. With their curriculum requirement, they were suppose to work on climate responsive buildings, so there was another level of challenge this time with climate responsive buildings; this was another value addition. This also helped them connect inclusive design to the larger body of 'design ethics' which is a shared responsibility of all designers to craft a socially and environmentally sustainable planet (Ostroff, 1997; Steinfeld, 1997).

We started again like a regular design studio and planned it in a way that it connects with the design process already known (Elizabeth; Sanders; Stappers, 2002) and practiced in a typical fourth-year semester studio. We had the same diverse core faculty team. We realized that with very young students, the formal and intense training of ethnographic research methods

may not work so well as with the senior students in the earlier semester. We planned that we would conduct an open ended design studio with a structure/support to keep them on track.

To start, we identified important key words for our studio after intense discussions with the co-faculty members until we reached consensus. The key words were identified under the larger umbrella of the *social art of architecture*. We came up with the following:

design ethics;

environmental and social sustenance;

inclusive/universal design;

design for diversity;

human-centered approach; and

cultural context.

As planned, we conducted parallel lectures, training, multi-disciplinary experts inputs and user/experts inputs in relation with the key words, and then students developed their own design proposals (individual and groups) backed by pre design research.

In the studio, we introduced the concept of Universal Design as part of 'design ethics' which is equally important in the built environment with form, function & technology. We connected with green design, sustainable design to make an argument in favor of universal design and design ethics. We further elaborated universal design as 'design for diversity' and 'design for others'. Then we then introduced 'human centered approach' as a tool to explore diversity and add value to the design process they already know. We told them how to involve users during pre design research, design development and post design feedback in the design process.

After initial classes of preparation we took them to the city of Ujjain. In this semester they were suppose to design '*Dharmashalas*-traditional community mansions for pilgrims' and

attempt 'redevelopment of Shipra River Front (*ghats*)' for universal usability. *Dharmshalas* are typical traditional features of pilgrimage cities in India, they are owned by community to serve people. The buildings typically reflect the communities to which they belong and the people who stay in them. The *dharmshala* was a new concept for students, so we also took them to another pilgrimage city of Shirdi to understand it better.

Some of the *dharmshalas* were historic buildings and belonged to the era when there was no electricity, hence were brilliantly climate responsive done with indigenous ways. The students also documented existing river front and structures around. In fact, we all stayed in *dharmshalas* in both the cities we visited. The students spoke with pilgrims, local people and facility managers to map the users' behavior (Figure 12, 13) and understand diverse people's needs. They also made their own list of building requirements to address those needs. They addressed social, cultural and economic diversity together with diversity of abilities/disabilities while formulating requirements and developing design solutions (Figure 14, 15) We also worked with full scale model (showing in Figure 16) this semester for design development and user testing.

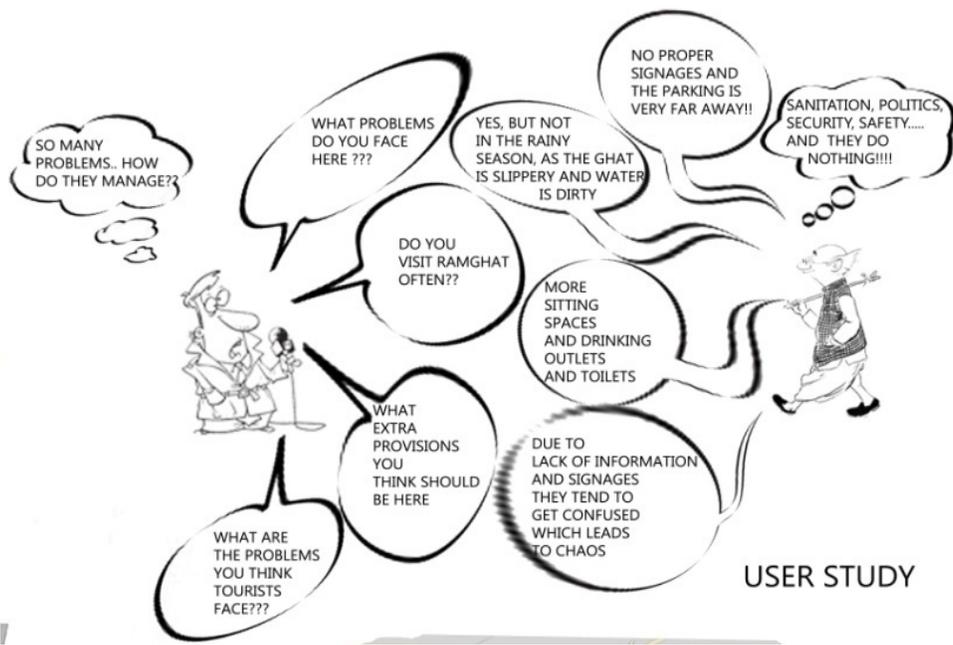


Figure 12: User mapping

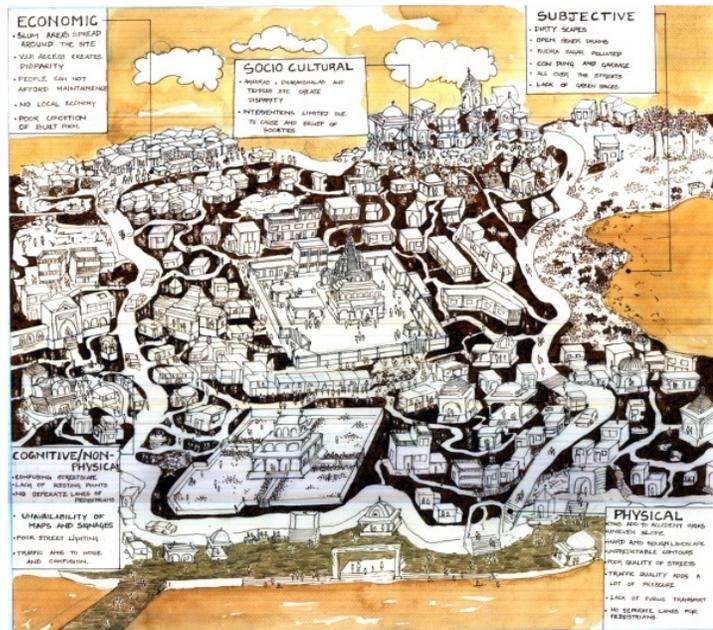


Figure 13: User behavior mapped with the city expressions



Figure 14: An old dharmashala with temple courtyard documented by students



Figure 15: 3-D views of a dharmashala - student design



Figure 16 a and b: Full scale modeling with user experts

Figure 17: Universal Design intervention to enhance usability on riverfront



Figure 18 a & b: National Student Design Competition

We extended one of the design problems during this semester as another flagship event of SPA-Bhopal, the National Student Design Competition (figure 17 and 18). We extended our studio theme 'Inclusive Design for Cultural Interface' to other faiths and other cities of India as

'student competition' at national level. We floated a 'National Student Design Competition' and asked students of other colleges to attempt 'universal design' for any one pilgrimage site in the country. We shared universal design resources with all of them and created virtual interaction forums for discussions and dissemination. Our students participated together with the students of other colleges on the same theme in the competition.

With a challenge and opportunity for innovation, UD concept reached across the nation through this student competition, and accepted by design students of other colleges, even when it was not a part of their curriculum /academic credit. It also gave us an opportunity to share and compare our work with other architecture colleges of the country. Since this competition was open to all architecture students in the country, our IV semester B.Arch. students were competing with senior undergraduate and post graduate students. We realized that our students, who were given inputs from ethnography, sociology and who worked with people centric approach, produced much empathetic solutions grounded in people needs. They had unmatched confidence in front of others who were senior to them, and they defended their designs with much more conviction compared to others. Since everybody was worked on inclusive design at historic fabric in competition, we observed that our students graduated from 'minimal intervention' to 'whole design solutions' to benefit communities.

CONCLUSION:

Learning to teach and practice social equity by design from our Indian example:

Reflections from the Berkeley Prize studio.

"The problem is not how to wipe out all differences, but how to unite with all differences intact." (Rabindranath Tagore)

Unlike western countries where the concepts of accessibility and Universal Design originated, Indian diversity is ingrained in poverty, rural life and social difference. In multicultural India, rapid growth has taken place within the lifespan of only one or two generations. This has resulted in complex challenging conditions. For UD to play an effective role and become truly socially inclusive in the Indian context, it needs to make itself relevant to the diverse marginalized population in India.

For this design studio, we started with the existing global practices of Universal Design education (Welsh, 1995; Ostroff, 1997; Steinfeld and Danford, 1999; Christophersen, 2002) and applied those in the local context. Most of these global approaches connected with the users, and we did the same to re-explore UD and diversity in the Indian context. Local application of the global practices made this studio unique.

We had several moments of joy and sorrow in this one-year-long studio. Universal Design is an abstract concept which cannot be seen and can only be experienced. It was neither easy to connect with the regular practices in design studio nor sustain students' interest for such long time in this otherwise fashionable and elitist profession. After one year past two months, we would say that though it was difficult but not impossible.

The semester was full of vibrant discussions. It was learning for all those students and faculty members who were new to the universal design field. And it was 'introspection' and 'reinvention' for people like us who worked in the area of universal design for long. We have seen it as a concept which evolved internationally after years of work in the area of accessibility. We struggled with the questions like; How UD would be different in the cities in India, which do not have traces of accessibility codes, or at times are devoid of basic infrastructure like roads, pavements, drainage, and public toilets? How these traditional communities support people with disabilities and elderly in their cities? How UD would be seen in the countries/cities where there are several other pressing challenges and marginalized populations? Is it more important to re-explore inclusive/Universal Design or to explore diversity and its spectrum in Indian context?

Would we be able to address needs of all users in one design or it would be 'to maximum extent possible' as is stated in the definition of universal design? How to do UD intervention in a Hindu religious site where it is believed that more difficulties in pilgrimage would bring more blessings? When teaching undergraduate students of architecture, how can we put across the message of universal design which is comprehensible for their young minds? How should we teach 'universal design' as a process or a product, which is not physical addition but a value addition to the soul of design?

Though nervous in the beginning, we did retrospection and introspection several times during the studio and learnt by our own mistakes and achievements. The best moments were when we connected it with the existing teaching practices and curriculum (Elizabeth; Sanders; Stappers, 2002; Balaram, 2002), and to our surprise it was then welcomed with open arms. Some overall learning experiences are shared below:

- In initial phase we did not know where to start with - codes and guidelines, audits, UD case studies or user studies. Though codes do not have a place in Universal Design, but unfortunately everyone was getting attracted towards those well compiled codes which were easily available on internet. This was probably because of the fact that compliance to the existing accessibility regulations is almost non-existent in India and the students had not seen any example of even accessibility forget about universal design.
- Working with user groups, who don't know anything about design was very different & over whelming for the students. The students were very excited when they first met the users, interviewed, observed and collected data, but had problems when they started the design process.
- Connecting pre-design user data with design solution was also challenging, and everyone was perplexed and started losing interest in the beginning. But with perseverance,

patience and faith in the 'architecture is a social art', it started showing in design gradually. Had it been a short universal design studio, the results would have been very different.

- The engagement of users and experts gave a new insight to the studio investigation and design. There were so many things we came to know through them those were completely new and unheard of.

- The students employed several methods like environmental observation, trace study, user interviews (Ziesel, 2006) that helped them to connect their design with the community for larger benefit. This helped them to attempt a critical, open-minded and open-hearted solution.

- User expert s' feedback on the final designs was also underestimated by everyone; they did not know how non-architects would understand their designs, and realized the value only after involving them.

- During the National competition, we had a chance to compare the work of our students who worked with human centered approach with students of other colleges who were just given the design brief. Our students made 'out of the box' design solutions compared to others. Connecting with people brought innovation and compassion in the studio. Students showed empathy, maturity, and at the same time their designs were reflective of the community needs and way of life.

- The evaluation of overall rich experience of social art of architecture was very tickey with the regular evaluation practices in the design studios. We made evaluation criteria that could fit in the existing system, which helped us to keep the intent of the studio intact.

When we started our studio we were not very sure that how students would be able to attempt Universal Design for such overwhelming diversity in India. The diversity where people have limitations of several kinds, like affordability, illiteracy, ignorance, unawareness, age,

religion and social conditions like abandoned elderly. We also struggled with the course requirements and co-faculty members with the final design outcomes. We were not sure that would it only be a spatial design or a set of details with features of accessibility. Over the series of discussions and stages of design development, we realized that we are not looking for a 'design' with 'accessibility features' pasted on it but a design that connects with the community and empowers all members of the community.

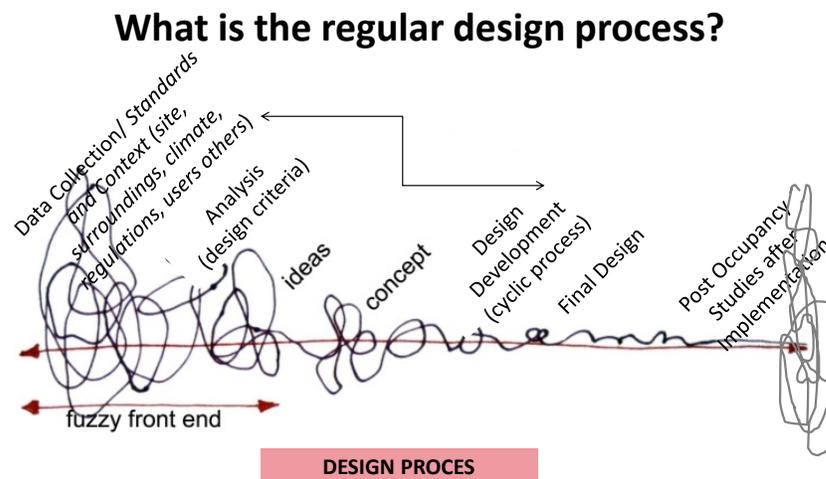
The best design solutions in the studio did not have just extra sheets with sizes, ramps, handrails, Braille signage or material specifications, but connected their designs with the whole community and issues of people in the community. They did not strait-jacket people to fit in their designs, but tailored their designs to fit the needs of the people. They respected users for what they are, and interpreted universal design as a human centered approach to improve lives of all. Initially our education administrators and co-faculty members thought that we are expert of 'something' which is foreign to them. But when they realized its compatibility with the existing curriculum and pedagogy, they responded very positively. We started as 'experts with team' and now we have 'team of experts'.

The user-centric model for undergraduate teaching of architecture in a studio setting.

Universal Design is expected to extend beyond the code compliance of the barrier-free to the more inclusive focus of good design for all. The Universal Design approach seeks to integrate the accommodation of disability with the basic concept of design. Not a new style, it is a social movement primarily concerned with making products, environments and communication systems usable to the greatest extent possible by the broadest spectrum of users. Since universal design is an utopian concept (as no one thing or place can ever be truly for all people), it aspires to achieve that utopian state, incrementally. Hence learnt with our experience that

universal design is better described as a verb, “universal designing” that is continually striving for utopia.

The undergraduate teaching in architecture is very studio-centric, process-oriented and product-focused. The typical architectural design process that we follow has multiple sequential stages of data collection, data analysis, concept formulation, design development and final design. We start with a fuzzy beginning and then as we analyze and synthesize the data, the ideas start getting clear. After experimenting with our designs ideas and design development, we achieve the final design solution. The project is then constructed on site. The knowledge after post-occupancy evaluation of an architectural project may contribute to larger body of knowledge. But, construction and post-occupancy studies are possible in architecture practice but not in education, as they are expensive and time consuming. This process is explained using different models in literature (Ziesel, 1975, 2005) (Figure 19).



Adapted from the Source: Elizabeth B., N. Sanders & Pieter Jan Stappers, S. Co Design, Taylor & Francis, March 2008.

Figure 19: Regular design process

We learnt through our experience of the BERKELEY PRIZE Studio that if we would be able to connect with these typical practices, then we may have better acceptability in education and practice. We may then be able to teach Universal Design in all our regular design studios. We learnt our experience and existing literature, and interpreted it to develop a user-based design studio teaching model which may be replicated in similar contexts. The overall idea of a Universal Design studio should be to help designers to identify diverse intended users in a context, identify needs of diverse intended users in the respective context, and address needs of all intended users (to the maximum extent possible) in the final design.

In the BERKELEY PRIZE studio we connected the human-centered approach with the existing design process (Figure 20) followed by architecture students. For this, firstly we separated “user study” from the regular “site and context study.” This was done to emphasize the relevance of user in different stages. During pre-design research the ‘users’ were studied as subjects using environment and behavior research methods (Figure 21). They observed users’ behavior (who is doing what with whom, in what relationship, in what context and where) (Ziesel, 2005) and conducted trace study (artifacts, by-products of use, adaptations, display of self, public messages) (Ziesel, 2005). They also took interviews based on environmental observations. They used mixed method approach for their ‘user study’ data collection. To ensure Universal Design, we asked them to have data representation from entire spectrum of diversity in the respective context. The rest of the studio investigations for site and context were done like the regular studio.

Figure 20: User-centric process merged with regular design process

(Forthcoming)

Figure 21: User centered approach used in the studio

(Forthcoming)

Secondly, as it is difficult to connect final designs with overwhelming user data, we tried to overcome this by making them organize the data in a way that it directly feeds their design thinking. We asked them to organize as Observations/Questions (what did you observe/asked), Inferences (what are the reasons behind this observations/answers) and Design Specifications (how does this informs your design) (Figure 22). In this way the students could summarize their data in reference to their design.

Figure 22: Summarizing user-centered data for design application

(Forthcomng)

Thirdly, in design development process we involved user/experts as partners. We also invited city experts to as partners. These partners helped during design development process by asking questions and directing students' ideas.

Finally, after designs were ready, we invited user/experts again as members of evaluation team, to receive feed-back on final designs. Most of these user/experts who visited during this stage were architects, planners and accessibility consultants themselves. To ensure that final designs are “universal”, we developed detailed evaluation criteria that we shared with the students. This served as checklist for the students to evaluate their design themselves. We developed these global-local criteria based on Universal Design Principles and Universal Design India Principles.

The BERKELEY PRIZE studio was successful in teaching a new concept of Universal Design to the design students in terms of the *social art of architecture*, which was not available in any regular academic course in the school. The challenges set in the studio were extremely motivating for the students, and interaction with user/experts generated a high positive energy and supportive environment that led to the acceptance of this new concept of UD without inhibition.

For the School of Planning and Architecture Bhopal, it was an enriching and insightful experience that had a continuing effect. Many students at SPA-Bhopal took Universal Design as seminar topics, Universal Design as part of their regular studios and Universal Design concentration at undergraduate final year projects after the event. The students participated in several such national and international competitions and conferences, during and after the studio, including the BERKELEY PRIZE essay competition. They won prizes in 2013, 2014 and 2015. Some students were also offered placement by district administration of Ujjain to implement their UD ideas on the ground.

The studio intended to train teachers and develop UD educational curriculum for Indian schools of design and architecture, learning from the global models. It also aimed to build pedagogy, share UD research methods and develop UD teaching materials for Indian use across several design disciplines of industrial design, architecture, urban design and planning. There is a lack of good examples in India that offer universal usability; this is affecting the state of Universal Design in India. The students' projects generated contextual and practical knowledge of Universal Design, and shared it with Indian design professionals to put it into practice with convincing rigour and realistic understanding. The international collaboration and network of institutions and educators developed during the studio supported the development and promotion UD education in schools of design and architecture throughout India. The studio also employed online technology to build the network that was cost effective, had wider reach and result in long term relationship that may last well beyond the duration of the Studio.

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Reflecting on the reality surrounding the African continent and the Sub-Saharan region in particular, it is clear that teaching the social art of architecture is an altogether new subject matter in architectural education for this region. People with disabilities, for instance, still face wide-spread accessibility issues due to long-standing discrimination, ridicule, neglect and/or varied socio-cultural prejudices in this region. Faculty among the schools in the region continue to lack knowledge and the pedagogical skills needed for confronting these problems. This makes the goal of a more people-centered design program that much more difficult, if not altogether fanciful. The year-long journey on the 2013-2014 BERKELEY PRIZE Teaching Fellowship follows the author's year-long journey addressing the specific subject of Universal Design in Uganda from essentially "point zero." More importantly it documents the changes not only to his school, but himself.

CHAPTER 4:

The Transformation of a Society/The Transformation of a Teacher

Allan Kenneth Birabi

INTRODUCTION

For the first time in the history of Uganda's architectural education, which commenced in 1989, the 2013-2014 academic year at Makerere University shall symbolically be remembered for getting on the hook of the inquest in the phenomenon of Universal Design (UD). By omission or commission, Universal Design is a grossly deficient element not only in the country's urban built environments, but as well as the rural setting.

The inquest was triggered by the maiden 2013 BERKELEY PRIZE Teaching Fellowship, which offered faculty who teach undergraduate architectural design the rare opportunity to focus on how best the teaching of the *social art of architecture*. The focus was on how Universal Design could mitigate the neglect of people with disabilities particularly among sympathetic pedestrian environments that have been created not only in Uganda but across the entire African continent and elsewhere.

To re-pick the direction and pathway of the Fellowship, the thematic thrust of its project-oriented approach was: *The Architect and the Accessible City* empathetic to people with disabilities (PWDs). Kampala City was the approved laboratory setting as the field sphere of reference. This was on grounds that PWDs still face considerable difficulties in Kampala City in

particular and rest of Uganda in general in as far as accessing the physical infrastructure and/or build environment is concerned owing to varied prejudices against them. Herewith, I set to work with 40 Year I architecture scholars in Foundation Studies of their B.Arch program at Makerere University's School of Architecture and Physical planning with intent to trigger inculcation of universal design among new generation of architecture scholars. This was exciting for me in view of making architectural education compliant with the UN Convention on the Rights of Persons with Disabilities.

Part 1:

STARTING THE JOURNEY ON THE BERKELEY PRIZE TEACHING FELLOWSHIP

The Case of Africa

As I embarked on the Fellowship, my preliminary realization was that PWDs continue to face long-standing discrimination, ridicule, and socio-cultural prejudices of all kinds together with inaccessibility to varied aspects of the built environment in many parts of the world and Sub-Saharan region in particular. This is in spite of ratification of the UN Convention on the Rights of Persons with Disabilities (2006) by many African countries, which urges architects and educators to embrace teaching and practicing Universal Design.

Many of Africa's architecture schools have now realized the necessity to teach Universal Design, but they have not adequately figured out how best this subject matter should be taught. Some remain indifferent to its inclusion in their curricula. In the wake of this Universal Design education deficiency, I fervently became resolute to bring forward 'best practice' experiences possible of how to teach this subject matter as my contribution to the ongoing global debate on how best Universal Design in architectural education can be addressed. With this backdrop, it

was my conviction that a definition of the concept of Universal Design should be the point of departure for commencing the Fellowship.

Given that the concept of Universal Design to date remains a relatively unfamiliar and somewhat vague phenomenon to some scholars, it was imperative to establish its clear and distinct definition for my learners. The approach to the definition was through lenses of historical perspectives as to where Universal Design came from, its contemporary configurations and why it matters so much to us today and for posterity. Choice of this approach was upon realizing that any absence of this historical perspective would negate satisfactory understanding of the obligation of design educators, learners, practitioners, industrialists and actors of the building industry to fully appreciate and commit their own current and future mental, institutional and professional urgency of promoting sustainable Universal Design practices for wellbeing of all humanity.

In comparable historical context, many myths and stigmas catalyzed aggravated discrimination and prejudice against PWDs and as well as their demise in pre-colonial Africa. Attitudes and practices embedded in deep-seated cultural beliefs, taboos, rites of passage, and religiosity created nearly insurmountable obstacles to the recognition of PWDs as full members of most of Africa's indigenous societies. This tended to deny PWDs the confidence and esteem to participate in various socio-economic, political, educational, and cultural activities and be counted as full members of society with equal human rights as any other persons without disabilities. Thus, in pre-colonial Africa, PWDs were irrationally seen as sub-human and awkward living beings and/or misfits of the world. They were also erroneously looked at as a 'drag on civilization' possessed by evil spirits and that their worth was grossly inferior to that of others. As further perceived by the rest of the communities, the consequence was for PWDs to live repugnant lives of a personal tragedy supposedly unproductive or unable to contribute economically to the society's viability, and therefore, deemed worthy of excommunication or exclusion from mainstream society, (Crow, 1996; Thomson *et al*, 2011; Eskay *et al*, 2012).

Beyond ignoring them for instance in fundamental matters of welfare of the society, their excommunication, a historic disadvantage that disabled people endlessly face in Uganda, ,at times went as far as killing them.

I modified the historiographic scan on Africa by including learner-centered reflective discussions on what the contemporary situation is like on the basis of individual cultural backgrounds of each student in the class. From the reflective discussions, it became plain that to date, cultures of most African tribal groupings and/or countries still view disability as a curse allegedly emanating from witchcraft, maternal promiscuity or displeasure of the gods or some tribal or ancestral spirits. In this connection, as noted by Choruma (2006, p.7) there is still "... limited social acceptance of PWDs by their families (particularly their fathers and paternal relatives) and the communities they live in. The birth of a child with a disability is viewed as a taboo that is likely to bring a bad omen to the family". In ignorance, fathers of such children usually blame the disability on the mother.

Other negative attitude includes derogatory stereotyping such as beliefs that PWDs are something of a borderline between human beings and animals, (Devlieger, 1998). To date, they are also misleadingly regarded as objects of pity with a marginal or insignificant capacity to make any constructive and impacting value addition to society due to their impairment, and that they are "pathetic figures in need of pity, charity and caretaking", (Funk, 1987 in Devine, 1997, p.25). The PWDs are also looked at as "... societal defaults", which tends to isolate them from all-inclusive livelihood and impetus to aspire for a workplace esteem, (Eskay *et al*, 2012, p.476).

At the level of the state, there is also a big problem in that in that much as disability has been put on Uganda's national agenda, most of the country's government bureaucrats and/or policy makers largely view it as a charity or social welfare issue. In other words, most of the policymakers tend to perceive PWDs as welfare cases rather than an outright human rights issue and that in itself constitutes a socio-political and funding problem which requires reversal.

While I doubled both as a researcher and architectural guru, what also intrigued my combined teaching and learning aspirations with my students in the course of the Fellowship was the concern of establishing whether or not any considerate stance for PWDs and the ethos of Universal Design ever prevailed in past times of human civilization. It also became of further interest to trace the historical trajectory of change of circumstances that came to disfavor PWDs and concomitant diminution of Universal Design. Sequentially, an appraisal was made of why, when, and how things must have gone wrong and perilously undermined Universal Design and status of PWDs as prevalently evident today in various forms in some countries. This appraisal was considered against a general fact that age-old Vitruvian guidance as acknowledged earlier for configuring built environments had already become a Universal Design-driven aspect of life.

In fact, this account became an in-built means for captivating the interest of my students about this subject matter (see Inset below for this “Short History of Universal Design”). From acceptable international socio-cultural, socio-scientific, econometric and moralistic thoughts and conventions, it brought to the surface the theoretical and practical underpinnings of the principles of Universal Design, where the concept began, how it spread, what the values and concerns are, where it is now, and where It should go particularly in Uganda’s and Africa’s case. Most profoundly, it prepared and transformed the mental faculties of my students into readily receptive grounds with ample appetite for learning about Universal Design. To further captivate their interest in the subject matter I considered it worthwhile to scrutinize case-specific effects of negative attitudes to PWDs in the aspect of architectural education, which are presented in the next section.

Effects of the Negative Attitudes to PWDs in the Context of Architectural Education

In an extensive account of literature review on attitudes towards disability, Hannon (Undated, p.31) substantiates internal and external consequences of stigmatization as follows:

“It impacts on peoples’ quality of life and social and psychological well-being. It causes stress, anxiety and further stigma. It causes reduced acceptance, discrimination, rejection and social exclusion. It causes label avoidance and makes it difficult to pursue employment or access to services. It can result in a lowering of self-esteem and self-efficacy People who perceive themselves as stigmatised may internalise stigmatising ideas.”

The varied social stigma and negative attitudes attached to disability coupled with cultural perceptions which supposedly explain disabling conditions in fact impose extensive harm to both the learner and to both the learner and the teacher. To find out about the teacher in particular, I engaged a qualitatively-driven multi-method of observing my fellow faculty coupled with the following: (i) Participant Observation; (ii) Discourse Analysis; (iii) Constant Comparison Analysis; (iv) Membership Categorization Analysis; (v) Narrative Analysis; and (vi) Qualitative Comparative Analysis. As a result, a combined set of social stigma, negative attitudes and cultural perceptions were detected for making faculty among schools of architecture particularly in Sub-Saharan Africa to become blunt and/or non-responsive to the obligation to address inclusive or universal design. In other words, the attitudes in question tend to limit and restrict potentialities of faculty to embrace Universal Design with the negative spin-off of maintaining the historic disadvantage that constrain PWDs.

It also became apparent that faculty with no record of exposure to disability concerns are very often uncomfortable about fostering of and participating in inclusive built environment design projects, because they lack confidence in the subject matter, feel unprepared, and technically under-resourced. So it being the case, these deficiencies were noted for generating a 'subject loyalty' syndrome characterized by such faculty *compartmentalizing* themselves in the patronage or teaching of architectural design as a subject area exclusively for persons without disabilities. This was further noted for breeding and aggravating spin-off reductions in the flow of 'currents' of the Universal Design ethos from permeating the architecture study program(s) right from the foundational year to the rest of the upper years.

As well, it was detected on the BERKELEY Fellowship that Uganda's schools of architecture and as well as the rest of Sub-Saharan Africa have had a legacy of reluctance to admit pupils with disability(s) into their training programs. In perspectives of the architectural educational enterprise itself, this non-responsiveness tended to eliminate the act of designing facilities conducive to special schooling possibilities and mitigation of entry barriers to associated built environments. Consequently, whereas youthful learners in Uganda in particular and Sub-Saharan Africa in general possess the potential to access architectural and other professional education pathways, virtually all disabled children receive inadequate formal education while in fact the vast majority receive no education at all, and girls and rural children suffer the greatest losses, spending their days idly in the company of care-givers who are also non-responsive and often regard them as a burden. The few that tend to make it are those who have climbed via special disability schools.

This still constitutes a big social problem because it is not under a broad umbrella of inclusive education. In this perspective, another spin-off from the Fellowship was the realization that the socio-historically engrained elimination of the interests and needs of the target group of people through deeply structured social patterns and institutionalization of segregation and discrimination and non-participation of persons with disabilities in architectural education and

Universal Design for that matter, has been making the goal of a more people-centered design program much more difficult, seem holistically insurmountable, and altogether fanciful. As such, it has been another debilitating factor among negative phenomena that have hampered possible construction of caring networks, infrastructure, and holistically and universally designed built environments in Uganda and rest of Africa.

These negative attitudes handicap further the PWDs on account of the other persons distancing themselves from them and ostracizing them from their social networks. Generally, society reacts with horror, fear, anxiety, distaste, hostile and patronising behaviour towards PWDs. This leads to further isolation, discrimination and prejudice against most of them and sub-consciously engulfs them with ridicule, disparagement, wretchedness, humiliation, and irresponsibility, (Fanon, 1963, p.137). For the biological parents in particular, the birth of a child with a disability in their family generates feelings of shock, disbelief, denial, anger, resentment, depression, despair, guilt, or shame, (Hardman *et al*, 1996). Among some households, parents believing that the child is symbolic of curse supposedly due to some disobedience to God's commandments or some offense(s) against gods of the land or some generational curse or disobedience to elders/leaders or due as resulting from a marriage not approved by the societal elders even hide the child as a way of coping with the affliction and retaining the much needed social equilibrium. This cognate set of negative attitudes goes as far as categorizing any unexplainable or unforeseen mishap in the home such as illness, death, poverty, sons not marrying, daughters not getting married, or crop failure as a consequence triggered by the presence of the child with disability in the family.

Often, the result is that the parents in question subject such a child with a disability to severely damaging neglect such as abuse and denial of parental love. In fact, fathers feature as the most negative parenthood concerning children with disabilities. They see associated disabilities as the largest components of their children, thereby obscuring what is unique and "human" about their children, respectively, (Van Der Klift and Kunc, 1994). Whereas some of the

PWD pupils are potentially capable of pursuing a B.Arch program, the psychological consequences were noted to culminate in a sequentially catastrophic set of backlashes namely: retreat, a feeling of rejection, despair, and eventual resignation from the program.

It is now appropriate for the next section of this Chapter to report on the teaching experiences I gained on the BERKELEY PRIZE Fellowship. In my view, just how I proceeded to interest my students in the subject of Universal Design on a day-to-day basis would perhaps be of utmost interest to other colleagues teaching in architecture schools since it was also somewhat challenging given the varied socio-cultural, ethnic, personality, attitudinal, gender, and aptitude backgrounds of the students.

Part 2:

HOW I PROCEEDED TO INTEREST MY STUDENTS IN THE SUBJECT OF UNIVERSAL DESIGN

The Strategy

From my past teaching experiences and a wide literary review of insights in newer ways of managing the learning enterprise in design-based disciplines, I zeroed on the key principle of winning the attention of the learners by continuously arousing and sustaining their interest. The wide literary review refreshed me and prompted me to assemble viable teaching and classroom/learner management strategies. These included:

- (i) The right controls on classroom psychology to support and strengthen fascination with Universal Design in each student;
- (ii) Building harmonious working relationships with my students;

- (iii) Hands-on Approach;
- (iv) A continuous focus on my role and that of the students; and
- (v) Engaging the 'Design Crit' as a tool for confidence building.

The Right Controls on Classroom Psychology

My overall strategy included provision of a creative and supportive climate for the learners to gain the sense of absolute security in the studio so as to fascinate themselves with the concept of Universal Design. It also doubled as a stimulant for creative and innovative thinking while according me best practices in classroom management for effective teaching and learning about the subject matter. Thompson, (2001), in Herteis (2002, p.6) while dwelling on a supportive climate for education asserts, "It takes a supportive climate for any garden to grow. Administration's role in fostering a culture of scholarship around teaching and learning doesn't involve taking on the gardening job directly—administration's role is climate control".

In a parallel application of Thompson's analogy 'the supportive climate' in this Teaching Fellowship denoted establishing a credible, consistent, reliable, enjoyable, motivating, and sustainable learning regime for grasping principles, theories and practices of Universal Design in fulfilling user needs of persons with disabilities regarding accessibility concerning all aspects of the built environment. In particular, the thrust was towards:

- a) Determining responsibilities and opportunities that would proliferate students' understanding of the Universal Design agenda;
- b) Identifying imaginative approaches to make learning about Universal Design psychologically interesting and effective;

- c) Directing attention of the students in detecting prevailing shortfalls in Universal Design within their own built environment particularly Kampala City, which formed the 'laboratory' for this Teaching Fellowship;
- d) Exploring and exploiting new credible directions of making the learners to unlock their own unique and creative thinking, innovativeness and representation of Universal Design;
- e) Creating internal and external opportunities by way of case studies that would exemplify best practices in Universal Design sympathetic to persons with disabilities regarding the built environment; and
- f) Creating an atmosphere and opportunities in which the learners' creative abilities towards Universal Design would maximally be exuded.

I realized that I was dealing with young adults of both male and female gender at the most exciting age of their lives, full of emotional liveliness, energy and conscious of desiring to be noticed and be commended. I further realized that they needed to be appreciated across the studio space that each of them was working in as they experienced delight of physical expression and the excitement of encountering and engaging in the new concept of Universal Design. Aware of these psycho-social interests of my pupils, I carefully and pedagogically chose to utilize dramatic body language, humorous voice variations, fine phrasing of sentences or explanations, inspirational eye contact, emotive facial expressions, and enthusing articulation of ideas as dealt with all manner of oncoming teaching/learning situations. I also made sure that there was no room for mere gambling or guesswork on my teaching job, but rather I made sure that at all times, I was appropriately organized, systematic, professionally dressed and pleasingly presentable as a boundary of good taste and setting the pace of a role model for exploring the subject matter.

On the frontier of group work, I mixed gifted students with the less gifted ones in terms of designerliness, which awakened a high sense of academic rigor in both categories of students. This unlocked an exceptional levels of willingness to share ideas, and to attain the best from each other in each group. Apparently, I also applied the 'peer teaching' strategy of learning in the groups on a fortnightly interval, which was characterized by each student taking a turn on a teaching role in the peer group setting, thereby enabling each of them to share their knowledge and experiences with other students. This strategy was also very instrumental in instilling in them the art of confidence building, inter-personal skills'-building, and each of them learning by teaching others. Looking back, my realization concerning peer teaching was that it accorded me some occasional paradigm shift of the students have to learn best while being taught by their peers due to some unique 'change-in-diet' comfort and relaxation it tended to create in the studio. Incidentally, this strategic approach also captivated curiosity of every student and it evidently linked the low achieving students with the high achieving peers with a cognate sense of mentorship aroused in the latter outside the conventional timetable. Furthermore, this peer teaching component enhanced greater sense of socialization and pleasant mood of friendliness among my students, which made my teaching tasks much easier as I came to learn towards the close of Semester II that the students had actually organized a couple of 3-D work-in-progress brainstorming sessions among themselves, which preceded crits that had followed those very sessions.

In some instances, I detected students who lacked confidence in the visual language of drawing and physical model-making on grounds of having not been exposed to the fine arts in their earlier primary and secondary education. This backdrop also tended to create some kind of fear in them: that they lacked faith in 3-D thinking; that they were not artistic enough; that they had no drawing potential; that their own work was out of place when displayed with the work of the other gifted students; that everybody was looking at them whenever they did any sketching task; and that they were generally mediocre in terms or designing something new. In this

regard, I was careful not to criticize them heavily in their weak instances of deficient drawing and modeling competences. Rather, I endeavored to dissolve away or alleviate the above-enumerated fear factors by instilling in them the 'Yes I Can-Do' attitude. Furthermore, I made it a point to attempt varied ways of increasing their individual self-esteem with words of encouragement and mini demonstration projects of how to draw, which I carried out from time to time on both a one-to-one basis and group tutorials. I also devised a strategy of 'rewarding' this category of students, for instance, by means of according them extra sheets of paper for additional practice in their free time outside the official time table.

Another experience was my realization that teaching on hot days with afternoon lectures tended to make learning less interesting. Students tended to doze and get exhausted halfway of each afternoon lecture. To overcome this problem I found it significantly profitable to modify some of my lecture plans for instance by converting them into classroom discussions punctuated with video exemplifiers, animated PowerPoint projections, or some short story or puzzle in between related to the topic of the day. A brief but interesting story told at the beginning of a lecture tactfully acted as a lure of some sort to capture attention of the students and to galvanize them to fully be absorbed in the learning enterprise. In the case of a puzzle, I would then guide them to try to work out the solution in a design-based and discursive atmosphere. As exemplifiers, I selected the videos and/or power point slides to include some illustrations or sketches of highly acclaimed schemes of Universal Design, or some architectural fragments in selected built environments that had the likelihood of increasing the students' understanding of the principles of Universal Design. Undoubtedly, this strategy turned out to be quite fruitful in that it made the students more engaging and the lectures more interesting.

Looking back, my realization is that by the close of the second semester, my explorative endeavors towards proliferating the right controls on classroom psychology to support and strengthen students' fascination with Universal Design turned out to be some artistry of teaching this subject matter, which I had never envisaged prior to embarking on the Fellowship.

Looking back, this perspective tended to have the impact of uniquely inspiring each learner's present or future individual and corporate design endeavors. It also tended to passionately create a sense of reward and profiting the learners to eagerly learn as much knowledge as possible about Universal Design.

Building Harmonious Working Relationships with my Students

Recalling that I used to allocate 20% of my time I spent in the first year of my M.Phil program at the University of Newcastle Upon Tyne, UK in 1997 to teach the foundation course of the architecture undergraduate program, I reminisced how the act of developing strong rapport with my students had made my teaching obligations a gratifying experience. This reflective hind sight prompted me to package my synergies of harmonious working relationships with my students into this notion of rapport. In some meaningful overlaps with some other actions I have already narrated, this notion opened for me the doors of structuring a dependable relationship with the students. Consequently, right from onset of the BERKELEY Teaching Fellowship, the classroom atmosphere remained pleasingly positive, accommodative, collaborative, supportive, and fulfilling. In fact, this aroused the students to assume the sense of co-owning both the learning program and the studio space in which it was unfolding. Unlike in previous years when students chose to cocoon themselves and work individually in their hostel rooms, they preferred to come to work from the studio given that that the apparent rapport I had established with them triggered off some kind of communal and respectful arena in which I would regularly check on their progress as they enjoyed each other's company in the studio. It is also pleasing to note that this very sense of rapport with my students tended to cut back on any potentialities of intellectual dishonesty. On my own part, the trust that the students placed in me was one among the fulfilling experiences I came to appreciate on this Fellowship.

I must quickly add that the easiness I extended to the students through this set of harmonious working relationships tended to be abused by a few of them, who would for instance overstep my private time such as making phone calls requesting me to check on their work on some days of official rest like the week-ends. Nevertheless, I learnt to respond with a sense of diplomacy without any offensiveness and handled well the situations with mutual benefit.

Hands-On Approach

The 'Hands-On' approach was a paramount feature of guiding the learners to make 3-D architectonic discoveries through hands-on model-making developed from varied sketching exercises, which also made them realize the critical importance of free-hand sketching and architectural draughtsmanship. The ethos was to capacitate students to 'design-and-build' the relevant architectonic artifacts. Related emphasis spanned conducting students to unlock product and system building skills both individually and team-centrally. In outcomes of their sketchbooks and model-making, students explored a wide range of materials singularly and in multiple combinations (pencils, pens, crayons, pastel, watercolors, acrylic, charcoal, collage, etc). 3-D experimentation capacitated them to explore polystyrene, cardboard, plasticine, varied types of soft and hard woods, artificial grass, glass, Formica, gravel, sand, cement, clay, etc. They also dealt with a range of technical tools and/or equipment namely chisels, hammers, pliers, nails, pins, adhesives, varnishes, sandpaper, steel wool, wires, strings, plainer, tape measures, Stanley knives, spirit levels, screwdrivers, sliding bevels, hacksaws, power saws, handsaws, etc. Looking back again, I note that my students were very receptive to hands-on sessions in comparison with theoretical lecture in-puts. This enthusiasm seems to have been linked to the fact that they tended to enjoy manipulating materials, handling equipment,

assembling things together and experimenting with all sorts of 3-D ideas, compositions, geometries, shapes, textures, forms, and/or structures.

Continuous Focus on my Role and that of the Students

The wide literary review further empowered me to configure multiple motivational interactions with the students. In some instances I acted like a guide, a project manager, a facilitator, an assistant, a director, a friend, an auditor, a doctor, an editor, a patron or colleague as each oncoming teaching/learning situation warranted. On the other side, I caringly, thoughtfully, influentially, flexibly, humanely and persuasively made my students to become explorers, team workers, pupils, novices, friends, clients, patients, authors, protégés and colleagues on both 'one-to-one' or group teaching as need arose. Furthermore, I encouraged individual and collective skill-building for stimulating cognate innovations/styles, technical abilities, and imagination in Universal Design interventions among the students.

One of the challenges I faced was that the classroom composition was a 'mixed crowd' with wide visual disparities owing to the nature of Year I admission to the architecture program. I endeavored to optimally create visual and designerly parity among them by non-discriminatorily offering extra 'one-to-one' attention to deficient students through 'take home' analytical drawing exercises from nature outside the conventional timetable. Despite stressing me, it yielded good results since the wide disparity between the two categories had diminished significantly as Semester II ended.

How I Employed the Design Crit as a Tool for Confidence Building

The design *crit* is a traditional assessment tool in architectural education particularly the design studio. Upon completion of a project, it is common for students to present their work to

their tutor(s), a design jury or a team of design reviewers. As I executed this Teaching Fellowship I continued this practice. While in most times of my past teaching experience, there tended to occur resentment of sessions of the design *crits* by students because of regarding them as worrying, traumatic, stressful, and torturous occurrences, I found the zeal and interest of my students in the `design *crits* on this Fellowship fascinating and cheerful.

What I learnt from this Fellowship was the importance of turning sessions of design *crits* into fora for the students to explore ideas and to develop their understanding of the do's and don'ts, the creative and non-creative, the innovative and mediocre aspects of design through dialogue between the students and the respective tutelage. My reflection on this frontier is that emphasis was on satisfying the 'Why', the 'How', the 'What', the 'Which', the 'Where' and the 'When' questions in getting the design schemes to work well and how best they would be made to work better. This way, the critical thinking of my students improved tremendously in comparison with the earlier moments of commencement of the Fellowship in Semester I, and the much higher critical thinking that had been attained by the close of Semester II.

CONCLUSION

It is clear that one of the objectives of this Fellowship was to amass experiences of teaching Universal Design, which would be shared with other fellow academics of other architecture schools so as to globally increase the teaching of this subject matter and most probably develop some repertoire of relevant pedagogic procedures. This appears to have been attained satisfactorily and I owe this success to the overall component of 'artistry'.

Nevertheless, I conclude with a word of caution, which is that the artistry of teaching Universal Design is an intangible virtue of some sort that cannot merely be downloaded or 'cut' and 'pasted' or represented by some mathematical formula or algebra in order for somebody else to quickly apply into his or her own teaching situation. Yet it exists and it is truly a vital

asset as empiricized by its manifestation on this Fellowship. It is about adeptness at spontaneous inventive power of adding interest to the teaching and learning paradigm, or propping it with some element of fascination or appeal, creative vision, all to make learning of their learners more interesting, dramatic and rewarding. It further calls for perceptivity, imaginativeness, patience, persistence, discernment, sense of empathy and a parental attitude towards the learner, unlike the sort of attitude a police officer possesses towards a criminal. I also realized that flexibility in judging the mood of the learners enabled me to choose the most appropriate combination of elements of artistry of teaching Universal Design at the right time, in the right way and in the right context and in some instances with the right improvisation free of any pretensions. It also required me to subconsciously develop capacity to juggle a multiplicity of tasks, techniques and style while flexibly keeping the goals of the program with a clear view.

As well, the experience I have gained is that all the virtues of artistry I have talked about must be prefaced with a sound background of wide reading about the subject matter by delving into its history and theory, its written and unwritten norms, principles and practices together with awareness of challenges and opportunities it faces. It is for this broad reason that this Chapter commenced with historiographical perspectives of how Issues of PWDs and Universal Design have been handled in past epochs of human civilizations to date. I completed the Fellowship somewhat different, having been deeply moved and transformed, remoulded and influenced by new insights, inscapes and way of seeing things about PWDs and Universal Design. Equally, I witnessed positively exciting ways in which my students were now able to view fellow human beings who happen to be with disabilities. To me, this is how this inaugural Berkeley Prize Teaching Fellowship has been a most rewarding experiences and I am truly grateful to the Committee that selected me to be part of it. Thanks indeed!

A BRIEF HISTORY OF UNIVERSAL DESIGN

The idea of Universal Design in built-environments education is notably rooted in European perspectives of architectural education. Tracing the actual triggers of this important humanistic aspiration, Esherick (1984, p.26) comprehensively recollects the antique guidance of Vitruvius Marcus Pollio that,

“... architecture and the work of architects is for the welfare of society in general and for the health, security and enjoyment of...(all individuals).”

This Vitruvian edict is an unparalleled early written demonstration of the concept of Universal Design.

Ron Mace is celebrated for having innovated the term *Universal Design* (UD) in contemporary times. Mace was a distinguished American architect born in 1941 and who died in 1998. Building on the timeless wisdom of Vitruvius, he proceeded to coin the term *Universal Design* and became its fervent advocate and international marketer in the spheres of design. Ron lived much of his life in a wheelchair and that in it became the arrowhead of elevating him into a celebrity and champion for UD-centered accessibility across all manner of built environments. Ron still lives on through his immense and massive contribution to the development of this concept.

As reminisced by Rao *et al*, (2014), Ron Mace defined Universal Design as the act of

“... designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their age, ability, or status in life. ... Universal Design seeks to encourage attractive, marketable products that are more usable by everyone. It is design for the built environment and consumer products for a very broad definition of user.”

Ever since Ron Mace named the phenomenon as Universal Design, there has been a marked rise in synonymous studies such as ‘*Barrier Free Design*’, ‘*Accessible Design*’, ‘*Trans-generational Design*’, and/or ‘*Adaptable Design*’. These studies now affirm Universal Design to imply ‘*Design for All*’ or ‘*Inclusive Design*’ with concomitant cognizance of the full range of human diversity with respect to ability, language, culture, gender, age and other forms of human diversity.

In a significant exception, ancient Egyptian civilizations are representative of a section of the world that was instinctively and religiously philanthropic towards People With Disabilities (PWDs) and the holistic ethos of Universal Design. In this connection Shapiro (1999, p.152) discloses:

“The early Egyptians represented one of the most humane societies of the time and were the first to display an interest in both the causes and cures of handicapping conditions as well as the personal and social well-being of individuals with disabilities.”

Inherently, a growing section of the global society from as early as 500 BC did in fact set in motion a pragmatic mindset free of any

discrimination and/or criminalization of persons inflicted with disabilities. Notable also among the earliest initiatives that resisted discrimination and/or criminalization of PWDs were undercurrents of religious benefaction planted for instance by the rise of Judaism under guidance of the Torah (the Hebrew holy book) Comparably too, it is on record that the Qur'an (the Moslem holy book, written by Prophet Mohammed, 570-632 AD) timelessly perceived PWDs as God's own innocent ones since, according to the very Qur'an, God also meant no such thing as standardization of human beings, (Bazna and Hatab, 2009).

Discrimination and/or criminalization of PWDs became a machination of laws and practices among radical aristocracies, monarchies, dynasties, dictatorships, monocracies, autocracies, states, social norms, customs, traditions, and some other radical religious beliefs. These varied regimes of political, and socio-cultural ruler-ship rather than leadership signaled the rise of the bad times, which protractedly befell Universal Design and the status of persons with disabilities as the varied civilizations unfolded across the world.

From as early the 8th Century BC, the suffering of PWDs proliferated from deep-seated socio-cultural, egoistic and attitudinal injustices coupled with demonological overtures throughout most human civilizations. In continental Europe from as early as the archaic period running from the 8th to the 6th Century BC, and right through the Middle Ages (5th to 15th Century AD) and the Industrial Revolution in juxtaposition with the Renaissance period up to late 19th Century, PWDs were pluralistically perceived to be sick and unproductive creatures who were purportedly useless and simply worthy of elimination, (Baker *et al*, 1953; Hunt 1966; Disability Rights Advocates, 2001). A vivid example of this school of thought was the Roman Emperor Lucius Aurelius Commodus (AD 161-192) who insatiately enjoyed killing persons with disabilities for assumedly being dangerous mythological monsters, only fit for eradication, (Shapiro, 1999). "Under his direct order ..." writes Scheerenberger, (1983) in Shapiro (1999, p.156) "...those with physical

impairments were brought to Rome for his use as moving targets for archery practice.” This was a complete contravention not only of Vitruvian counsel but as well as obvious laws of natural justice.

Given that the Roman and Greek empires were world powers for a considerable period of time, their anti-PWDs’ acts cited above represented an undisputed set of evidence of prolonged political, demonological and mythological cruelty for pleasure’s sake and perilous prejudices and disastrous misassumptions about this section of society. In addition, the Greek and Roman city-states obsessed with religious fantasies of absolute beauty, wholeness, faultless physique, and perfect health, deplored any form of disability. This conscripted cruelty and undermining of the ideals of Universal Design and PWDs gained overarching consolidation due to influences of some of the most celebrated philosophers of the two empires. In fact, their influences did permeate through a number of eras and numerous civilizations up to as recent as the 20th century.

Cases in point were the arguments advanced by philosophers such as Plato, Aristotle, Socrates, or Herodotus. In his lifetime, for instance, Plato in his controversial treatise *De Republica* (i.e. *The Republic*) recommended the banishment of PWDs at an early age in some unknown remote places or outright death (Goldeberg and Lippman, 1974 in Munyi, 2012). In ideological accord with Plato, Aristotle also affirmed the placelessness of PWDs in society. Herodotus advised that a world in quest for happiness should free itself from such frightening deformities dangerous to mankind (Shapiro, 1999).

Whereas doctrines of Christianity are philosophized philanthropically, the European Renaissance church also animated a controversial tinge of disregard for PWDs. It outlawed persons with disabilities from being at the helm of priesthood on the basis of the biblical scripture of the Old Testament in the book of Leviticus (21: 17-21), which in full states:

¹⁷ Say to Aaron: 'For the generations to come none of your descendants who has a defect may come near to offer the food of his God. ¹⁸ No man who has any defect may come near: no man who is blind or lame, disfigured or deformed;¹⁹ no man with a crippled foot or hand, ²⁰ or who is a hunchback or a dwarf, or who has any eye defect, or who has festering or running sores or damaged testicles. ²¹ No descendant of Aaron the priest who has any defect is to come near to present the food offerings to the LORD. He has a defect; he must not come near to offer the food of his God

Given that the Bible also contains several pieces of scripture in the New Testament that enshrine compassion for PWDs, it remains questionable as to whether the above-cited stand of the European Renaissance church towards PWDs was the most worthwhile act of humanism since PWDs were denied of priestly functionalities and in some instances they were put to death, (Durant, 1944; Onwegbu, 1979).

The church was a major patron for artists and architects in molding liturgical art and architecture. This role was equated to holy priesthood since their artistic, innovative and designerly works of their hands were believed to be divine callings for augmenting worship. As such, with advice of Leviticus (21: 17-21) cited above, the orientation of architects was packaged with the impetus to configure built environments with disregard for PWDs in order to assumedly be at peace with the most high in heaven. The ramifications of this contempt for PWDs were aggravated by the appearance of the 'Vitruvian Man' sketched by Leonardo da Vinci in about 1509 in unison with the Golden Ratio/Golden Section/Golden Proportion at the height of renaissance Roman and Greek civilizations and works of their philosophers, and the European renaissance church. In this connection, up to as recent as the 19th century, guilds of artists, architects and civil engineers in particular

engaged the concept of the Vitruvian man in configuring built environments with notable disregard for PWDs.

Arguably, the world entered the 20th century with greater enlightenment from modern science and technology. The irony is that but built environment did not significantly get better for PWDs. Time and again, all-inclusive design remained elusive to PWDs as the taste of architects to perceive house designs for the conventionally perfect human continued to be the yard-stick for their excellence in architectural output, (Zeisel, 1975). For instance, in the early decades of the century, Le Corbusier who was reputed for designing for civil society is noted to have in fact taken the mathematical and geometry proportions of both the golden ratio and the Vitruvian man to an extreme of using them in some form of modular system to design his 1927 Villa Stein.

It is inherently plausible that the rigid application of principles of the Golden Section/Ration and Vitruvian man are likely to have impacted considerably the consciousness of other generations of architects to contemplate designing for ergonomically and anthropometrically perfect human beings, while treating PWDs and older adults as absolute minorities unworthy of comparable attention. This prejudicial stand against PWDs and older adults arose from influences such as the political and religious patronage cited above.

Some ruthless governments went as far as regarding PWDs as dangerous creatures unworthy of any expenditure of time and national resources upon them in the course of configuring built environments. Incidentally, some of the most horrendous accounts in the history of modern times of inhuman deviation from ideals of Universal Design occurred in past times of Nazi Germany. In this connection, Adolf Hitler viewed PWDs as precursors of degeneracy and collective compost of worthless sub-humans and useless eaters. Aspiring to build a powerful and perfect nation of the so-called Arian race void of any imperfections, Adolf Hitler engineered a grievous agenda for destroying all PWDs. This

became his plausible reason for perceivably not wasting money on designing unconventional architectural elements for valueless 'wretched of the earth', (Fanon, 1963).

Hitler's strategy progressed in stages, which encompassed the destruction of PWDs of any kind. Recounting this perversity, the Disability Rights Advocates (2001, p.16) disclose:

"In fact, people with disabilities were persecuted both within Germany and in the territories conquered by the Nazis, including Central Europe. Disabled men and women became victims of mass sterilization and murder, often at the hands of their own doctors. They were herded into killing centers and concentration camps. On forced labor crews, they were worked to death by German companies. They were made subjects of horrific medical experiments, both before and after their deaths. The Nazi persecution of people with disabilities can most accurately be termed genocide: the systematic annihilation of a biologically-defined group of victims. ...

Compulsory sterilization for people with disabilities became law in 1933, resulting in more than 400,000 people with disabilities being sterilized, often by painful and dangerous methods. A formal killing operation targeted directly at people with disabilities, known as Aktion T-4, quickly followed. More than 275,000 people with disabilities were murdered in the T-4 program, not counting those killed in concentration camps, in institutions after the formal T-4 program ended, and in occupied countries."

Parallel excesses of denial, abuse and probable demise of PWDs were also recorded in Japan, Vietnam, and India, to mention but just a few, (Shapiro, 1999). In fact, it is apparent that undercurrents of Nazi practices against people with disabilities seem operational to a considerable extent in present day China 'for the good of the state'. Accordingly, while quoting Fletcher (1996), Shapiro (1999, p.251) notes:

“Thousands of babies with disabilities have been systematically starved to death or killed through prolonged neglect and abuse in Chinese orphanages. In 1989, the death rate in some of the orphanages in various Chinese provinces ran as high as 72.5 percent. Abandoned children, mostly female or disabled, were being neglected as a deliberate policy to kill them.”

The cruel acts of discrimination and/or criminalization of PWDs have not all gone on without being resisted. A section of the global society grew from as early as 500 BC with the notion of a pragmatic mindset in disagreement with discrimination and criminalization of others inflicted with disabilities albeit on a small scale of recognition. In the case of the European Renaissance church's fronting scripture in Leviticus (21: 17-21), was challenged by Judaism's position with Leviticus (14: 14), which directs mankind not to curse the deaf and not to put a stumbling block in front of the blind, but rather to be empathetic and kind in elevating their livelihoods, (Artson and Silver, 2008).

In a comparable measure, from its beginnings as authored by Prophet Mohammed, the Qur'an has also enduringly echoed that "... Let no group scoff at another group, it may be that the latter are better than the former ... Nor defame one another, nor insult one another by nicknames..." but instead human dignity be accorded to all, and unto one another, with or without disabilities, (Qur'an, 49: 11). In a supplementary disclosure, Asad (1980) as a renowned philosopher of Qur'anic teachings in Bazna and Hatab, (2009, p.12) retrospectively

asserts that "...people with disabilities are to be treated with full regard and to have the same subject-to-subject relations that are granted to the non-disabled". Hence, the Bazna and Hatab (2009, p.17) encapsulate that the Qur'an agelessly "...removes any superstitious notions that people might attach to persons with disabilities, which may often lead to their exclusion". By doing that, the Qur'an since time immemorial was and is still opposed to cultural beliefs, taboos, customs and injustices unfavourable to the wellbeing of PWDs, and instead urges their inclusion in the society.

In effect, the afore-cited part of mankind provided the foundations and a practical ray of hope for countering centuries-old discrimination, ridicule, and misery against PWDs. Being the case, by the late 1800s, some think-tanks had begun to view PWDs at least as medical anomalies, thereby attracting scientific scrutiny instead of deploring them as evil omens, the products of witchcraft, and punishments from angry gods or ancestral spirits displeased with their parents, (Bogdan, 1988). However, this medical perspective did not offer lasting means for mitigating against discrimination and denigration of PWDs since it transformed into a model for seeing PWDs as the problem, rather than attitudes of society.

This culminated into further ridicule and stigma based on fascination and curiosity, and legitimization of the infamous freak shows in the transition from 19th to the 20th Century, (Bogdan, 1988; Pettit, 2014). Critically dissatisfied with this look of things in early 20th Century, a section of PWDs propped by an upsurge of religious ethics and well wishers learned in human rights and natural justice slowly and unwaveringly birthed what came to be known as the global 'Disabled People's Movement' (DPM). Miles (2013, p.12) narrates protests of some Buddhists belonging to the Disabled People's Movement as follows:

"We Speak For Ourselves (like any other group of intelligent adults)! There's Nothing Wrong with Us ... We are complete human beings ... The problem is that the entire social and physical environment has been designed by and for clever, wealthy, young or middle-aged, mostly male, English-speaking, physically fit, hearing people, to the disadvantage of 95% of the general population. In practice, this bad planning and design excludes those whose bodies and minds cannot compete on equal terms in an obstacle course demanding perfect sight, speech, mobility, hearing, balance, cognitive speed, and bladder control! And the obstacle course has been organised and embedded in everyday life with the active participation of the world's religions and philosophies! That is what is Wrong, and we are not going to tolerate this rubbish any longer! (Nor do we need any fascinating history lessons!) We have rights, we have legal rights and human rights and we want Compliance, and Action Now, not in fifty years' time."

Unstoppably, the 20th-century growth of the Disabled People's Movement particularly after World War II aroused profound outcomes on the lives of PWDs. The impact resulted namely from the large populations of disabled veterans the world could not ignore, and who had been key players to secure victory for the NATO countries so as to bring World War II to an end. These veterans exerted significant pressure on their home governments to introduce legislation for disabled people's rights. Another powerful trigger connected to the latter was the world's realization in the aftermath of the World War II about the extent of atrocities of Adolf Hitler's "race purification," as well as the horrors of his eugenics-driven elimination of PWDs.

Consequently, overt hostility and rejection of disabled persons associated with previous centuries and the vulgar perceptions of the medical model of disability begun to ward off as new societal empathy, tolerance and acceptance of PWDs intensified. This was epitomized in the turning point of the emergence of the universal declaration of human rights upon the founding of the United Nations in 1948. In this connection, mounting pressure exerted by PWDs for equal rights, options, opportunities, inclusion in society, and access to various amenities surged. Although a small number of countries initially responded to their demands, it signaled a resilience of PWDs on a long and difficult trek from the ugly past when they would expressly be murdered, be left to die in forests or be thrown off cliffs into rivers or lakes because of their disabilities. It further signaled a protracted fight to attain a breakthrough for social acceptability of PWDs contemporarily and endurance of this acceptability for posterity.

From hindsight, among the initial countries that signaled positive responses was Britain and its Disabled Persons Act of 1944, which gained greater strength though it was replaced recently by its 1995 Disability Discrimination Act. Another country was the US with its first Civil Rights Act for PWDs that appeared in 1973, followed by its Disabilities Act of 1991, (Shapiro, 1999). Most countries only began to respond after 1990. For instance, the Republic of the Philippines passed its Republic Act 7277 - Magna Carta for Disabled Persons in 1992, (DRPI, 2009). As well, Germany passed its Equality Amendment in 1997 and Anti-discrimination legislation in 2002, while Kenya passed its Persons with Disabilities Act in 2003, and Ghana's Persons With Disabilities Act emerged in 2006, to mention but just a few, (Downing, 2011; Tomlin, 2013).

As of today's 21st -century, an international consensus in favor of PWDs is unstoppable and there is a corresponding rise in the number of documents dealing with the rights of PWDs on a world-wide basis, including the Universal Declaration of Human Rights; the International

Covenant on Economic, Social and Cultural, Rights; the Convention on the Rights of Persons with Disabilities of 2006; the 1991 Special Rapporteur's Report on Disability; and other material gathered and published by the UN Sub-Commission on Human Rights. These instruments and/or publications present an outline of issues and procedures that can serve as a check-list for problems and represents a growing consensus in the international community of minimum disability standards applicable to but not limited to legal systems, and built environments.

In retrospect, this historicist and reflective account provides significant insight of how the main philosophical and moralistic realms, coupled with theoretical and pragmatic norms and standards pointing to the fight against discrimination of PWDs came about, which influence present configurations of the concept of Universal Design.

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Reflections – I

A “License” to Teach Inclusively

Josh Safdie

I think it was near the start of my second semester when I first began referring to the BEERELEY PRIZE as my “license” to teach inclusively, though it may have been even earlier than that. Unlike some of my colleagues who rounded out our inaugural Teaching Fellow roster, the *social art of architecture* had already been a small part of both courses I would be teaching at the Massachusetts College of Art and Design (MassArt, Boston, U.S.A.) even before my PRIZE year began. The “Urban Visionaries” course had seen several previous incarnations at Rhode Island School of Design (RISD, Providence, U.S.A.) from 2010-2012, and I had been including Universally-designed units in my multi-family housing studios at RISD and MassArt, for equally as long. From the outset, then, my approach was not so much to augment an existing course by introducing concepts of Universal Design; instead it was to re-frame my teaching entirely by making the social art of architecture central, and not peripheral, to the learning objectives of the courses.

The two courses naturally offered different challenges and opportunities. As a required design/theory elective outside of the program’s sequence of core studio courses, the fall offering of “Urban Visionaries” was already well-positioned to be a testing ground for new ideas and approaches to design thinking. The nature of its imperative to my students – to be a *visionary*, as opposed to just being a *designer* – also lent itself to a critical re-thinking of the way that we approach the fundamentals of urban design. “Housing for All,” on the other hand, was the required fourth-semester studio that every undergraduate takes in their second spring in the

program. It is by far the most complicated building and site that they are presented with their first two years, and their first exposure to life safety codes, the zoning ordinance, accessibility standards, and other regulatory constraints only add to the complexity of the studio. In short, the course leaves students with little room to be *visionary*. They are typically far, far too busy being *practical* – or at least trying to be.

But what, exactly, did I come to feel the PRIZE gave me *license* to do? First and foremost, it gave me license to place user/experts at the center of the design process. In the past, the “Urban Visionaries” course had taken a belief in the value of inclusive design and cloaked it in the mantle of sustainability. “Green” thinking has been coming easily to my students for some time now, as it is very much in the *zeitgeist* of architectural education in the United States today. Designing for human diversity, on the other hand, was a new idea for them – and so I cleverly (so I thought) would weave conversations about inclusive design into broader conversations about streets and squares, parks and open space, etc. Bike-friendly cities are better for the environment? Great! They happen to be more accessible as well, because, you know – lots of people get around the city on wheels. In some ways, I was ripping a page from my parenting manual. Here’s your “mac and cheese”; I hope you don’t notice the pureed cauliflower I slipped in with the powdered cheese sauce.

During my PRIZE year, I tried overtly to change this. By introducing my students to user/experts at the very beginning of the semester, I made a statement: this course will focus primarily on the incredible diversity of human ability – and on all of the ways that design can fail us when it refuses to anticipate this diversity. And in this course we will rely not just on our own creativity to arrive at new visions of the city – we will rely as well on the lived experience of our user/experts as well. We will walk the city with them, we will experience the city as they experience it, and we will use this as the basis for our design thinking. My students quickly learned that there was a big difference between studying the guidelines for an accessible pedestrian route and walking alongside a man who navigates the city in a power chair. They

learned to ask frank questions of their user/experts, and they learned that the answers were rarely what they would have expected.

In reflecting on my experience of the fall semester and sharing the outcomes with my BERKELEY PRIZE colleagues, I came to recognize some of the ways that my specific circumstances contributed to my *license* to teach the way I had. First off, I am fortunate to be teaching (and living) in a culture where non-discrimination is a human right and not just a theory. The Americans with Disabilities Act is approaching its 25th year on the books, and the architectural accrediting bodies already cite accessible design as one of its required student performance criteria. While some of my colleagues were perhaps struggling to even convince their students/universities/cities that accessible design was a good idea, I had the luxury of teaching in a context where taking this *license* was not only acceptable, but it was possibly even seen as *experimental* at worst, *cutting edge* at best.

In the spring, then, I decided to take advantage of this cultural and academic context by placing user/experts even closer to the center of the design conversation. In an earlier Fellow's report, I even claimed that my multi-family housing course had begun "with a very explicit focus on design for disability" and that I was "enthusiastic about the early returns." On the second day of class, we visited the home of a young woman who is a wheelchair user, which my own studio had renovated several years back. In "Sally," a young woman in her mid-twenties who had graduated from a University right down the street from MassArt, the students could recognize a true peer. And Sally's personal story (she lost the use of her legs due to an accident in her late teens) resonated with the students, allowing them very easily to recognize that any one of *them* could share Sally's own story.

As the semester went on, we visited several senior housing projects and talked directly with residents and caregivers about how their buildings and units served (or failed) them. We invited an 80-year-old architect with a pacemaker, two new hips, one new knee, and a lifetime of

experience to critique the students' unit layouts. We negotiated the subway system, a local bus route, and the urban square around our site with a blind resident of the city.

And yet, the further into the semester our work progressed, the less I found myself talking about inclusive design. Where the student work from "Urban Visionaries" had focused ever-increasingly on the diversity of the residents of the Utopian cities rising up from the drawing boards, the multi-family projects coming out of the spring studio looked more and more like "typical" housing projects with each passing week. Emboldened by what I perceived to be the successes of the fall course, I had certainly taken advantage of my *license* to teach an "inclusive studio" – so why were issues of diversity and inclusion falling further and further by the wayside in desk crits and pin-ups? Was I taking these issues for granted?

I tried everything I could. I emptied my bag of teaching tricks. I sponsored an "entourage prize" for the student who did the best job of including a representative range of human diversity in their architectural drawings and renderings. I had the students write "user narratives" in which they specifically described – in words and drawings – how each of the user/experts we had met over the course of the semester would experience their project specifically. I threatened them with failure if they didn't design accessible versions of each of the unit types provided in the program. In the end, none of it worked. In my eyes, and in the eyes of colleagues who had been to reviews for previous studios of mine, the projects that came out of the "Housing for All" studio during my Prize year failed to fundamentally differentiate themselves from any other project from any other year. So what happened?

Ultimately, I think the relative success and failure of these two courses provided me with a valuable lesson in the teaching of the social art of architecture, and architecture in general. For decades, if not longer, architectural education has been divided roughly into three phases of learning: a common core group of studios, followed by a series of elective or "advanced" design experiences, culminating in the capstone or thesis project. This sequence helps to support consistency in student growth while still allowing for individuation and the establishment of the

architect's own 'voice'. It also allows for the identification and development of educational *through-lines* which help to reinforce fundamental values and methods. Lastly, it provides students with a consistent frame of support in which increasingly complex questions of form, material, program, and social intent can be considered.

In the case of my BERKELEY PRIZE year, I believe that the *license* to bring questions of social intent to the forefront of my teaching served students in one phase of their education well, but they were harder for other students to take on. For my students in the "Housing for All" studio, I believe that questions of social intent unfortunately were displaced by their struggles with the basic architectural lessons that are part and parcel of the design of multi-family housing. It is challenging enough for students at the beginning of their architectural education simply to make efficient, rational buildings. They may at the same time be asked to consider "who are these building for?" but I believe it is simply too much for them to be expected to begin to significantly differentiate their design based on the answer(s) to this question. The tired cliché of learning to walk before you run has some relevance here.

So where does this leave me as my PRIZE came to a close and I begin to look ahead to my next year's teaching at MassArt? Does the *social art of architecture* even have a place in the beginning architectural studio, or is it something best left for later on in the curricular sequence? Despite my disappointment with some of the outcomes of my housing studio this past spring, I still believe it does have a place in all phases of architectural education – but its role may be different for the beginning student than it is for the advanced one.

I mentioned above the concept of *through-lines* – the underlying lessons or "big questions" that serve to unite an entire sequence of lectures, projects, or courses. In recent years, in the United States and abroad, we have seen the principles of environmental sustainability create an entirely new set of *through-lines* in architectural education. It is in this fashion that I believe the *social art of architecture* would best be incorporated into architectural education: as an essential belief, a fundamental tenet by which all design thinking is measured

and by which all outcomes are evaluated. For advanced students, this may mean embracing fully the diversity of human ability; for beginning students, it may simply mean being exposed to these bigger questions even as they begin to develop their basic tool kit of architectural design.

But for all students, I believe the question of social intent should be ever-present.

Students will always make projects – some good, some bad, some middling. The *how* of making a building will ostensibly improve from the first semester to the last; it is the *why* of making a building that I would like to encourage students to consider from the very beginning.

Reflections – II

Towards a Better Architecture: The Challenges of Engaging User/Experts

Elaine Ostroff

(Forthcoming)

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If it is not yet universally accepted that scientific research about human interaction with the built environment must be included in accredited architectural programs, let alone integrated into actual building projects. In practice, exactly how to develop these synergies is even less clear. The author, whose background is in the new field of applying the findings of neuroscience to architectural design, attempting in effect to create a “neuro-architectural” process, has developed both clinical educational modules and methodologies for critical analysis of the results. These have been applied in the classroom and throughout the architectural process in real practice. Reporting on a one year-long design studio application in Phoenix, Arizona, U.S.A, a variety of potential issues and problems of the integration of science and architecture are catalogued and discussed.

CHAPTER 5:

NEUROSCIENCE, Meet Architecture; ARCHITECTURE, Meet Science

Eve Edelstein

Introduction

The term *neuro-architecture* is used by scientists to denote the brain's form and function, and is increasingly used by architects to describe study that seeks to expand our understanding of the influence of buildings on the brain, body and behavior. Neuro-architecture, which considers science, medicine, humanities, and the arts, includes the range of human responses, and looks broadly beyond medical models focused on disease or disorder to include the many interactions between the built environment and behavior across all ages, genders and social settings.

It is not yet universally accepted that scientific research about human interaction with the built environment must be included in accredited architectural programs, let alone integrated into actual building projects. Yet in practice, these synergies are now increasingly applied in a broad range of built settings.

A compilation of experiences during a one year-long studio application in Phoenix, Arizona, U.S.A, in previous initiatives at accredited architecture and design programs in San Diego, California, U.S.A., and in international practice reveal a variety of opportunities and issues to be addressed in the integration of science and architecture. These experiences

revealed that the most successful strategy integrates specialists and user/experts into the entire design process. Teaching together, expert knowledge is readily conveyed in a cost effective and efficient manner among faculty and students, allowing all to learn together. There is no need to separate scientific study from design studios, and critical analysis of scientific research about the human interaction with the built environment can be readily included in accredited architectural programs and practice.

My journey to become the first contemporary 'neuro-architect' reflects my father's legacy as an architect who joined a team of ten who founded what was to become one of the largest design firms in the world. He provided my early and continued education in architecture during site visits and casual discussions as we explored each building. Yet, it was his home that was stunningly functional, and geometrically beautiful, that set me on a path to understand why certain places 'work', and for whom.

My formal education began with anthropology and the ethnographic study of behavior at the University of California, Berkeley, Berkeley, U.S.A.. It was there that I met an inspired teacher who turned my attention to explore neuroscience. After many years in practice in clinical physiology, upon hearing about the Academy of Neuroscience in Architecture, I realized that I had come full circle, and could now apply my training to think again how people and place interact. Returning to complete a professional Master in Architecture, my research-based design practice informs real-world projects and pedagogy (Edelstein 2007, Building Health. HERD).

Over the past decade, I have had the pleasure of working with colleagues to incorporate universal design principles in a neuro-architectural process at various universities. We have found that the best way to inspire faculty and to prepare students for the challenge of meeting the needs of individuals with disabilities is to model interaction with user/experts, creating 'safe' settings in which we can consider hard questions and teach each other the practice of empathetic design.

Background

The alarming increase in non-communicable conditions (respiratory, cardiac, obesity, diabetes) is now understood to be associated with environmental stressors, and the lack of active healthful places that support well-being. The growing number of veterans and sufferers of stressful conditions, those with developmental disorders and aging population add to a compelling need to consider how the brain, mind and body are influenced by built settings. Students and practitioners must meet the challenge that this poses. It is our duty to prepare them, and to learn from each other as we incorporate the innovations that our students will create.

Individuals with disabilities are not merely “users” of the built space, but also experts on their specific needs and the ‘uses’ of each place. They should be brought into the classroom as well as the design studio as co-instructors with the architectural faculty. The art and neuroscience of design for all peoples can and must be included in architectural pedagogy and in practice.

A neuro-architectural approach challenges designers to think about the broad continuum of human physical, mental, emotional and cultural states. The use of a ‘clinical’ viewpoint looks broadly at the ‘human condition’ includes scientific, medical and psycho-social interactions with the built environment across the span of one’s life. The broad domain of clinical data considers the dynamic continuum of abilities and preferences as people interact with the sensorium. Site analysis thus extends to human analysis, and research explores how people respond to places.

What Is Neuroscience?

Neuroscience has much in common with the field of architecture, although it might not be readily apparent. The field of neuroscience explores the form of the *brain*, and how *it* functions to produce the *mind's* delight. Although early philosophers suggest that the mind and brain are not one, ('dualism'), neuroscientists explore how the brain functions as the 'organ of the mind', and provides the biological bases of the human experience.

There is no need for dualist stance that separates neuroscience and architecture. Indeed, they share a common legacy as both disciplines advanced with Greco-Roman writings of Socrates, Plato, Aristotle, Vitruvius, Palladio and others. These 'fathers' of architecture considered the perception of beauty and how form and function drive delight. Even further back in time, Buddhist philosophers (circa 400 BCE) sought to understand the interaction between the body, sensations, perceptions, and mental formations of consciousness and Arabian and Indian scholars explored the beauty of geometrical forms still visible in the designs of this region. Our common history includes Imhotep (circa 2600 BCE) an Egyptian physician who is often referred to as the father of architecture. Leonardo da Vinci, both physiologist and artist, related the geometry to human form in the illustration of 'Vitruvian Man' and provides copious illustrations of the brain and buildings.

Emerging from this collective knowledge, the field of neuroscience was transformed in the 16th century when new methods enabled more detailed neuroanatomical studies of the brain. In the 17th through 19th centuries, discoveries revealed that nerve fibers convey information via electro-chemical changes. Advances in microscopy at the turn of the 20th century heralded the age of contemporary neuroscience and the Neural Doctrine. Using new staining techniques developed by Camillo Golgi, Santiago Ramon y Cajal showed that nerve cells formed the basic units of the nervous system and that information flow along each nerve, receiving input at the dendrites and transmitting signals out along axons, and across synaptic

gaps to stimulate the adjacent neurons.

The study of neuroscience has now grown to include numerous disciplines that investigate human behavior and neural function in health, and with disease, disorder and dysfunction of the brain, mind and body. Findings from chemical, molecular, cellular, anatomical, physiological, psychological, sociological and computational approaches are combined to reveal the neural representation of an individual's experience and interaction with the sensorium of the environment. Behavioral and social neuroscience test hypotheses derived from psychology, sociology and ethnography. Intra-cellular neuron studies, brain wave and brain image mapping show in near real-time how sensory information is transformed into electrical and chemical changes traveling through bundles of nerves, integrating input from multiple locations and across both sides of the brain. Bio-molecular analyses reveal the fine scale of cellular mechanisms that drive neural function. These data inform pharmacology medical innovations. Systems neuroscience, network analysis and engineering and predictive computational models offer new means to test ideas about large-scale networks that give rise to consciousness itself. All of this leads to a greater understanding of the mind-brain-body relationship.

With this knowledge, it is now suggested that the human brain is comprised of approximately 200 billion neurons and that each neuron gives rise to up to tens of thousands of connections. Further, the role of glial cells, up to 10 times numerous as neurons, are understood to play an important role in connecting brain mechanisms and functions served by this massive network of cells. (Micheva et al. 2010). It is suggested that the human brain may be one of the most complex living structures known.

An Overview of Functional Neural Anatomy

There are many myths about brain function derived from historic concepts that have been overturned by more recent research, or misunderstandings created by over-simplification of findings described in brief press or media reports. A basic understanding of neural science supports communication and collaboration between architects and neuroscientists, and puts all in a better position to understand the impact of design on individuals with a diverse set of needs.

The location of the brain's activity reveals what is being processed, and how these neural systems drive thoughts and actions. A complex network of parallel and overlapping nerves travel from one side of the brain to the other. This neural network feeds information forwards and back, using top-down and bottom-up and side-to-side from brain to body and vice versa. The connection between the brain and body is served by several nervous systems. The central nervous system (CNS) is formed by the brain and spinal cord, the peripheral nervous system (PNS) innervates the body, and the autonomic nervous system (ANS) automatically (autonomously) controls the internal organs and body processes without conscious effort from the entire neural system.

Anatomical brain mapping techniques that create images of the mind's activity, challenge the concept of dualism between the brain and mind. Further, neurophysiological that track neural mechanisms, demonstrate how the brain and body feedback through multiple systems to control each other. The neuroscience of design must therefore consider how the physical attributes of built settings impact the body, are converted to senses, perception, thoughts emotions and actions within the workings of the mind.

The experience of the built sensorium is central to an architect's scope of influence. In addition to the visual sense, architecture simulates auditory perception of sounds, speech, and noise), and vestibular functions (angular, linear and gravitational movement and a sense of balance). Smell and taste may also inform programmatic layouts, the design of ventilation

systems, air-flow and landscape architecture. Somato-sensory systems provide information about the body's interaction with physical form (touch, temperature, stretch and pressure). The architecture of each sensory organ is exquisitely formed to transduce stimuli from the physical world arising from light or sound waves, pressure forces, chemicals and movement into electro-chemical neural signals that give rise to sensation. Sensory signals do not fully represent the physical world in a one to one relationship. Instead, the neural signals from each sensory system are transformed into perception via the integration of input from several layers of 'bottom-up' neural networks as well as 'top-down' information from higher brain centers that add memory, and emotional salience.

As a consequence, our thoughts, actions and emotions represent complex interactions that span broadly across the brain in order to attach meaning and memory to experience.

This 'connectome' of neural fibers are no longer considered a hardwired genetically programmed computer, but an ever growing and changing network of systems. Recent discoveries demonstrate how exposure to environmental stimuli may alter this genetic program, changing brain structures and functions. Neural networks may change and grow with experience and learning, or be lost with lack of use or injury (Fuchs & Flügge 2014). Several studies demonstrate that the adult brain grows new cells (neurogenesis) and makes new connections throughout life (neuroplasticity) (M. Diamond, Pers. Comm 2012).

While genetic instructions guide the early development of basic architectural elements and connections within the brain, the precise anatomical form differs in each individual's brain, changing in response to exposure, experience and function. As the brain rewires itself with repeated activities or environmental exposure, new connections may be grown and signal transmission may be enhanced (Koehl & Abrous 2011). Perception and performance may change with stress and aging as well as conscious attention, repetition and reward (Kemperman & Gage 2000, Merzenich xxxx). Even exposure to built form or enhanced environments may change the brain and modify preferences and performance within those spaces.

Thus, Churchill's adage has great validity, *we change our buildings,*
and they in turn change us.

The Importance of Neuroscience for Architecture

Architectural processes too often neglect the influence of built setting on human health, function and well-being (Edelstein & Macagno, 2012), yet knowledge of the relationship between the mind, brain, body and built environments is essential to shaping environments to fit human needs. Significant improvements in health and longevity have been associated with a wide range of environmental interventions and changes to urban design guidelines that reduce toxic and harmful environmental conditions. These are now codified in standards, recommendations, guidelines, and white papers by institutions focused on health promotion. (See the World Health Organization (WHO), the Japanese and WHO Alliance for Healthy Cities, the Canadian Public Health Agency, the Australian Department of Health & Healthy Urban Development, the National Institutes for Health and Center for Disease Control, and the United States of America Healthy Peoples 2020. The recently launched AIA Design + Health Research Consortium and the International Well Building Institute add new studies and certification programs that specifically address the influence of architecture on human health, performance and preference.

There is a great deal of research that has yet to be translated from neuroscientific and clinical studies into brain-based design principles. For example, a large body of research reveals that exposure to light has significant impact on mental state, cognitive function, behavior, and physical health in addition to vision itself. Although rigorous circadian research has taken place over more than 60 years revealing the human need for natural light/dark patterns, the impact of changes in spectra, intensities and timing of light that entrains cardiac,

brainwaves, and melatonin, and cortisol fluctuations is only recently being incorporated in best practice. Edelstein et al. (2007) demonstrated in carefully controlled office conditions, that heart rate variability (HRV), a well-established indicator of health risk and stress, was highly significantly different during memory tasks performance when subjects were exposed to less than 15 minutes of red light, versus bright white (with a blue peak) light. Whereas many studies have focused on the influence of blue and bright white light of melatonin responses, this experiment demonstrated that red light was associated with changes in cardiac responses (Edelstein, 2008).

Similarly, the guidelines and legislation that limit sound exposure in order to prevent noise-induced hearing loss, set limits based on research dating back to the 1990's. Even the 2003 Directive (2003/10/EC) by the European Union defines the maximum averaged continuous noise levels based on exposure levels defined by ISO 1999:1990. The Directive's limits for impulse sounds, now common in recreational as well as industrial and military settings, use a single value limit of 140dB including hearing protection, but does not take into account any frequency or duration information, and lacks any scientific validation (Buck et al. 2012). Yet, research has shown that exposure to such increases the risk of noise-induced hearing loss, as well as physiological and psychological changes. A consistent trend towards an increased cardiovascular risk has been observed with daytime noise levels exceed moderate levels, and stress reactions, such as cortisol disturbances, have been observed in children with long-term low frequency traffic noise exposure averaged at less than 55dBA (Ising & Kruppa, 2004).

Unwanted noise also diminishes performance and environmental quality. A survey of over 100 medical leaders found that acoustical conditions in healthcare settings were the most common complaint. Noise may reduce speech intelligibility and be associated with medical or medication error, increased stress and sleep interruption (Edelstein 2013). If listening in a second language, an additional 15dB is required for equivalent perception. Empirical acoustical tests demonstrate that typical wall system design that meets privacy standards for office spaces

are insufficient to ensure confidential communication, especially in settings where voices are must raised to command attention, to express great need, or to communicate with hearing loss.

The Value of a Neuro-Universal Approach

The intersection of neuroscience and Universal Design offers to build a community of practice who support, encourage and teach each other inclusive and holistic design innovations that serve social justice (Edelstein & Sax, 2014). A ‘neuro-universal’ design approach accepts that variation in human ability is not a ‘special need’, but a reality across one’s lifetime. Both take into account the continuum of human abilities, and embraces the most gifted as well as the least able. Discussion of the universal reality of the human condition offers a profound opportunity to motivate faculty and students to enhance the experience of design.

For instance, as people with disabilities expand engagement with their communities and worldwide network, a broad range of specific needs must be kept in mind. In accredited architectural programs in the U.S.A., the Americans with Disabilities Act (ADA, 1990) is taught as a required element of the curriculum. In practice, architects must demonstrate knowledge of these codes via regular continuing education exams. Unfortunately such codes and similar guidelines are typically centered on mobility impairment with lesser consideration of the much wider spectrum of needs. This may leave the design faculty at accredited programs a loss as to how to incorporate this content into densely packed degree curricula. However, we have found that undergraduates through doctoral students, and artists through architects in accredited programs, can readily take on training in the scientific method and critical analysis within their design studios, enabling them to *apply* evidence to evidence-based design.

Rather than focusing on how to “accommodate” individuals with disabilities or “special groups”, it is more advantageous and cost effective to design buildings that address the needs, preferences and desires of the greatest range of individuals. Users *are* the stake-holders. By

merging principles of Universal Design with brain-based principles from neuroscience, a neuro-universal process has been developed to inform design that bends to the needs of its users, rather than making people bend to accommodate built space.

If the adoption of innovation is based on the perception of merits of the innovation itself, the increasing global interest in healthy design offers to promote this cause. The World Health Organization defines health very broadly a fundamental human right and more than the mere absence of disease. They advocate for human-centered development even when it does not “result in immediate economic gains and may require public investment” (WHO European Health 2020, 2012. pp 97).

Clinical versus Medical Approaches

The translation of such data may increasingly serve the needs, preferences and desires of users with the inclusion of clinical information that expands consideration from ‘averaged norms’ to the range of users and uses that any place may serve. Clinical knowledge adds to a more holistic approach that considers the entire person in the context of their culture, condition and experience, as well as their medical condition. As such, a holistic consideration of needs include mental, emotional, and physical status that may both enhance and save lives. It includes perspectives from medicine, and looks beyond dysfunction to include the strengths and weaknesses of many users in a diverse range of contexts, and accepts the continuum of abilities and dynamic changes in need as the norm.

This clinical approach serves the many global initiatives now calling for design that serves health and wellbeing. The need for human-centered research and socially responsible design has long been recognized by many international institutions including the World Health Organization, the Urban Land Institute, and the newly formed AIA Design + Health Research Consortium who call for policy changes that will drive changes in practice. Similarly, clients and

communities now call for the design of built environments that better serve human outcomes at all scales. A growing body of rigorous research demonstrates the direct and measurable impact of the built environment on individuals, economies and ecologies across the globe. The World Health Organization reports that “Human health depends on society’s capacity to manage the interaction between human activities and the environment in ways that safeguard and promote health but do not threaten the integrity of the natural systems on which the environment depends” (WHO, 2013, pp 103).

Pedagogical Approach

Our BERKELEY PRIIZE Teaching Fellowship in 2013 sponsored the integration of neuro-universal content in a two-semester design studio for undergraduate architecture students at the University of Arizona, Tucson, U.S.A.. Collaboration with the director and associate director of the Disability Resource Center and specialist staff provided both in-depth knowledge of student services and user/expertise.² The user/expert team included the director of rehabilitation at San Diego State University³ (San Diego, U.S.A.) who contributed to course content and lectures at the NewSchool of Architecture + Design, San Diego⁴. Course development also reflects over a decade of collaboration with the founders of the Academy of

² Sue Kroeger, Amanada, Sherry, Marisela

³ Caren Sax

⁴ Gilbert Cooke, FAIA, Kurt Hunker, FAIA

Neuroscience for Architecture⁵ with the American Institute of Architects⁶, the Salk Institute⁷, and the University of California, San Diego⁸, among others.

Lecture courses, seminars, design studios and directed studies have been incorporated in accredited architectural degree and interior design programs (undergraduate and graduate) as well as in Master of Science and Doctoral courses. Areas of focus and certificate programs have been developed to encourage both professional and degree seeking students to pursue a greater degree of expertise in research-based design and neuro-architecture. The content introduced Universal Design concepts to undergraduate and graduate students enrolled in environmental and research-based design courses and studios, with assignments focused on design projects including 1) an educational institution to serve students and faculty with a broad variety of cognitive and physical needs, and 2) accessible residential design for a real-world client with multiple sclerosis, among others.

To date, the following courses have been taught, integrating neuro-architectural content with Universal Design objectives.

- Neuro-Architecture lecture and seminar courses
- Neuro-Architecture Thesis Design Studios
- Thesis Research Integration
- Environmental Psychology lecture course
- Research-based Design lecture course
- Immersive Virtual Reality Design
- Healthy Urbanism

⁵ John P Eberhard, FAIA

⁶ Norman Koonce, FAIA

⁷ Thomas Albright, Fred Gage

⁸ Eduardo Macagno, Ramesh Rao, Thomas DeFanti, Jurgen Schultze

A 'neuro-universal' approach uses the scientific method to outline design hypotheses that inform brain-based design decisions that lead to universal design outcomes. Yet, few architecture students and fewer practitioners or faculty, have been schooled in the scientific method or clinical analyses. In order for students to adopt a neuro-universal process, instruction includes discussion of the scientific method, basic research skills and methods of searching for and summarizing literature. Students were taught to locate literature using database searches and to critically analyze findings, recognize limitations and the degree to which generalizations may be applied. In class discussions and lectures convey analyses of biological, clinical, medical and psycho-social research papers to interpret complex data and generate new perspectives on the range of interactions between people and places. Instruction on typical formats for describing these findings in written form as well as in annotated graphic illustrations allows students to disseminate their work to designers and scientific audiences.

These concepts were most effective if introduced at the beginning of the term, and then parsed into small, additive assignments throughout the term. Our consensus was that neuro-architectural and universal content would be best served by being spread in modules across the entire curriculum, with each assignment building on the previous, and need not be taught in isolation nor in electives. With neuroscientific faculty joining universal user/experts and the design faculty, students build upon interactive feedback and faculty may build insights resulting from these conversations into teaching modules.

Table XX: Suggested Neuro-Universal Teaching Modules

A sequence of teaching modules, learning assignments and most importantly, user/expert interactions progress as follows:

- *User/Expert Interaction with Design Faculty*
- *Integration of Neuro-Universal Lectures & Assignments in Syllabus*
- *User/Expert Interaction at Introductory Lectures*
- *Neuro-Architecture & Universal Design*
- *Scientific Methods*
- *Student Project Proposals*
- *Literature Search & Summary Methods*
- *User/Expert Interaction in Small Group Studio Discussions / Lectures*
- *Empathetic Design & Social Equity*
- *Visiting Experts and User Groups*
- *Design Hypotheses*
- *Development of Evidence-based Hypotheses*
- *Conceptual & Schematic Development*
- *User/Expert Interaction in Studio and Small Group Meetings*
- *Original / On-Site Research*
- *User/Expert Interaction on-site to highlight positive and negative impact*
- *Critical Analysis of Research*
- *Translational Design Interpretations*
- *User/Expert Interactions*
- *Design Development*
- *User/Expert Interactions*
- *Final Design*
- *Studio Reviews with User/Experts,*

- *Visiting Experts, User Groups and All Faculty*

Teaching the Scientific Method to Architecture Students

A simple input-response-output model of the scientific method is used to represent input from features in the built world, its influence on the body, brain and mind's responses, that result in behavioral changes as a measure of output. At the simplest level, students are able to articulate a design hypothesis in terms of how physical input from the built environment influence the mind, brain, and body in terms of behavioral changes and Universal Design objectives. Modeled on evidence-based medicine, the use of rigorous data describing human responses to specific physical conditions provides a valid basis to explore the relationship between design and human reactions. Design hypotheses can be tested using measurements, observations and surveys to track social, psychological or physiological reactions and to determine if universal goals have been met. For example, the acoustic qualities of a space are determined by its physics, materials, and geometries, regardless of the architectural type. Hearing relates to the individual listener's clinical status beneath the layer of culture, and universal outcomes are dependent on the users' ability and needs.

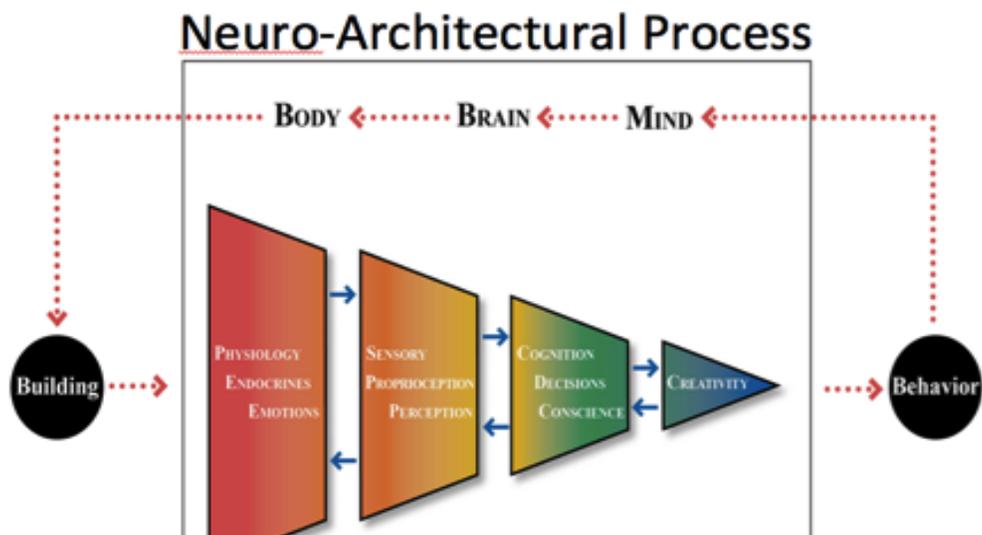


Figure xx: A flow diagram using a conceptual framework derived from the scientific method, links the physical stimuli of a built setting as the input to the responses of the body, brain, and mind, yielding behavioral output. A feedback loop between all elements represents the complex interaction between physical and human outcomes. (Edelstein, Eve A. "Research-based design: New approaches to the creation of healthy environments." World Health Design Journal, October (2013): 62-67.)

Developing Design Hypotheses

These data inform the development of design hypotheses that focus design inquiry on the impact of each design decision on 'users and uses'. The 7 universal design objectives serve as measures of essential outcomes, and can be used to prioritize and rank the benefits and limitations of each design intervention.

Students are guided to construct valid design hypotheses and to outline how the existing evidence supports their contentions using a hypothesis template as below.

"It is proposed that _____ element of the built design will influence human responses, changing _____ (mental, neural, physiological, or behavioral) reactions that result in in changes to (behavioral or human outcomes) and universal design benefits by creating (equitable, flexible, simple and intuitive, perceptible, tolerant, low effort, or the size and space for approach and use)."

For example, design hypothesis might state:

“It is proposed that acoustic paneling in hospital procedure rooms will influence human responses, changing speech intelligibility and stress reactions that result in changes to error and alarm fatigue and universal design benefits by creating settings for perceptible communication.”

INPUT	RESONSE	OUTCOMES															
Physical: Layout Material Adjacency Temperature Sound Dimension Humidity Light	Neural: Sensory Movement Emotional Cognitive	Universal Design Uses: 1) Equitable us 2) Flexibility in use 3) Simple & Intuitive 4) Perceptible information 5) Tolerance for error 6) Low physical effort 7) Size and space to use															
SEATING SPACES	FOLDING CONCRETE TO CREATE DIFFERENT OPTIONS FOR SEATING	EQUITABLE USE															
PERMEABLE SHADING SYSTEM	DIFFERENT LEVELS OF SHADE THAT PROVIDE UNIQUE EXPERIENCES WITH DIFFUSE LIGHT	RECEPTIVE COMFORT EFFORTLESS															
SMOOTH FURNITURE	DIFFERENT MATERIALS USED IN THE SHADING TO PROVIDE CLASH OR ELEGANT ONE	LOW PHYSICAL EFFORT PERCEPTIBLE FURNITURE															
2 // Individual seating pods in groups	Emotional, Movement Build community through social groupings, size and space for use // Low physical effort	<table border="1"> <thead> <tr> <th>INPUT</th> <th>PROCESS</th> <th>OUTCOME</th> </tr> </thead> <tbody> <tr> <td>Change features</td> <td>Neural Responses</td> <td>Reduce time</td> </tr> <tr> <td>Variable seating</td> <td>Movement & balance</td> <td>Reduce circulation time physical effort Traffic response</td> </tr> <tr> <td>Control shading</td> <td>Visual perception</td> <td>Control heat without high contrast shades that cause shadows</td> </tr> <tr> <td>Community garden</td> <td>Social integration</td> <td>Inclusion of people who are expert of community</td> </tr> </tbody> </table>	INPUT	PROCESS	OUTCOME	Change features	Neural Responses	Reduce time	Variable seating	Movement & balance	Reduce circulation time physical effort Traffic response	Control shading	Visual perception	Control heat without high contrast shades that cause shadows	Community garden	Social integration	Inclusion of people who are expert of community
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NEED ANALYSIS	MOVEMENT BALANCE	BE LOW PHYSICAL EFFORT TO SIMPLE AND EQUITABLE USE TO EQUITABLE USE															
ACCELERATE PLANNING BATCH	HEARING SENSE VISUAL	DECREASE SURROUNDING NOISE POLLUTION DECREASE VISUAL AUTOMATION INCREASE USE OF SPACE IN PERCEPTIBLE INFORMATION															
LARGE CHAIRS	THERMAL COMFORT	INCREASE OF USE IN SHARED AREA TO USE AND SPACE TO USE															

Student Work: Design Inquiry Framework

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Ranking Design Options

At a more sophisticated level, students are able to translate scientific, psycho-social, and clinical research into a decision grid that helps clients and users to relate built features to user interactions and measurable outcomes. The use of a graphic chart plots the relationship

between input, responses, design options and universal outcomes. Many specific components and reactions that must be considered at once, and laid out in a singular grid, focuses design thinking on interaction between form, function and user outcomes.. The cost of each design option, proposed benefits and risks, and the return on investment can be set out in human, ecological and economic terms.

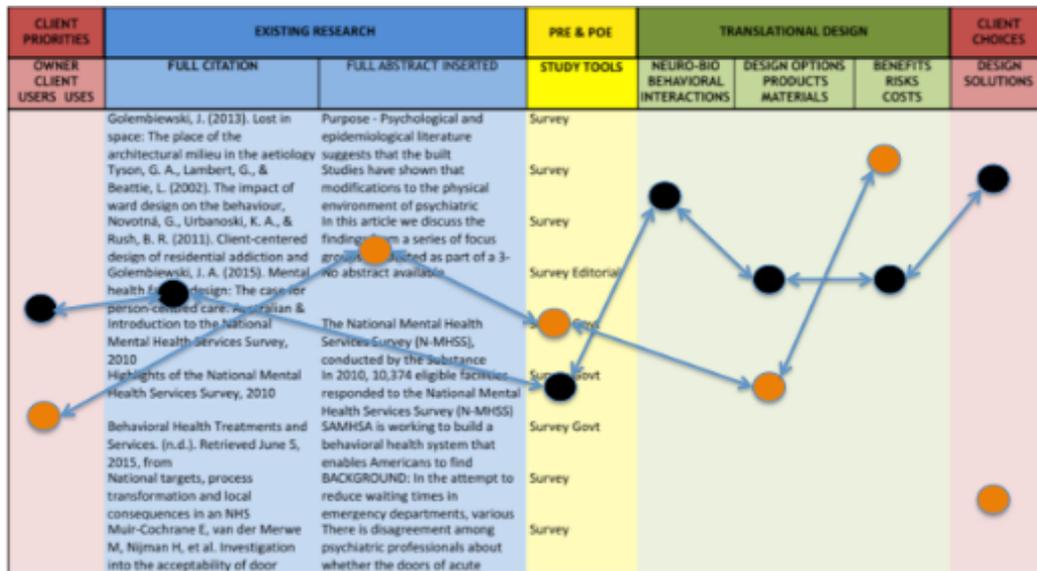


Figure xx: Client objectives inform (left column in red) literature reviews (blue columns) and research protocols (yellow). Dotted lines show the relationships between evidence, translational options, and cost/benefits. The final column on the right (red) shows the priority ranking of two design options.

With the design faculty, neuro-architects, user/experts, users/experts and clients rank the potential return on investment of each design option. Human-centered design decisions may be ranked in terms of 1) health and safety, 2) enhanced performance and creativity 3) emotional well-being, 4) aesthetic preference or satisfaction, 5) social, cultural and political factors and 6) cost / benefit analyses. With the addition of environmental and economic

analyses a more holistic understanding of brain-building interactions can predict human value of design.

Transdisciplinary Teaching

Discussions with invited user/experts representing a different range of abilities and disabilities empower multi-way learning. By teaching *with* user/experts and research professionals, design faculty may absorb new skills and approaches, and incorporate new content into the densely packed accredited architecture programs without the undue burden of expecting all teachers to become experts in all disciplines. It is important that each discipline represented in such transdisciplinary teams are represented and recognized for their unique approaches, knowledge and practical constraints.

For example, architects may be well versed in teaching the laws, codes, regulations and costs associated with design for access and the reduction of barriers. User/experts learn about the imposition imposed by such realities on the architect's desire to meet universal objectives. User/experts may offer a deeper insights to the efficacy of designs that meet the minima described in law, but poorly serve those for whom they were designed. Researchers may guide the group to understand the limitations of studies and the limits of generalization for the project at hand. At the heart of evidence-based and translational practice is the understanding that lives may be enhanced and saved even though it is based upon limited knowledge. Architects gain insights about the impediments that user/experts experience when only the minimal standards of accessible design are implemented. As students observe and engage in this conversation, empathy grows, and they become inspired by open conversations about design for people with disability.

Integrated Pedagogical Approach

This integrated *pedagogical* approach is similar to the Integrated Project Delivery (IPD) process that is becoming increasingly popular in practice. The American Institute of Architects (AIA) currently defines IPD as "a project delivery method that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to reduce waste and optimize efficiency through all phases of design, fabrication and construction." Specialists work together across the entire timeline of the project, from early conceptual visions through schematic and design development and apply this expertise in making decisions that impact value engineering during the final phase of construction and building. With this strategy, expertise from many disciplines can introduce scientific principles and cutting-edge innovations that are integrated into the design process early, and often.

In a similar way, user/experts and specialists *add to* and enrich courses and studios that both teach essential concepts and universal principles, without increasing the burden on regular design faculty. In this manner, regular expert consultation provides the interpretation of deeper knowledge than students are expected to gather, and interpret the available findings into relevant design principles. Neuro-scientific, clinical, physiological, and psycho-social findings from existing studies provides data that reveal the range of responses that have been observed in response to each design condition. Architectural and environmental expertise is used to define the physical features that may be used to solve the design problems. Finally, user experts may provide the insight to guide prioritization, identifying the ranking of outcomes in terms of those that best serve universal outcomes.

BERKELEY PRIZE Teaching Fellowship Semesters

The BERKELEY PRIZE Undergraduate cohort of 63 students were in their 3rd year of an undergraduate B. Arch. degree program at the University of Arizona, Tucson. Universal Design content was integrated across two semesters in their academic year.

Semester One:

a) *Tectonic Urban Design: Community transportation center and café*

Project 1 considered design of a transportation hub in downtown Tucson. Students' deliverables included design boards, physical and digital models. The design hypotheses proposed were analyzed in terms of design input, human response, and desired universal outcomes. Annotated boards outlined the impact of design elements proposed. The students presented their conceptual framework, inquiry process, and design solutions to the faculty, students, and disability resource specialists in studio round-tables, conversations, and juried reviews.

b) *Urban High Rise: urban garden and community center that attended to tectonic considerations*

Project 2 required that students create a multi-story tower in downtown San Francisco in the Embarcadero district. Site visits with the design faculty, DRC and SDSU staff yielded valuable opportunities for individual and group discussions about the challenges posed in an urban context. Students were challenged to seek imaginative solutions for equitable inclusion, engagement, and mobility within a multi-story complex structure.

Semester Two:

Land Ethics & Arid Habitats

Project 3 comprised a spiritual and educational campus in a natural desert habitat that respected land ethics and resource use. The project spanned the Spring semester with a focus on ethical use of land and building resources. The assignment comprised of a religious and educational program set in an inaccessible and arid valley in a high desert plateau. Students were asked to focus on the phenomenological experience of this natural setting, to overcome the difficulty of gaining access during site-visits, and to propose a spiritual campus with equitable access in a rugged, hot, and potentially hostile climate. The site presented great challenges. The first issue was to ensure that all students and user/experts could access the site chosen for the project. The challenge that followed was inclusive thinking in order to create without excessive use of resources, spaces and interactions that were pleasant for all.

Teaching Conditions

We found that while some faculty were unsure of the students' ability to take on extra content, students were highly inspired to learn how to design for individuals with disabilities, at every level from undergraduate through professional masters or doctoral level students. The inclusion of neuro-architectural or universal principles in a densely packed, accredited curriculum limits the time available for students to think about human-centered curricula. The existing program focused studios on National Architectural Accreditation Board (NAAB) student performance criteria (SPC) related to technical design and responsible land ethics. Therefore, the neuro-universal content had to be limited to fit within the existing course content and

interaction with user/experts were reduced and assignments were not graded. There was no reduction in work-load associated with tectonic or land ethics assignments, and the students were fully absorbed by the acquisition of skills, understanding and ability to produce their design projects.

While it may seem preferable to present human-centered content in separate studios, it should be acknowledged that all architecture must consider human interaction with the site and the functional program. In a post-course faculty survey it was noted that “incorporation of human centered outcome criteria into the entirety of our taught coursework, enhanced the students’ experiential and design thinking skills.” Every project must take into account the range of human uses and the diversity of users. Therefore, a neuro-architectural process and universal design outcomes are appropriate for all projects and within every studio project.

Despite the need to understand of the relationship of people to their built surroundings the inclusion of human-centered and community-centered principles outlined in architectural accreditation criteria have recently been diminished or dismissed in the 2014 National Architectural Accrediting Board (NAAB) draft conditions. These conditions define the criteria that professional architectural degree programs are required to meet to prepare students in their careers. In response, the Environmental Design Research Association (EDRA) Board of Directors called for action, noting that “the proposed changes are not adequate to protect the health, life, safety, and welfare of the public, nor are they concurrent to the standards of engaged and responsible practice or global citizenship.” EDRA called for a strong futuristic vision and thoughtfulness to “ensure students understand how to integrate research evidence into design decision-making, the critical relationships between humans and designed environments, the changing dynamics of people and environments, and are able to work collaboratively in interdisciplinary teams.” (See http://bit.ly/edra_response.)

It is important to explore why attitudes toward architectural equity have stalled, and why adoption of human-centered values has not gained greater traction. The Berkeley Prize

Teaching Fellowship offered experience to yield insights into teaching approaches that may foster appreciation for human-centered values in the next generation of architects.

Changes in Student Design and Attitudes

Regular and repeated interaction with user/experts in lectures, one to one desk critiques and studio reviews are critical for a trusting atmosphere wherein difficult questions could be asked, and empathetic design could be developed. Although it was expected that the human-centered NAAB performance criteria were learned during the previous years, the students themselves reported that they had not sufficiently mastered the knowledge regarding codes and accessibility requirements, and did not feel ready to leap to address the breadth of neuroscientific or universal design concepts.

The concept that architecture can and should 'flex' to meet the continuum of human needs, rather than require that people 'bend' to built settings, challenged students and faculty alike. Nonetheless, many projects demonstrated thoughtful design that addressed mobility in their first term projects. Many of the second term projects incorporated design solutions that addressed sensory and cognitive, as well as mobility issues. Students used neuro-architectural relationships to develop design hypotheses, and to articulate universal objectives. Neuro-universal design principles began to be incorporated in student projects as second-nature, as students assumed that all projects and places should offer equitable design solutions.

Students discovered that the impact of specific components of design may be understood in terms of their measurable influence on specific human responses. For example,

- In a high-rise assignment for a tectonics studio, students considered how human circadian rhythms of workers within the building could be served by glass curtain-walls and atria that allow natural daylight into work spaces.

- In another studio project, design for a downtown transportation center added innovative illuminations as a visual announcement system for those with auditory dysfunction.
- Clinical research and authentic experience was readily incorporated in a class project on residential design. Students met with an owner, a user/expert with multiple sclerosis (MS). A review of clinical literature indicated that heat often exacerbates MS symptoms. The resultant design included an interior courtyard to address the client's cultural preferences and window designs that allowed for sightlines to a sunny west facing garden while the user was at rest, and minimized direct solar gain. While these examples seem simple they demonstrate that design can readily respond to research principles and Universal objectives without limiting creative design solutions.
- Several design visualizations and models demonstrated sophisticated consideration of equitable design with the choreography of equitable entry points, interaction places, and circulation paths that consider physical movement, auditory and visual responses to design of a downtown trolley station.

Impact Surveys

Surveys and discussions revealed how student attitudes changed as a result of these pedagogical strategies. Surveys of student attitudes and learning outcomes explored their

appreciation for authentic learning experiences and interaction with faculty and peoples with disabilities.

A post-course survey was completed by the BERKELEY PRIZE neuro-universal studio after the academic year:

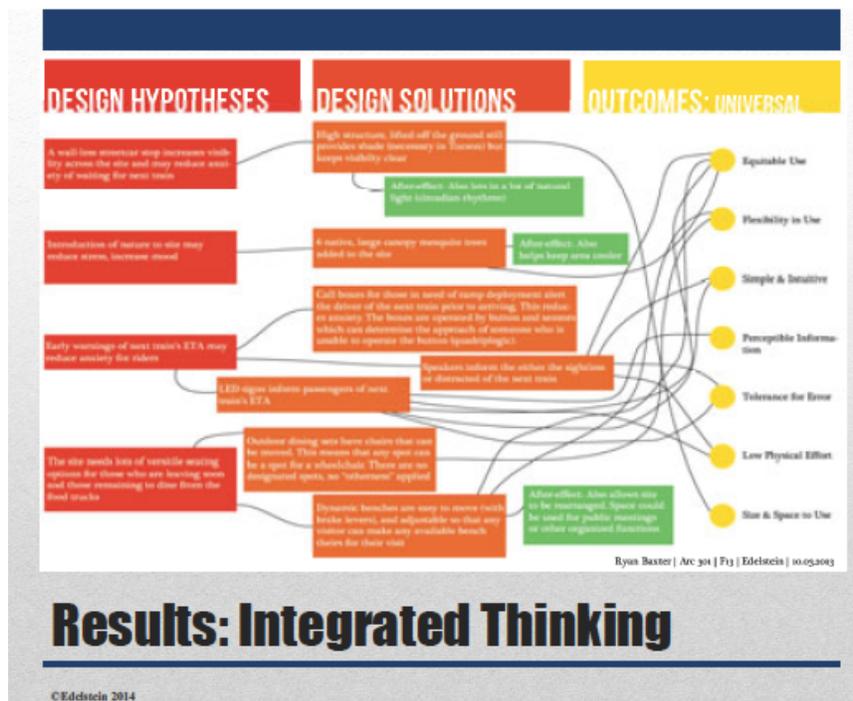
A total of 17% (11 of 63) of the students answered eight questions using a 5-point scale (Strongly agree = 1; Agree = 2; Neither Agree or Disagree = 3; Disagree = 4; Strongly Disagree = 5).

- Four questions probed how students thought about design, and another four asked how the experience of the class influenced their thinking.
- Ninety % (n=10) of the students strongly agreed or agreed that “These experiences made me think about designing for people with a broad range of abilities.”
- Seventy-two % (n=8) strongly agreed or agreed that “These experiences made me think about how my senses, movement, emotion, and thinking change with design.”
- Eighty % (n=8) strongly agreed or agreed that “These experiences influenced the design of my studio projects.”
- Ninety % (n=9) strongly agreed or agreed that “These experiences will influence how I design in the future. (IAUD Submittal)

Comments from students expressed great appreciation and knowledge gained from meetings and site tours with Chris Downey and his students, Ray Lifchez and Bill Liddy at the Ed Roberts Campus* in Berkeley, California, USA.

Students also found the neuro-architectural process and interactions with users and experts useful.

*The neuro-architectural process and visits to Berkeley helped me to...
 "think about what my design is going to offer in terms of what to see, what to smell, hear, and what to feel."*



*The Ed Roberts Campus is a nonprofit (501c3) corporation that has been formed by disability organizations that share a common history in the Independent Living Movement of People with Disabilities. These organizations joined together to build a universally designed, transit-oriented campus located at the Ashby BART Station in South Berkeley. The ERC houses the offices of the collaborating organizations as well as fully accessible meeting rooms, a computer/media resource center, a fitness center, a cafe, and a child development center.

Students provided examples of how these experiences influenced their thinking:

“I thought a lot more about space in general and how to make it enjoyable and pleasant for everyone, which turned out to be very difficult.”

“I really started thinking about entire sequencing of space for UD. Instead of simply providing a ramp or lower desk heights (singular examples), I thought about how the user (of any ability) experiences my architecture from the road to the parking through the entire project.”

“I didn't think about ADA (or have to look up very many ADA requirements) because I was focused on multiple user groups and a design that went further than the minimum so that all people could be included in equivalent experiences.”

“The Ed Roberts Center allowed me to see how one design can create equality amongst all. In addition the San Francisco area allowed me to see that designers need to change how they design to make it universal.”

“The paving and textures of ground and wall can make such a meaningful impact on everyone's life.”

Examples provided that described “how these experiences have influenced your design approach” include the following.

“UD is no longer an afterthought. Though UD is an ideal which may not always be achieved to perfection, the goal is now imbedded into initial sketches. I think about equitable circulation, natural daylighting strategies in my sketchbook,

before any hard lines are drawn.”

The use of wood is meant to absorb the sound coming from the street,



Visual changes on the roof mark the different uses of the spaces below.

Results: Student Work

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CEdelstein 2014

Inspired by the BERKELEY PRIZE studio, a ‘Neuro-Universal Design Merit Prize’ was set up and judged by the BERKELEY Fellow and the Disability Resource team. The winner, outspoken in her passion and attention to design details that serve universal needs, wrote:

“I may not be able to change the entire world, but I can now begin.”

Changes in design faculty attitudes

There was a measurable change in the view of faculty members as evident by the following quotes:

“Involving user/experts is invaluable.”

“Increasing the number of sessions that were interactive in nature would be helpful.”

“Having raised consciousness in this area, it will be passed on to future students.”

However, being charged to focus on previously designated student performance criteria, the faculty did not make great changes to their studio approach, but did collaborate with disability resource experts in an attempt to bring them into an existing studio framework. Nonetheless, interaction with user/experts helped faculty to “understand the complexity of the situation beyond basic codes etc.”

Faculty noted that a greater *“commitment upfront from the administration to waive other studio criteria – to make it is more of a focus”* would be helpful. *“This was acknowledged at the end of the semester, and there was consideration that some existing criteria should have been lessened in order to facilitate integration of this curriculum n an easier way for faculty and students.”*

“Even though it should be an inherent part of the design process, there needs to be a commitment beyond the superficial, ... as it is not a simple issue for students to come to terms with as an additional check box item.”

Other faculty members offer:

There has been some shifting in my perception of the issues facing the visually impaired and I see that this population could be well served by a creative inquiry by architects into various methods of serving their unique needs. Also, having opened the doors last semester in a discussion or two to the behavioral and psychological challenges that exist between the those individuals who live with significant physical challenges and those of us who operate with far fewer challenges, I can say that I have begun to more fully understand the importance of UD from this human behavioral perspective and how critical it is to remove the barriers that create, not only physical difficulty but perhaps even more significantly, emotional difficulty as those who are challenged struggle to simply lives their lives WITHOUT the ubiquitous perception of those who perceive them to be challenged.”

Challenges

Despite these encouraging comments, the design faculty faced a great many challenges. They felt that incorporation of additional human-centered content ran the risk of interfering with the student performance criteria that had been previously designated for the 3rd year program. Some of the disability resource faculty agreed that they did not have sufficient experience in the architectural process or reading plans to adequately understand or comment

on the students' visual representations of their ideas. All faculty agreed that we each needed to learn more about each other's area of expertise, and the application of this expertise in their profession and as built in the 'real-world'. In addition, they all recognized that undergraduate students, having completed only 2 years of study, may lack the skills necessary to graphically represent their passion for design that serves all users, or to verbally express the extent of their understanding of the continuum of human needs in built settings. Thus, several faculty acknowledged that a greater commitment to human-centered design would be helpful.

Currently, there remain many challenges in teaching Universal Design, its incorporation in accreditation conditions, and its adoption in professional practice. Why are writings, media, and academic programs on the topic of universal design rejected or overlooked? What will force, or at least encourage teachers and the design profession to confront and embrace the reality of the breadth of human experience with design?

The primary and repeated response from some faculty was that they already practice and teach this material. Though this may be true, such an approach assumes that students can take on board these principles when they are embedded in a great deal of other material. Especially with the typical overload of assignments with other foci, studio culture of competition for compelling visuals, and the students' perception of what might achieve the best grades.

Common observations include:

- Students don't have time to read the given studio project overload
- Faculty don't have time to update knowledge or materials
- Administrators face accreditation schedule conflict and curriculum overload
- Professionals feel they already teach code and integrate concepts

All wish they were more fluent in universal design, and are sensitive to not having time to improve their knowledge or curricula.

Initially, the BERKELEY PRIZE faculty felt that our challenge was primarily of a logistic nature. The integration of additional content in a densely packed, accredited curriculum that addressed many NAAB student performance criteria focused on tectonics, land ethics, and learning visual representation, were assumed to impose too many limitations on the time available for students to think about universal curricula. One faculty member noted that, *“incorporation of human centered outcome criteria into the entirety of our taught coursework, enhanced the students’ experiential and design thinking skills.”*

While surveys and design projects demonstrated their appreciation of direct interaction with user/experts, students felt unable to dedicate sufficient time or attention to the additional neuro-architectural assignments as well as their tectonic and land ethics assignments. Although the faculty acknowledged the value of regular contact and open discussions with user/experts, there was little time afforded to conversation that would have helped students and faculty to ask the ‘hard questions’ or to break down barriers to understanding.

A greater commitment to human-centered design in studio is essential. Pre-course workshops with user/experts are recommended so that all studio faculty may become equally fluent in universal design. User/experts should also spend time in discussion and workshops to learn about real-world constraints on design. In addition, faculty recognized that undergraduate students, having completed only 2 years of study, may lack the skills necessary to graphically represent their passion for design that serves all users, or to verbally express the extent of their understanding of the continuum of human needs in built settings.

However, students are not lacking in a concern for ‘empathetic design’. I have found that students in this course, and in all previous courses, have been motivated to learn about design that meets the many needs of many users. It is up to their faculty and the accreditation process to ensure that their curriculum makes time for human-centered design. If courses

cannot accommodate additional assignments, regular contact with user/experts in special lectures, desk crits, and juries will instill empathetic thinking.

To encourage students to take on additional effort, a 'Neuro-Universal Design Merit Prize' was set up and judged by the BERKELEY PRIZE Teaching Fellow and the Disability Resource team. The winner, outspoken in her passion and attention to universal design wrote:

"I may not be able to change the entire world, but now I can begin."

Recommendations

It became clear that many are not equally 'fluent' in universal needs", and that many faculty and students wish to be guided in how to 'model' empathetic studio behavior, communication, and interactions. Whilst it may be easier in general for faculty responsible for teaching universal design to be solely responsible for their own syllabi and lectures, this slows the dissemination of knowledge.

Over the course of BERKELEY PRIZE studios, Universal Design, Environmental Psychology, and Neuro-Architectural classes, courses and studios taught at four universities over the past decade, it was found that regular and repeated interaction with user/experts was the most effective means to build empathetic thinking and to break down barriers to understanding. The hard work required to merge disciplines and teach this content across all courses must be undertaken if we are to accelerate the adoption of universal objectives in educational and professional practice.

Post-course discussions and surveys indicated that learning in the context of a neuro-architectural conceptual framework and universal design principles offered opportunities for students to incorporate knowledge about sensory processing, space perception, and cognition, and to create designs to achieve more comprehensive objectives. The importance of peer-to-

peer conversations, networking, and iterative interaction among architecture students, educators, and individuals with disabilities were also demonstrated.

A greater commitment to human-centered design is essential in education and in practice. Pre-course workshops with user/experts will enable all faculty to become 'equally fluent' in research-based Universal Design. User/experts should also spend time in these discussion and workshops to learn about the process and real-world constraints on design.

The way in which architects address the needs of a diverse society will change most rapidly if we synchronously address the attitudes of the current generation of professionals, scholars, and teachers along with their students. In order to achieve greatest progress, knowledge building among the faculty, both designer and user/experts should engage in deeper understanding of the complexity of each other processes. While some resource experts in our group had a great deal of experience in studio pedagogy, several were unfamiliar to the design process. Similarly, some of the design faculty had limited experience teaching human-centered curriculum.

It is suggested that the key element required for adoption of these ideas is empathetic thinking. It serves the design of carefully controlled scientific studies as well as creative innovation. The propositions below are consistent with strategies that have been used successfully in many programs.

First, we must invest in training our trainers to become fluent in the breadth of needs to be considered in universal design. Faculty workshops (online, interactive or onsite) are highly recommended. At a minimum, an instructional team comprised of a relatively equal share of experts/users and design faculty can create easy to execute syllabi and assignments. This strategy enables new courses to be developed rapidly, and have had demonstrable impact on student engagement and faculty integration. This collaborative and equal approach allows faculty experts to focus on their domain of expertise (be it design, neuroscience, psycho-social,

or universal concepts), without the extra burden of creating new curricula. Of course, as the course is presented, faculty absorb the information passed as they listen to each other's lectures and comments, and a greater understanding results, that applied to the courses that follow.

Second, repeated interaction with expert users who represent multiple modes and needs adds exponential value to the instruction. At a minimum, user/experts in sensory, perceptual, cognitive, emotional, and physical needs should be included in discussion. The spectrum of experts should also represent emerging issues that reflect the changing global and local demographics associated with aging, temperature and climate change, chronic health conditions (obesity, asthma, cardiovascular limitations) in addition to cognitive conditions that are on the rise (learning disabilities, dementia, autism spectrum disorder).

With such rich interactions, students readily understand that they should think beyond the 'ramps and rails' that address physical mobility issues alone. Conversations with those spanning many ages and cultures should help each student and faculty member to assess their own abilities relative to the continua of human functions. Empathetic behavior based upon a deeper understanding of diverse and dynamic changes in each person's skills, abilities and perspectives should replace anarchic modes of studio competition, and be superseded by reward for collaboration, inclusive design and creative evidence-based innovation.

Third, design students are more than able to learn and execute scientific design thinking, articulate well-formed design hypotheses, and critically analyze evidence. Regardless of age or previous training, undergraduate and graduate students were able to analyze the interaction of physical form, human responses, and universal outcomes. The use of a 'neuro-architectural' grid is helpful in guiding faculty to talk about the response of the mind, brain, and body in terms of behavioral responses to physical elements and design conditions. It steps

students through the process of prioritizing and ranking the user benefit derived from multiple, yet often competing, design needs. Critical to this mode of inquiry is the recognition that experts should be consulted to provide the most up-to-date and rigorous data, and to review design interpretations to ensure that such data has been generalized and translated in a manner that appropriately reflects the depth and strength of evidence. The result demonstrates that students integrate this approach in all projects, seeking to go beyond ADA minima, and assuming universal design as a matter of course

Finally, **fourth**, the modes of collaboration described in the three points above, are consistent with current architectural practice that utilizes sub-contractor specialists, and with the emerging integrated project delivery approach. The concern that such deep knowledge cannot be integrated into densely packed accredited architectural programs is overcome by welcoming experts and new modes of thought within the design studio, where each design faculty member may continue individual studio critiques, while expert users follow-up with specific observations in desk critiques or small group conversations. In this mode, users will gain an appreciation of the rigors and constraints of the architectural process, and design faculty will gain deeper knowledge and become more fluent in universal needs. The architectural profession and academic scholars should proudly acclaim this trans-disciplinary approach, highlighting their ability to utilize the burgeoning research now available in the 'information age' for the betterment of human outcomes.

Together, these activities will yield a global resource that will spread the impact of universal design. The creation of up-date educational modules using contemporary digital media examples will engage and inspire students, emerging professionals, and policy makers. A web presence that connects local and global expert users and faculty may serve online course development, workshops, seminars, and the accreditation bodies.

The resultant spread of knowledge will inform professional codes, regulations and recommendations in practice, in addition to a 'grass-roots' demand for 'design for people'. Despite the constraints encountered, the exposure to neuro-universal concepts resulted in a significant shift in student attitudes. Most rewarding was a comment from one of the students, a user/expert, who observed a dramatic change in his peers compared to his previous 2 years with the same cohort.

"I can assure you that you have had a great impact on the way students think."

Lessons Learned : Empathetic Design

Despite the need for students to acquire understanding of universal needs, and the ability to apply accessibility laws, encouragement of socially and environmentally creative design remains restricted. Indeed, the greatest student engagement and personal pride was observed when students encountered the real-world site challenges of peers on a difficult site. If faculty and disability guidelines for 'inclusive behavior' were discussed more openly, students and faculty may be less concerned about highlighting disability and more open to design for inclusion. What is required is the development of empathic design. Derived from the Greek linguist roots combining 'em' (in) 'pathos' (feeling), an empathic approach develops the skills and abilities to understand and share the feelings of another must be included in all architectural classes.

The Future: Students Teaching Teachers

Today's students also play a great role as innovators in this new pedagogy. The world-wide web provides the means to encounter all disciplines, and have developed the expectation and power to incorporate new perspectives in their design process. As the world of neuroscience expands and reaches this global knowledge network, students are on their own accord, including brain monitoring tools and immersive architectural simulations to explore the impact of design on human outcomes. (Tyler / Hannah / Zach xxx). The growth of digital biosensors and location trackers that combine 'crowds' of human data in 'big-data clouds' places clinical information in the hands of users, who are empowered to analyze and express their needs and desires for the design of places where they work, live and play. This adds fuel to students' desire to use biosensors and brain trackers to track their own wellbeing, and during their own design research.

A number of emerging technologies offer to increasingly included individuals with disabilities in our communities, and students are leading the way in expecting socially equitable design. Just as professional design courses allow for hand drawing as well as digital visual simulations and fabrications, so too will neuroscientific principles be included in curriculum to consider the impact of design on all people and places.

We as faculty and professionals should rush to match our design process and pedagogy to take on this philosophical revolution and lead changes in practice that serve all peoples in built places.

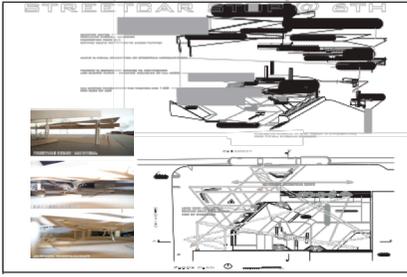
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IMAGES

To be attached







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The “How To?” of making architecture reflect its social basis has only now begun to be investigate in depth. For instance, while actively engaging user/experts in the design process, we often rely on our own interpretations instead of established data analysis methods as applied in the social sciences. How to reinforce architecture as a social art through adoption of the rules and methodologies of the social sciences is at the heart of this chapter. Two different approaches used at undergraduate design studios to rigorously mine data to inform the design are explored. The first approach focuses on the collective data assembled in an organized public engagement event, while the second approach focuses on collective data analysis following individual data collection. The results, based on the author’s work in Hong Kong, are informative and surprising for both social artists and social scientists alike. The result? The first step towards actual information-enhanced design.

CHAPTER 6

The Social Science of Architecture: Data Collection and Analysis

Joseph Wong

“不要搞奇奇怪怪的建築”

(“No more weird architecture.”)

Xi Jinping, Chinese President, 2014

Introduction

Home to “visionary buildings” from the “Big Boot” (“大靴子”) (Louis Vuitton Shanghai Hongqiao L’Avenue by Jun Aoki), to the “Big Underpants” (“大褲衩”) (CCTV Headquarters by Rem Koolhaas), and from the “Bird Nest” (“鳥巢”) (Beijing National Stadium by Herzog and de Meuron), to the “Stripy Eggs” (“條紋蛋”) (Galaxy SOHO by Zaha Hadid), architecture students in China and Hong Kong are under strong influence from close contact with works of *Starchitects* from around the world. Inhabiting an urban environment with arguable the highest concentration of buildings designed by big-name architects in recent years, students learning architecture in Hong Kong are often found focusing more on creating a product of instant

gratification through formalistic statements than learning a process in which various considerations – technical, functional, environmental, users’ needs, etc. – are balanced.

Mitchell (1993, p.xii) had lamented the “divorce of architects” concerns from those of “design users” with Richard Meier’s Bronx Developmental Center as an example. Completed in 1976, the building had won recognition from the profession with a wide array of design excellence awards *before* its occupation by users in 1978, as well as a lawsuit from the clients *after* due to the failure of the cool aluminum and glass box design to satisfy the client’s specification of a “warm, home-like feeling.” Moreover, despite its failure to serve the client’s and users’ needs, the building was praised as “one of the treasures of late 20th-century architecture” by architects and historians when it was renovated and expanded into premium office space in 2002 (Martin, 2002). Almost forty years later, this de-coupling of what the architects *want* from what the actual users *need* has only grown deeper with literature and magazines focusing on “exciting” and “provocative” forms. The Information Age of Facebook and Instagram had further reduced the common discourse of architecture to one of debating, “What does it look like?” not, “Is it any good?” (Arit, 2014) Present day architecture, and more significantly, architectural education, continued to be dominated by questions of form, not a critical consideration of forming the question.

This chapter describes two undergraduate architecture design studios conducted under the support of the 2014 BERKELEY PRIZE Teaching Fellowship at the Department of Architecture and Civil Engineering of the City University of Hong Kong, which emphasize a user-driven agenda over formalistic manipulations: a social investigation over artistic expression. While focusing on promoting architecture as a social art, these studios also explore architecture as a *social science* – moving towards *information-enhanced design* – to adopt more structured data collection and analysis approaches methods when engaging user/experts as consultants (Ostroff, 1997). It must be however stressed that the methods presented here are only two of many tools that architects and architecture students can utilize to engage users as experts.

Eliciting more debate can only be healthy to the development of architectural design with strong user/expert input, as Lifchez and Clavan (2005, p.64) remarked, “Even among academics and practicing professionals there is little consensus as to how to discuss, let alone attack, design issues related to individuals who have never constituted the traditional notion of a “client group.” This chapter is not about the translation of information into design ideas, but the interpretation of the information itself.

Users As Expert Consultants

When discussing the critical information that needs to be collected from users to make design decisions, Jones (1992, p.222) raised two key objectives to pursue instead of asking questions directly relating to initial design options:

- 1) To identify the normal activities relating to the design, and
- 2) To identify all major and minor criticisms of design precedents.

Before designers can come up with design solutions, they must first try to understand the problem on hand. Far too often, architects design new buildings with all the good intentions of improving the experience of everyday activities in terms of effectiveness, efficiency, comfort, interest, and so on, without an understanding of *how* these activities are performed *normally*, or worse, without an understanding of *what* these activities are. As a result, users are forced to change their behaviour to adapt to the building, rendering all such “good intentions” moot.

Noticing that too many designs, not just architectural but also industrial, engineering, product, and so on, seemed to be amplifying people’s deficiencies rather than help overcoming them, Jones concluded that we need to strive towards “people-dependent design,” solutions that “would work *because of people*, not *in spite of*” (Jones, 1991, p.xxxviii). This echoes Lifchez’s

(1987a, p.15) observation on designs for the physically disabled:

“I then began to understand why conventional institutions designed for special populations fail: They are based on the misinterpretation of the residents’ or patients’ genuine need for a dependent relationship as the need for custodial care, the provision of which juvenilizes the residents and patients.”

In architecture, it may simply mean creating familiar surroundings for users where people can instinctively know how to use the space because the space supports the way they carry out their activities in the most comfortable way; a space that helps them go about their normal activities, not asking them to change their behaviour and adapt to the space.

Hertzberger (1991, p.28) called this the “safe nest”:

“If you don’t have a place that you can call your own, you don’t know where you stand! There can be no adventure without a home-base to return to: everyone needs some kind of nest to fall back on.”

This however does not mean that architects should strictly follow only the users’ needs and desires and create spaces to predetermined specifications with no design innovation to speak of. Instead, the “safe nest” enables innovation by providing the fall back users can rely on thereby encouraging them to experience new design innovations with a more open mind.

Hillier and Hanson (1986) spoke of a “major disjunction” between architectural critique driven by images and words and the practicalities that define the experience of buildings. The focus of architectural discourse needs to be put back on the complex network of relationships among users, objects and spatial system defining the social nature of buildings, which must be

“understood and experienced more than seen” (p.3). Pelli (1999, p.182) called users the “lifeblood of architecture” whose needs buildings are designed to house. Architectural design should derive from the users’ needs and determine the objectives and functional organisation from them. The actual users of the network of spaces should be treated as “consultants and not surrogate clients” (Lifchez, 1987a, p.7). There is also a parallel in the field of product design through *co-design*, in which designers increasingly view users as important collaborators in the success of professional design projects (Ylirisku et al., 2007). With products increasingly used in a diverse range of real-world situations, designers are searching for new ways to put themselves closer to actual work / live situations to create better-informed design solutions.

Setting up the Projects

The two projects introduced in this article had explicitly incorporated new elements designed to ensure that students begin to appreciate that “the design process had to begin with an understanding of the client and of how to acquire that understanding” (Lifchez, 1987a, p.16). There were set up with the specific question of: How to obtain a detailed understanding of the established practices of users in going about their everyday activities in informing the design of new systems (Crabtree, 2003)?

The emphasis was therefore not only on *what* information was acquired but on *how we went about acquiring such information.* Present participatory design and community engagement process commonly mold the participants to work within the domain of our processes and speak our language – bubble diagrams, clay models, kit-of-parts templates, sketch plans, etc. On the contrary, the user engagement exercises in these studios were set up outside the architectural students’ familiar territory of abstract drawings and diagrams to come back down to concrete earth to speak the users’ language, which ironically is not a communication form given much emphasis in architectural schools (Lifchez and Clavan, 2005).

We take the architecture students out of their comfort zone and put them into the users', allowing the latter to take over the process and to take up the role of expert as they were expected to.

At the beginning of the project, the studio tutors had surmised that the focus on the users' input would revolve around two themes: the desired features of the new building and the relationship among various functions. The starting point of the projects was therefore not on thinking about *objects* as the outcome of design but the determination of the *conditions* they design for. As a design endeavour, "Buildings may be comparable to other artefacts in that they assemble elements in to a physical object with a certain form; but they are incomparable in that they also create and order the empty volume of space resulting from that object into a pattern. It is this ordering of space that is the purpose of building, not the physical object itself." (Hillier and Hanson, 1986, p.1) The user/expert engagements were set up to not only look at the desired ordering of space, but also to further take the whole thought process one step back to determine what kind of spaces are to be ordered.

One of the three major problems in engaging user/experts that Lifchez had mentioned (1987b, p.68-69) was the difficult task of appropriating their contribution as consultants:

"We wanted our students to relate to the design consultants as consultants and not as clients. That is, we wanted them to consider what the consultants said, to evaluate it, and to accept or reject advice according to their own understanding of what the design exercises asked of them as architects. We did not want students simply to acquiesce to the consultants – to take order or slavishly incorporate every suggestion, every personal need into their designs. Nor did we want students to sidestep any discomfort in confronting the consultants' disabilities simply by trying to please. The consultations

were to impel the students to take account of a range of complex human issues, not merely to settle for a set of architectural solutions.”

The importance of these exercises is to create an environment for students to ignite a sense of not only asking the formalistic question of, *What to design?* but rather to directly ask, *Whom to design for?*, and *How to design for them?* Ylirisku et al (2007, p.9) argued that co-designing with users can be more systematically framed with a more structured procedure as well as immersion into real world situations: “These are fundamentally about the framing of the ambiguous design opportunities as well as framing a focus upon the work practice of the users.” Both studios presented in this article adopted more systematic processes of collecting and analyzing information from users experts, which served as scaffolding for the studio process.

The approaches to user/experts were different in the two projects, catering to the gap in abilities between the two groups of students – students just getting into the program and students in their final year of the program. In the first project, more senior students were brought directly to the site to meet with residents and users, who were organized in groups representing different interests. The consultation with the user/experts and the processing of the opinions collected were done collectively together with the user/experts in a structured formal setting with the help of local District Councilors. In the second project, first year students were asked to interview potential users individually and come back to share their findings with other students working on the projects with the same target user group. Combining these findings, they used a software called Gephi to organize the data into a inter-connected network and analyze them to identify key concepts. With inexperienced students who were still grappling with the fundamentals of architectural design, we introduced a common method to systematically extract and structure the data from the interview transcriptions.

The main objective of these engagements was to employ established methodology to elevate the user/experts' input from mere anecdotes to applicable contributions in a wider sense. The first group of students engaged the user/experts as a group and processed the findings together with them, and the second group engaged the users experts separately and process the findings in their absence, but with a rigorous analytical method. While the former process dealt with rigorously collecting data, the latter dealt with rigorously analyzing collected data. The two different engagements with user/experts each in its own way “added a measure of reality with which most students had had no experience” (Lifchez, 1987a, p.16) but yet this unfamiliar reality was intended to serve as the most important force in driving the design. The following are more detailed accounts of the two studio user/expert engagement processes.

The Projects

Undergraduate architectural studies at the City University of Hong Kong consists of two government-funded programmes in a “2+2” model offered under the Department of Architecture and Civil Engineering (ACE) – a 2-year Associate of Science in Architectural Studies programme (AScAS) followed by a 2-year “top-up” Bachelor of Science (Honors.) in Architectural Studies programme (BScAS). The “top-up” BSAS only offer courses at the Year 3 and Year 4 levels. There are 100 places at the AScAS level and 50 places at the BScAS level. Therefore, only students finishing at the top half of the class in the AScAS can normally advance to the BScAS. With exiting students expected to join the work force and contribute to the industry, a problem-based learning (PBL) approach is adopted for the AScAS to more closely integrated subject area learning with the design studios. The BScAS maintains a traditional architectural education structure of design studio learning supplemented by parallel subject area courses.

The first project presented below took place in Semester A (September to December) of academic year 2014-15 with 37 BScAS Year 4 students in the course CA4186 Architectural Design 6: Urban Interventions. This was a semester-long mixed-used high-rise project spanning 13 weeks. All 37 students were involved in the user/expert engagement activities. The second project took place in Semester B (January to May) of academic year 2014-15 with 24 AScAS Year 1 students in their first ever architectural design studio course CA19101 Integrated Studio 1 – Small-scale Buildings. The entire cohort had 98 students divided into four tutor groups and only one tutor group was involved in the user/expert engagement activities. There were two 6-week long projects in the semester and the involvement of user/experts took place in the second project, a small-scale community library.

YEAR 4 STUDIO – HEALTHFUL VERTICAL VILLAGE

Project Brief

Emblematic of Koolhaas' (2002) concept of *junkspace*, the ubiquitous massive podiums of shopping malls and car parks dominate the urban fabric of Hong Kong (Figure 1). These unending expanses of interior spaces "promote disorientation by any means" (p.175). Like candles sitting on a birthday cake, the residential towers and their inhabitants above are disconnected from the urban fabric, killing off any possibility of a vibrant street-scape. Extending 40 floors or more with eight apartments per floor, a typical 5-tower development is a *vertical city* that houses over 5,000 people up to 20-30 meters (66 to 100 feet) above street level (Fig. 1).

Besides the displacement from street life, these extensive impenetrable podiums obstruct much air circulation into the dense city, further adding to the problem of *urban heat island* (UHI) effect in Hong Kong, where increases of up to 10°C (18°F) in urban areas

compared to suburban areas is not uncommon⁹. The Hong Kong Buildings Department introduced a new set of Sustainable Building Design Guidelines in 2011 to counter this problem and stipulated a minimum permeability of buildings for new developments to facilitate air movement in dense urban areas¹⁰. However, the outcome is mostly limited to two-dimensional geometric considerations of the physical massing (Fig. 2). Moreover, this new statutory requirement has re-opened the podium previous dominated by commercialism and economics for re-examination based on social, environmental and health considerations. While others see the permeability requirements as additional constraints on the design of high-rise residential developments, this proposal sees this as *an opportunity to re-inhabit the lower zones of a building and inject much-needed life back to the spaces near the street*.



Permeable Elements

Provision of permeable elements within, above, below or between buildings

- clear opening size of such a permeable element is not less than 3m

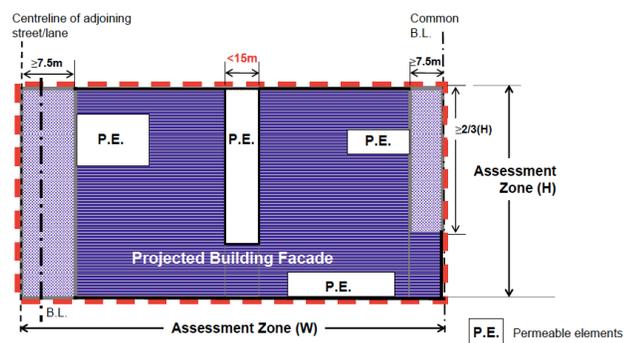


Figure 1 (Left): A typical podium-type development with 11 residential towers sitting on a 7-storey carpark. (Source: Wikipedia user / Baycrest. License: CC-BY-SA-2.5). Figure 2 (Right): Diagram explaining the permeability of buildings requirements. (Source: Hong Kong Buildings Department.)

⁹ Green Power Hong Kong (2012). *Report on Urban Heat Island Effect in Hong Kong*. Available from: <http://www.greenpower.org.hk/html/download/concern/gp_urban_heat_island_report_2012.pdf>. [28 May 2014].

¹⁰ Hong Kong Buildings Department (2011). *Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers APP-152: Sustainable Building Design Guidelines*. Available from: <<http://www.bd.gov.hk/english/documents/pnap/APP/APP152.pdf>>. [28 May 2014].

The major objectives of this studio were:

- Re-inhabit the lower zones of a building and inject much-needed life back to the spaces near the street;
- Exploration of the permeated three-dimensional form as an enhancement of social interaction and health conditions of the living environment; and
- Actively engaging existing residents, shop-owners and other stakeholders of the community to inform your design.

Redevelopments of old urban districts in Hong Kong are often perceived as a disruption to the local community and result in displacement of current residents. This studio project aims to change this perception through rigorous design and focuses on a real government redevelopment project located at a busy city corner of Argyle Street and Canton Road in Mongkok where the old Mongkok Market stood (Fig. 3). Despite the rundown state of the built environment around Mongkok, it is home to a vibrant community of mom-and-pop shops, markets, Chinese medicine practitioners, local food stalls, etc, that have grown into an integral part of the lives of the mostly under-privileged families in the vicinity. The studio project examines the possibilities of regenerating the community by rebuilding a better environment to house these local features and extend this vibrant fabric upwards to connect with the new living environment to form a healthful vertical city. The site area is approximately 1,250 m², giving a total gross floor area of 11,250m² with a plot ratio of 9. Maximum site coverage is 60%.

Hong Kong is inevitably a high-rise high-density environment (Fig. 4) due to the lack of developable land. Only 25% percent of the land in Hong Kong is developed. With an aging population, one of the most affordable and readily available forms of exercise for the elderly is

sitting right outside the doors of their very own apartment units – the staircase. However, most staircases in high-rise buildings are hardly used because they are fire escape staircases intended for use only in times of emergency, e.g. a fire. As a result, staircases are designed to be hidden away inside the central service core of the building with little or no sunlight and with the steepest gradient allowed to save space. It is not the most suitable staircase for the -elderly to use.

In this redevelopment of the old market building into a high-rise building consisting of a Community Health Centre, Elderly Centre and other community facilities, we explore the possibility of using programming to create local movement networks to encourage the users, especially the elderly, to make use of staircases instead of elevators for vertical circulation when they move up or down only a few floors.

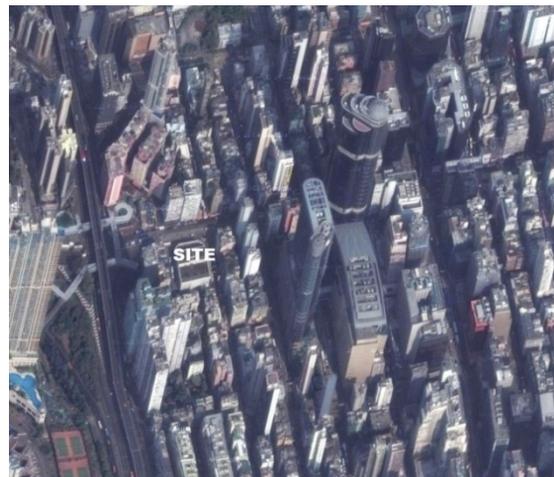


Figure 3 (Left): Digital model of the site showing the urban fabric of the old neighborhood to the north in contrast to the newer developments to the south. Figure 4 (Right): Aerial photo of the site showing the very high density of the Mongkok district, which is typical to many areas in Hong Kong.

Using the parameters set out in the new Sustainable Building Design Guidelines as a base, in particular those requirements on permeability of buildings, the studio explores strategies for controlling **density**, **proximity** and **porosity** to reinterpret the ultra-high density mass housing block as a vertical extension of the city's fabric and activities:

Density: disposition and optimization (of area) of existing and new programs to foster a vibrant local community and to control the bulk of the new architectural interventions.

Proximity: generation of physical and visual network of spaces to improve connectivity among programs and from the lower levels to the higher levels of the vertical city and establish desirable destinations.

Porosity: control of permeability to facilitate movement of users and optimize interaction with the neighbourhood and the community.

Re-introducing vitality back to the street-scape of the dense urban fabric goes a long way to promote healthy living among under-privileged communities as studies have shown that walking – often the *only* affordable form of exercise to these families – in a high density city increases significantly in a climatically comfortable and visually pleasant urban environment with salient destinations.

Schedule of Activities

Week 1-3

- Students were asked to spend the first week coming up with an initial

scheme. Most of these took the form of a section showing the vertical distribution of functions and some considerations of permeability. Color-coded function diagrams were also drawn to highlight the relationship among various functions (Fig. 5).

- Students have also searched for background information in a different manner than before: besides the basic statutory documents – lease, outline zoning plans, etc. – some students collected meeting minutes, press releases, newspaper clippings, etc., of the recent negotiations between the residents and the government on the program of the redevelopment. For the first time ever, they looked for information for a studio project from the District Council website of the Yau-Tsim-Mong District, which is the larger district combining our site Mongkok and the two neighboring areas Yaumatei and Tsimshatsui. These background site analysis information were included in the final presentation to give the guest critics a general impression of the site and its surrounding.



*Figure 5 (Left): Pin-up and discussion of early design ideas before meeting user/experts.
Figure 6 (Right): Post-it notes used to identify and organize initial thoughts on programming in the first studio meeting.*

- An exercise with post-it notes was conducted to facilitate students to

express their first ideas as *issues* (what are the problems), *desires* (what are the solutions), and *strategies* (how to generate the solutions) (Fig. 6). Each student posted their ideas – alignment of issues-desires-strategies – onto a wall and a discussion followed. The students mainly deliberated on how different issues and desires could be matched with the same strategy and vice versa. After several rounds of discussion and moving post-it notes around and taking out ones with similar ideas, the students' ideas were rearranged into broad categories.

- Guest Talk: The architect who helped the government to develop the set of Sustainable Building Design Guidelines, Mr M K Leung, Director of Sustainability of local firm Ronald Lu & Partners Ltd, delivered a talk on Permeability of Buildings for improving air movement in the dense urban fabric of Hong Kong. He introduced the general principles behind the permeability guidelines and calculations, and explained the implications on the Mongkok area, one of the densest areas in Hong Kong.

Week 4-6:

- The original plan was to conduct the surveys and meet the user-experts during this period. However, our plan was severely disrupted by the Umbrella Revolution / Occupation Movement. The occupation site in Mongkok was just two blocks from our site and since the movement was initiated by university students and student groups, the three studio tutors collectively decided that it would not be safe for students to go ahead and conduct an university project near the occupation area. Consequently, the planned questionnaire surveys were deferred to be conducted during the community engagement exercise.

- With an idea of the programming in their mind, students began an investigation onto how they can combine varying degrees of density and porosity with a series of architectonic models. They work on a 3x3 matrix – low-medium-high density

combining with low-medium-high porosity – to examine transformational strategies and the possibilities for different types of programs. The resulting matrix of architectonic strategies formed the kit-of-parts students would use to compose their high-rise design. Students took photos of each round of changes as record of the process (Fig. 7).

- The general direction was to define porosity as the amount of non-programmed social space and open space, such as landscape terraces, foyers, common lobbies, etc., associated with programmed spaces, such as elderly clinic, library, shops, etc. A more *porous* area would have a higher proportion of non-programmed spaces but, as a result, a lower *efficiency* in terms of usage. Student could not indefinitely increase porosity and blindly provide more and more interaction spaces to the users due to statutory building density controls but must carefully balance the proportion of low and high porosity spaces.

- At the end of this exercise, students matched each of their proposed programs to one (or more) of the resulting density-porosity combinations in their 3x3 matrix (Fig. 8). Extensive debates broke out during the pin-up when students put up their own program-strategy alignments as there were some very obvious disagreements on how porous a program should be or what density of each program was needed. Plugging these “space chunks” onto the circulation/service core according to their vertical distribution of programs formed the framework of their schemes.



Figure 7 (Left): Tectonic models by students exploring different combinations of density and porosity in a 3x3 matrix. Figure 8 (Right): Interim crit of tectonic models.

Guest Talks: There were two guest talks during this period:

- Mr Lawrence Mak, Project Manager, the Hong Kong Urban Renewal Authority. Mr Mak is in charge of the actual Mongkok Market redevelopment project. He shared his views and the many concerns from the government side as well as his experience of engaging different stakeholders with urban renewal projects. He also presented a number of projects on redevelopment of old districts.
- Ms Wong Shu Ming and Mr Chan Siu Tong, District Council Members of the Yau-Tsim-Mong District. Both Ms Wong and Mr Chan are involved in the Mongkok Market redevelopment as representatives of the local residents. They work very closely with the local community on many issues. They shared with students the major concerns of the residents on this project. They also helped to organize the community engagement event held in the later part of the semester.

Week 7-10:

- Moving on from their tectonic models from the 3x3 matrix, students began initial attempts at their design moving back and forth between using models and drawings. Pin-ups were held every week to get maximum feedback from tutors and fellow students to prepare them for the upcoming engagement with the user-experts. The major outcomes of this series of pin-ups were not design solutions but more questions for the user-experts. Every design decision seemed to be linked to the preference of the users.
- The public engagement exercise finally took place on 1 November (Week 10) after much delays due to the Occupation Movement. The venue was a classroom in

the Heung To College in Mongkok, located about 15-20 minutes walk from the site. There were two sessions of meetings with the user-experts with two groups of users in each session. The first session consisted of housewives (6 nos.) and elderly (6 nos.) and was attended by 17 students while the second session consisted of students (5 nos.) and workers (5 nos.) and was attended by 18 students. 2 students missed the engagement exercise due to sickness. They were tasked with compiling the results and findings.

Each session lasted about 90 minutes and was divided into 3 stages:

- What is needed?
- What are useful strategies?
- What is your ideal new Mongkok Market?

A more detailed account of the user/expert engagement exercise is given in the next section.

Week 11-13:

- The entire first studio session after the community engagement event with the user-experts was used to share views and findings from the event. Many students formed new ideas on programming, especially on introducing new programs that they had not thought of before meeting the use-experts and, more significantly, new relationships between programs.
- The final two weeks of the semester was spent on finalizing their schemes and production.
- After an extension was granted to take into account the disruptions caused by the Occupation Movement, which was still on-going until the end of the semester, the final crit was held on 13 December. There were altogether 6 panels

involving over 20 outside guests. The two District Council Members who helped with organizing the community engagement event also joined some of the panels. However, they gave very limited comments as they felt uncomfortable giving critique on the design schemes in front of academics and professionals.

User/expert Engagement – Collective Design Workshop

Before the main user/expert engagement event, a guest talk cum discussion was held with Ms Wong Shu Ming and Mr Chan Siu Tong, District Council Members of the Yau-Tsim-Mong District in Week 8 (15 October 2014). Both Ms Wong and Mr Chan are involved in the Mongkok Market redevelopment as representatives of the local residents. They shared with students the major concerns of the residents on this project. This served to provide some background information to the students before they meet with the user/experts in the Collective Design Workshop.

The relatively structured public engagement exercise finally took place on Week 10 (1 November 2014) after much logistical delay due to the then active Occupation Movement. The venue was a classroom in the Heung To College in Mongkok, located about 15-20 minute walk from the site. There were two sessions of meetings with the user/experts with two groups of users in each session. The first session consisted of housewives (6 nos.) and elderly (6 nos.) and was attended by 17 students while the second session consisted of students (5 nos.) and workers (5 nos.) and was attended by 18 students. Two students missed the engagement exercise due to sickness. The user-experts were identified with the help of two District Councillors from the region where the site is located.

Before attending the user/expert engagement exercise, a briefing session was held with the students to explain to them the process and key areas to pay attention to. Each session lasted about 90 minutes and was divided into 3 stages borrowing from the approach of *value*

management (VM):

Stage 1: What is needed?

User/experts were asked to identify the major issues and desires for the project and site. Two to three students worked with each of the user/experts and record down the issues raised. The issues raised covered a wide range of topics, for example, access, functions, materials, elderly and handicap provisions, outlook, and so on. Standard forms were used to record the user/experts' views (Fig. 9). These were then shared with the group towards the end of the session. Each user/expert was given a chance to elaborate on their opinions and answer queries from others. The intention was to let everyone have a chance to learn more about their counterparts' views and build towards a consensus solution. The major aim at this stage was not to come up with solutions but to extract the critical problems and questions that need to be resolved. It was explicitly explained to students during the briefing session that this stage is not about generating design solutions. Instead, it was about learning about the detailed needs to which their design solutions must satisfy.

The studio tutor, in this case the author, acted as the overall facilitator and monitored progress as well as time-keeping. He moved between the two groups towards the end of the session to help facilitate the consensus-building process so that the group collectively identify the most important four to five issues to bring forward to the next stage of deliberations. Students and facilitator took special care to listen very carefully to the views of the user/experts and refrained from giving their own opinions. Their contribution was on process, not content. The decision would be down to a vote if the groups could not arrive at a consensus on which key issues to adopt for the next stage of the process. In the end, only the workers' group had gone to a vote to make a decision.



Figure 9 (Left): General setting of discussion. Figure 10 (Right): Stage 3 discussion in the elderly group.

Stage 2: What are useful strategies?

After deciding on the 4-5 key issues to tackle, the use/experts worked as a group to discuss what are the possible strategies to resolve the issues that were raised. Again, the facilitator and students made an effort to avoid translating suggestions into design solutions too early and keep the discussion as open as possible. For example, when one of the consultants in the elderly group mentioned a neighbouring sitting-out area as a possible strategy for creating better linkage, most in the group thought that the idea was simply to put in “sky gardens” with landscaping as connectors on the higher floors. After some discussion, it turned out that the key attribute of sitting-out areas for this particular user group was not greenery, but ample benches so they could take a rest when moving horizontally across the urban fabric. So, when applied to the vertical village, from this user/expert’s point of view, it is essential to provide seating wherever possible around vertical circulation staircases, even at half-landings, and not large open terraces.

In this stage, students continued to speak to their respective assigned user/experts and go through the key issues one by one asking for possible strategies. It was not critical that the

user/expert must give ideas for each of the issues raised because there were at least five other user/experts looking at the same set of issues. The students also helped to mark down the proposed strategies and, in many cases, used sketches, diagrams, etc, to help the user-experts to convey their ideas. It is important to note that the visualization was solely for the purpose of helping the user/experts to express their ideas better, not for students to prematurely moulding the ideas into rigid designs. The main outcomes the process was trying to achieve at this stage were not the designs themselves but attributes describing designs that were desirable to the user/experts. A similar deliberation and/or voting process was used to determine the most desirable strategies and ideas to be adopted for the final stage of the process.

Stage 3: What is your ideal new Mongkok Market?

The last stage was a participatory design exercise and the entire group, both user/experts and students, had worked together to produce a “design scheme” based on the main strategies and ideas selected from the previous stage (Fig. 10). After the previous two stages, the group had first deliberated major issues and then discussed ways to overcome the key issues, arriving at a set of strategies and ideas. In the four groups, the adopted strategies could loosely be grouped into two types: programming strategies – organization of various functions – and linking strategies – ways to enhance the journey from one program to another by elevating it beyond the mundane experience of moving up in an elevator or going through dark enclosed staircases. On the other hand, ideas raised by the user/experts were mostly features coupled with desired attributes of those features. Due to the limited time, the completed design schemes were mostly in the form of annotated sections and a few representative floor plans. User/experts from each group presented their schemes to the participants with a short questions and answer period after each presentation.

Observations on the user/expert engagement

All the user/experts had participated enthusiastically in the Community Engagement event. Many insights shared in the sessions were crucial information that had never crossed out minds. For example, one elderly lady was the owner of one of the stalls in the decommissioned market. While many students quite naturally included a new fresh market in their proposals, the old lady surprised us all by strongly objecting to putting a market back into the new development because, 1) many stalls in the old Mongkok Market was vacated long before the government's plan for redevelopment due to various reasons, and 2) there are already many street stalls selling fresh vegetables, meat, fish, etc., right across the road from the market and in the vicinity.

The four groups of user-experts gave very different views. On the one hand, the elderly user/experts primarily based their opinions on their understanding of the history of the site and had a strong inclination towards preserving the character of the region. On the other hand, the students and workers did almost exactly the opposite and proposed many new ideas, such as local artist market, to transform the region. One engagement session alone seemed to be inadequate for all the students to gain a deep enough understanding of the different perspectives to make an informed decision on which direction to take.

The other interested thing about the user/expert is the overlapping of ideas among the four groups. Almost every group shared at least a few key ideas with another group despite the different backgrounds. While the housewives and elderly groups, and the student and worker groups shared more ideas due to similar age range, the older and younger user/expert groups also shared some ideas. For example, both the student and elderly groups opined that it is important to open up the ground floor more to facilitate movement as well as to allow more air movement to help improve the micro-climate in the region.

The two District Councillors are very passionate about the project and provided much valuable background information on the many negotiations with the government. But my tutors agreed that the group have to be very careful and avoid becoming involved in the politics of the project as there has been an on-going “dispute” between the residents and the government on the program of the future building, e.g. strong objections to the privatization of the proposed healthcare center.

Student Designs

Students designed their high-rise *Healthful Vertical Architecture* based on their findings from the previous two stages (Fig. 11-14). Most schemes challenged current statutory control regarding building bulk – plot ratio and site coverage – by incorporating “urban open spaces” at various levels in the high-rise building. These urban open spaces played a key role in encouraging the usage of the staircase for short vertical journeys and provided opportunities of exercise for the users. As a result, although the bulk of the building had been increased, its adverse impact on the surrounding environment had actually decreased because the buildings were now much more porous in both the horizontal and vertical directions. Another common strategy adopted by students was the clustering of programs which the users had a good chance of visiting at the same time.

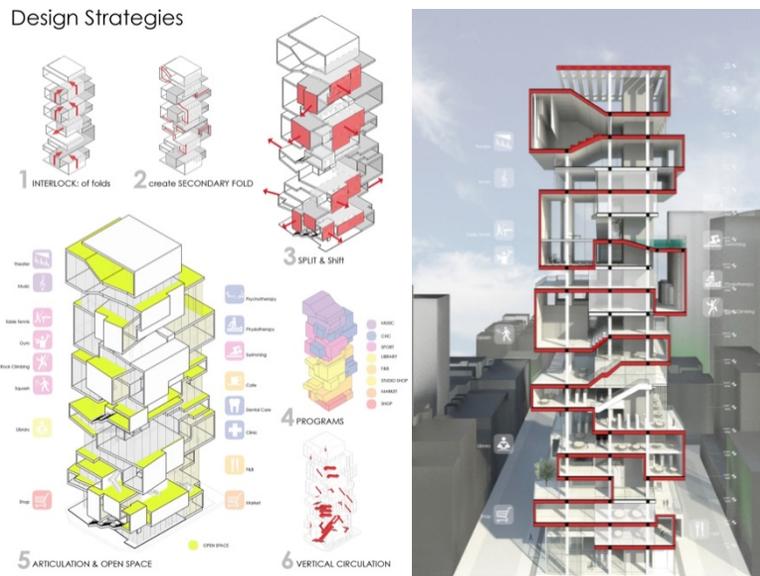


Figure 11: (Left, middle and right):

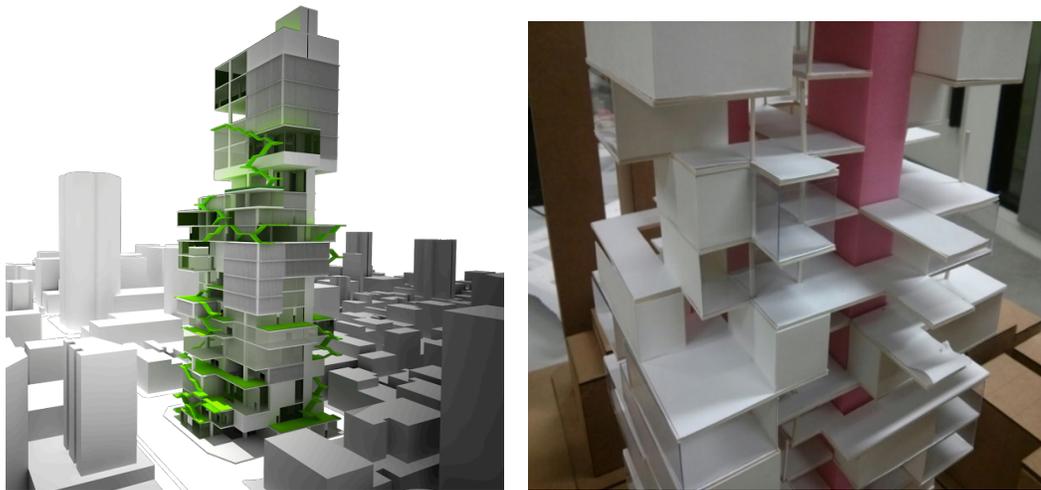


Figure 12 (Left): Diagram highlighting vertical connections in Healthful Vertical Village (by Karen Law). Figure 13 (Right): Student model showing a series of sky-terraces to serve as local connectors (by Teego Ma).



Figure 14 (Left and right): Incorporation of urban farming as substitute for passive landscaping into the Healthful Vertical Village following user/experts' idea to provide locally grown organic produce and to bring elderly and younger generation together (by Matthew Fong).

YEAR 1 STUDIO – COMMUNITY LIBRARY

Project Brief

Project statement from the actual project brief: Vitruvius's ten books informed Alberti's treatise and, thus, turned architecture from a masonry practice into a discipline; Umberto Eco explains the mystery of books in fourteenth century Italy; and Gutenberg's printing press made it possible to communicate the knowledge of both Galilei and Newton, which paved the grounds for the emergence of modern science. The power of the book cannot be underestimated: the beauty of the book continues to inform our daily life also after the introduction of digital technologies. While the book signifies knowledge; knowledge disseminated in the twenty-first century is not limited to books but includes also the digital realm and the array of temporal prints such as magazines, journals, pamphlets, posters, and newspapers. We may question the use of libraries when the knowledge of books overcomes the realm of buildings. Still, however, the

library function expands in current society when specific user groups call for spaces feasible to accommodate the exchange of specialized knowledge. Hence the library becomes a social network, serving as meeting place and venue for the dissemination of niche interests. The creation and cultivation of knowledge in contemporary context goes beyond the formalized routines of institutions and establishments to encompass, also, the fine-grained initiatives of community and neighborhood.

The Library Building: In this project, students were asked to design a public library that reflects their user group's lifestyle and activities. The building should be two stories and complies with stated program requirements.

The Site: There are a total of 4 sites proposed for this project located in the Junction Road Park in Kowloon City on Kowloon side of Hong Kong (Fig. 15). The area of each site is approximately 540 sq.m (site dimensions 20m x 27m). Each tutor group was assigned one of the four sites. The group working with the author was assigned Site B.

The Terrace: The outdoor terrace was essential for the students' design as they were required to create aesthetically pleasing and functionally sound connections between inside and outside.

Design constraints and requirements:

1. The public library shall be designed as a two-story building based on the following space requirement (some spaces can be combined).
2. The design shall include a public library building with indoor and outdoor spaces.
3. A parking space should be provided for two cars with easy access.

4. Develop a set of spatial requirements relevant to the client needs.

The major objectives of this studio were:

- Generate architectural massing concepts that relates to the various characteristics of the site and its context.
- Develop design concepts focused on the analysis of the use requirements of different user types and their preferences.

Students were asked to identify a need within the community and focus on a specific user group, usage type or trend, for example, a children's library, a library for the elderly, an arts library, a library for manga culture, etc. Drawing from information collected from their detected user groups, students first created massing models to communicate the relationship between the urban context and their design intents for a public library. Students' design intents should correlate with the identity of the typical users of their public libraries. There were altogether 92 students in the entire studio divided into four tutors groups. The method employed by students to analyze the information collected form individual interviews of users described below was utilized only by the studio group supervised by the author.



Figure 15: (Left): Location of the four sites in and near the Junction Road Park, Kowloon. (Right): Aerial photo showing the context of Site B.

Schedule of Activities

Week 1

- Students were divided into four groups of 5-6 students each (there were 22 students in the studio group under one tutor). As a group, they discussed which user group they would like to target and each group selected a different topic. The four community library target groups that the students came up with were: children library, secondary school student library, art library and manga library.
- Students visited the site – their first real site for an architectural design project – and spent the first week coming up with an initial massing concept based on the site forces using simple paper and cardboard models. There was a corresponding lecture on site analysis in their Environmental Studies course.
- Besides their individual assignments, students in the same user group were also asked to prepare a presentation on their site analysis findings as a group assignment to be shared with the entire tutor group.

- Students were also asked to speak to at least two potential users of their libraries over the weekend loosely based on the following questions:

- What factors contribute to a comfortable library for your user group?
- What activities do you desire in a library devoted to your user group?
- How would you like these activities to be related?
- How would a library for your user group differ from those for other purposes?

Week 2

- Initial models were mostly focused on external influences only as they were only asked to develop massing concepts. As this was the students' first design studio, most of the initial concepts at this stage were very literal, such as slanting a face of the library massing towards the direction of a desirable view, cutting off corners of the massing to maintain existing pathways, setting back from existing boundaries, and so on. Very few students began to talk about how internal activities were related to the external form.

- Student user groups also shared their site analysis with other groups in short group presentations. It was obvious that different groups had different concerns as influenced by their respective user groups. With a specific user group in mind, the emphasis of the site analysis of each student group focused a lot more on their user group's own users' special considerations. For example, the group working on the secondary school student library was very concerned with noise sources as one of the major functions of the library was to provide spaces for self-study for students preparing for public exams. On the other hand, the art library group was most concerned with natural lighting and paid little attention to noise.

- In the second studio session of Week 2, students within the same group were asked to share their user/expert interview findings with their fellow group mates. Each user group had 5-6 students so there were at least inputs from 10 user/experts to each of the library types. The most surprising element at this stage was the diverse range of user/experts that the students had been able to engage. The children library group not only collected views from children of various ages ranging from 5-12 years old and their parents, they had also spoken to kindergarten teachers and childcare center workers. This resulted in an extremely diverse perspective of views from user/experts that gave the students a much better understanding of the design task they were facing.

- After initial sharing within user groups, students were introduced to using Social Network Analysis (SNA) methods to interpret their findings in a more rigorous and “scientific” manner. More details of SNA can be found in the next session. Students were told to install the SNA software *Gephi* before the class and each user group must bring at least one notebook computer to class with the software installed (Fig. 16). The tutor then went through the process of inputting data into the software step by step with the students to generate their Opinion Network Analysis (ONA) diagrams. The software was very easy to pick up but the data input could be very tedious because the students must input the opinions expressed by the user/experts one by one as nodes as well as the connection between these opinions as edges. Furthermore, students in the same user group must determine whether similar sounding concepts should indeed be represented by one node only or should they be separated as two distinct nodes. Due to the large amount of work required to review each opinion to complete the opinion networks, students could finish their diagrams within the remaining class time and was given the until next studio meeting to do so.

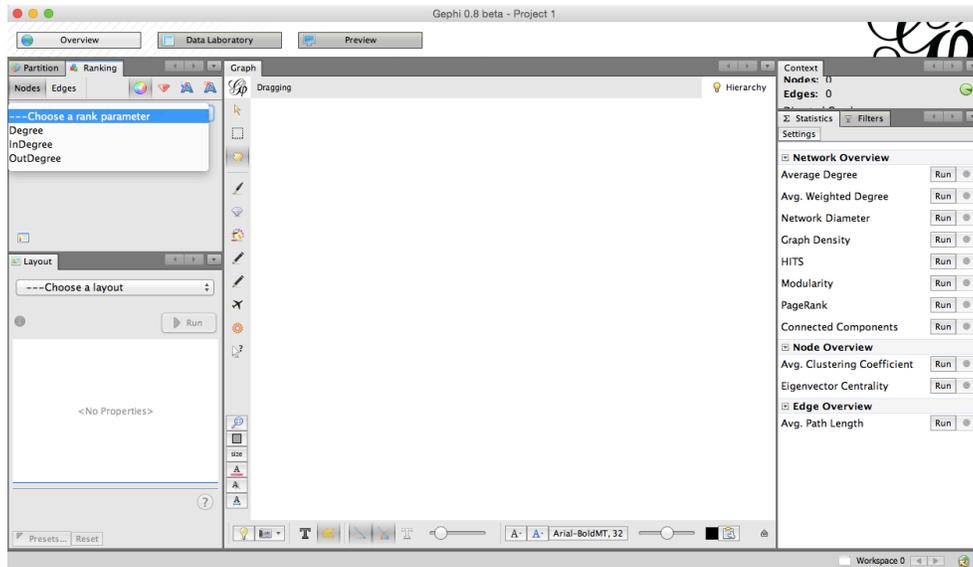


Figure 16: Gephi interface.

Week 3

- The workshop on using Gephi to analyze their findings continued with the completed opinion networks (Fig. 17). These diagrams look just like any mind-maps with inter-connected concepts. The next step was to run different measuring functions of Gephi to allow characteristics of the opinion networks to be calculated. In this exercise, we focused on the two centrality-measures of *degree* and *closeness*. The advantage of Gephi is that it can not only calculate the measures but also allow visualization of the data in various modes. Color and/or size ranges can be used to represent the ranking of values (Fig. 18). Working in groups, the students used the ranking functions to generate opinion network diagrams with values of measures indicated by color and size. Figure 19a shows the opinion network diagram of the children library group with the values degree centrality ranked. In terms of degree centrality – immediate relationship to other factors – “parents” and “teachers” were two important factors that had values close to that of “children.” On the other hand, in terms of closeness centrality – relationship to all factors in the network – “children” was clearly more important than the other factors (Fig.

19b).

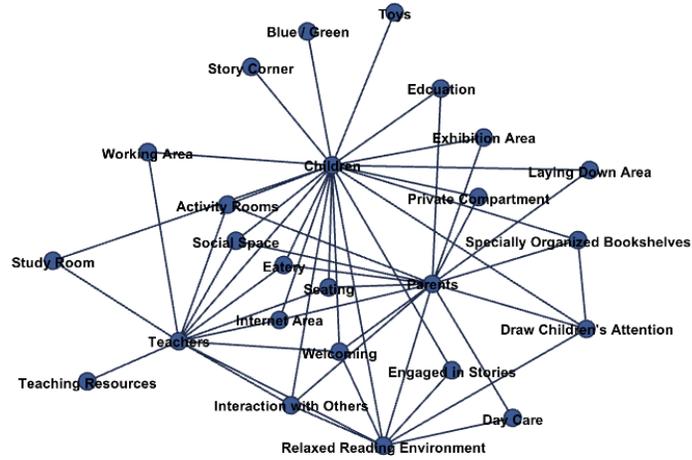


Figure 17: Gephi Opinion Network graph with no indication of ranking of measures.

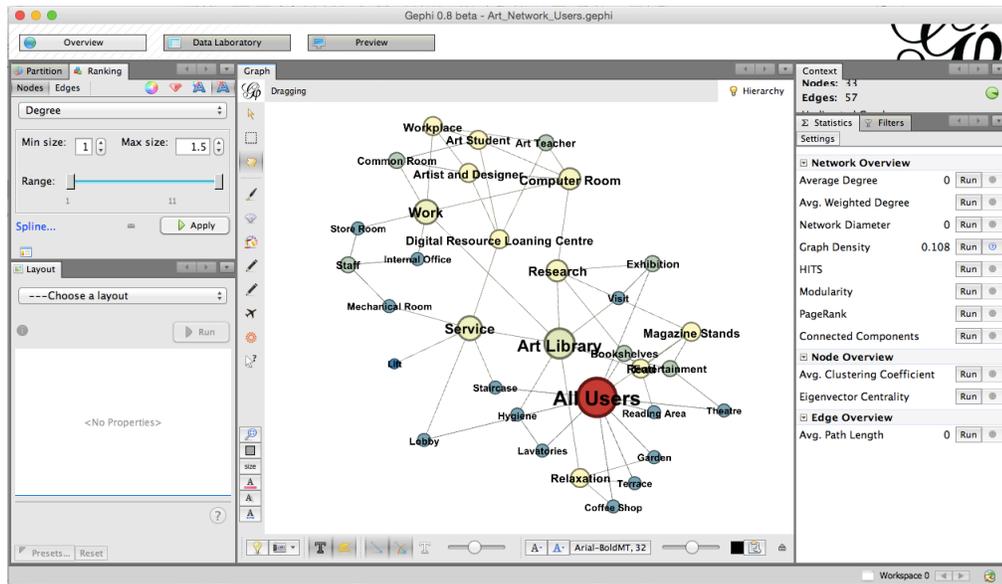


Figure 18: Using ranking of measures tools in Gephi.

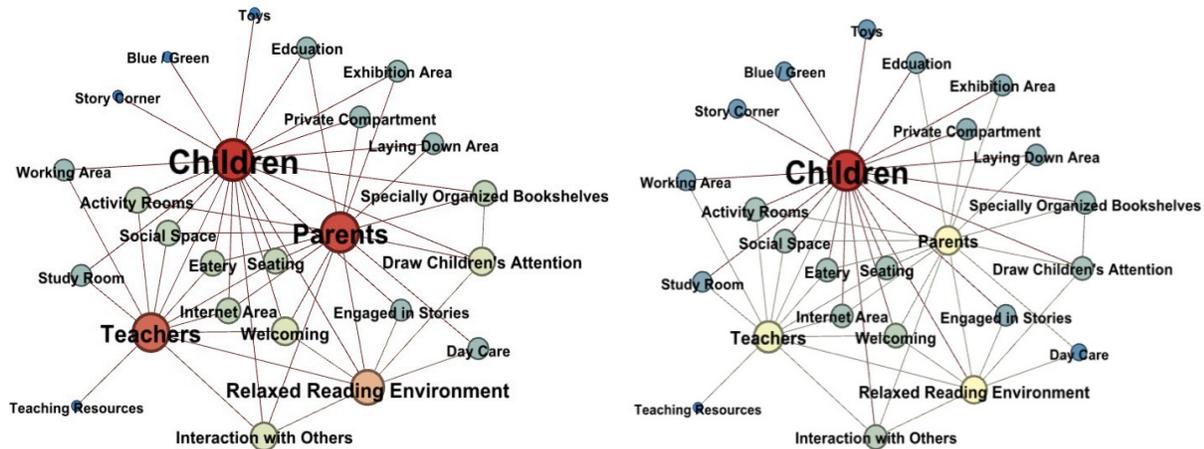


Figure 19a (Left): Visualization of Degree Centrality values. Figure 19b (Right): Visualization of Closeness Centrality values. In both figures, higher values are represented by larger node and label size, as well as color ranging from low values in blue to high values in red.

Week 4-6:

- Week 4 was spent mostly on translating the findings generated from the opinion network diagrams to the students' designs. These were done mostly in the form of program/space organization strategies. It was noteworthy that although the students went through a relatively rigorous method to arrive at a collective understanding of the various input from the user/experts, each student still interpreted the opinion network differently. In other words, the generated opinion network did not serve as constraints to their designs. Instead, it worked more as a foundation on which new ideas could be tested out.
- The final two weeks of the semester was spent on finalizing their schemes and production.
- A joint teleconferencing session was held on 13 April 2015 (Week 5) with the organizers of the Berkeley Prize together with the other two Berkeley Prize 2014 Teaching Fellows and their students. The students benefitted tremendously from this

“face-to-face” sharing and many stayed behind after the session ended to continue to discuss.

- The final crit was held on 23 April 2015. There were altogether 3 panels with at least 2 outside guests per panel. Unfortunately, no user/experts were invited to the final crit.

Borrowing from Social Network Analysis (SNA) – s Opinion Network Analysis (ONA)

Opinion Network Analysis (ONA)

In this studio, we look to the field of mathematical graphs to analyze disparate opinions given by different user/experts as coherent wholes. Primarily, we will look at user/experts as what Watts and Strogatz (1998) refer to as *small-world networks*, in which the typical distance between any pair of randomly chosen nodes are relatively small. *Network models* of views collected from users of different types were constructed by each student by modeling the views as *nodes* and use *edges* to link up related nodes to represent connected views, for example, views that were mentioned in the same sentence or when answering the same question. To collate the user/expert opinions and develop a systematic process of analyzing their relationships and relative importance, the tools and methods of *social network analysis (SNA)* are adopted for assessment. Tangible network measures were extracted from the user/expert opinion networks to identify patterns and distinct categories of attributes. Properties of these networks, namely *network centralities*, were compared to identify key concepts that form the foundation of the students’ designs.

In order to understand the complex web of inter-relationships among the many concepts and views expressed by the user/experts, we adopted methods from social network analysis. Studies on social networks depict units as a set of *nodes* that are connected by *edges*, which

represents different types of relationships (Scott, 1992; Wellman, 2011). The underpinning assumption in social network analysis is that the relational properties among network members are more important than the individual attributes of the members themselves. Thus, the involved methods focus more on the examination of the relational aspects of network structures. Marsden and Friedkin (1994: 3) state that, “The proximity of two actors in social networks is associated with the occurrence of interpersonal influence between the actors.” Network analysis stems from the study of a group of actors engaged in a “conversation,” directly or metaphorically, and one of the more important emphases is on the emergence of sub-networks within the larger group (Mische and Pattison, 2000; Snow and Benford, 1988). The network method allows user/experts that were interviewed separately and had never come into any kind of contact to be engaged in “conversation,” thereby coming to a rigorous *collective opinion*.

Network Centralities

Centrality is widely considered to be one of the most significant attributes in social network analysis as it helps to identify the key actors – occupying the most “central location” – in a network (Everett and Borgatti, 2005). There are three fundamental concepts of centrality: *degree*, *closeness* and *betweenness* (Brandes, 2001; Scott, 1992), but only the former two was used in this studio exercise. We adopt the definitions from Brandes (2001) in this study.

Degree Centrality (C_D) – Measures the number of nodes directly linked to node v by an edge.

Closeness Centrality (C_C) – Measures the proximity of one node to all other nodes in a network, regardless of the dimension of the paths to the other nodes. A high closeness centrality means that the node

is close to, i.e. a low average distance from, all other nodes in the network

Betweenness Centrality (C_B) – *Measures the degree to which a node lies on the shortest path between any two nodes in the network.*

A high betweenness centrality suggests that the node is playing a key role in linking up the different parts of the network.

After reviewing their interview transcripts and extracting key views and opinions from their respective user/experts, each student constructed a *mind-map* to represent the contribution from their user/experts. These mind-maps were combined using the open source software *Gephi* (Bastian et al., 2009) to conduct the user/expert opinion networks and their analysis. The findings were presented in a series of colored network diagrams for the above measures for each of the user groups. Students then used these network diagrams to inform their library designs.

Student Designs

Students designed their community libraries based on their findings generated from the opinion networks of user/experts for each one of the four library types – children’s library, art library, secondary school student library and manga library. Compared to previous years’ design works from the same studio, the schemes from this year’s students seemed to be more developed in four main areas:

1. There was a much higher diversity in design approaches not only across different user groups but also among students working on the same target users. The

schemes also attempted to engaged the external context a lot more with varying strategies to connect with the outside park spaces, such as using folding forms (Fig. 20a-20b) and transparency (Fig. 21).

2. In previous years, students mostly start with an overall form and used sub-division as the main strategy of creating separate spaces for the various functions. With more specific input from user/experts this year, most students adopted aggregation of form instead of division as the requirement of each space became much clearer (Fig. 22a-22b).

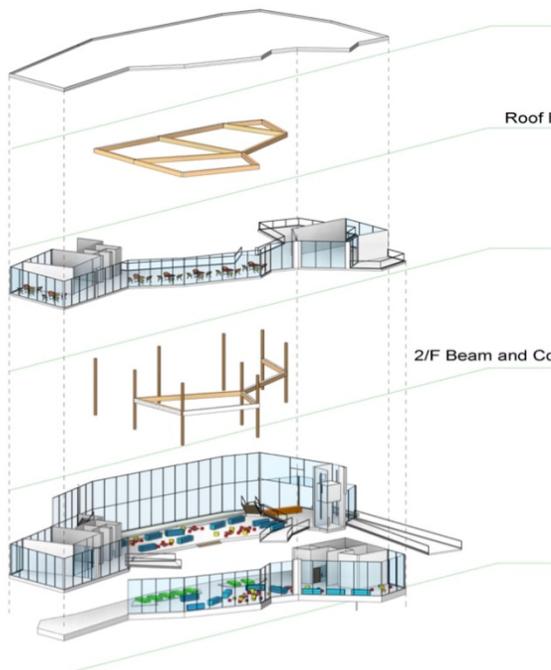


Figure 20a (Left) and 20b (Top right): Children's library using folding form to connect outside spaces and create spatial separation for internal spaces (by Ethan Yeung). Figure 21 (Bottom right): Art library employing box-in-box strategy with a transparent outside box to create visual connection to outside park spaces (by Jenny Chan).

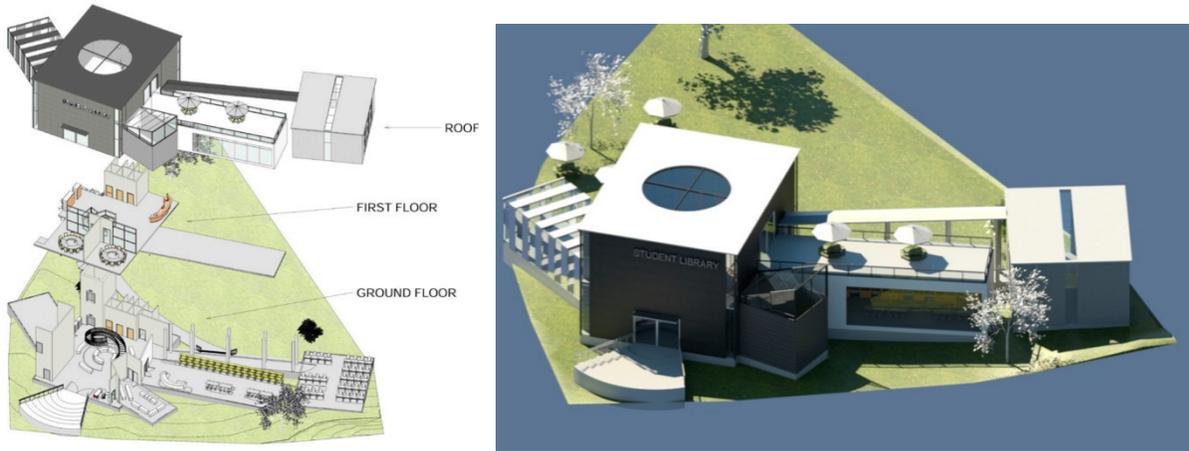


Figure 22: Secondary School Student Library formed by aggregation of distinct volumes to indicate different functions to allow student users to identify different spaces easily (by Kenny Cheung).

3. Again, due to better understanding of the specific requirements of each space from user/experts inputs, students put a lot of effort into optimizing the characteristics of the different spaces in the library through varying the boundary conditions (Fig. 23).

4. Finally, some students had developed spaces specific to their user groups as the main design features for building up the scheme. Most of these either took the form of specific repeating modular units for multiple users, such as a study room in the library for students (Fig. 24), or main central spaces specially designed to serve a key function identified by the user/experts, such as a large display hall for materials in the art library.

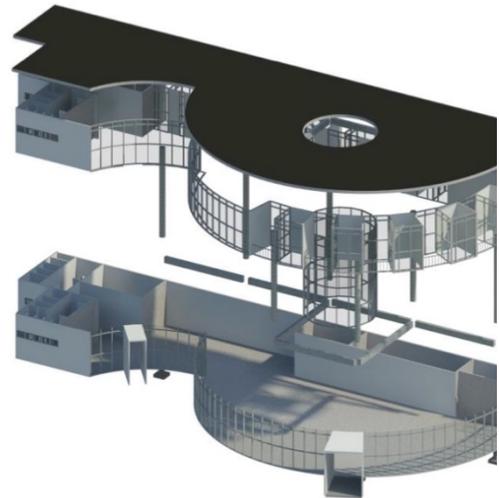
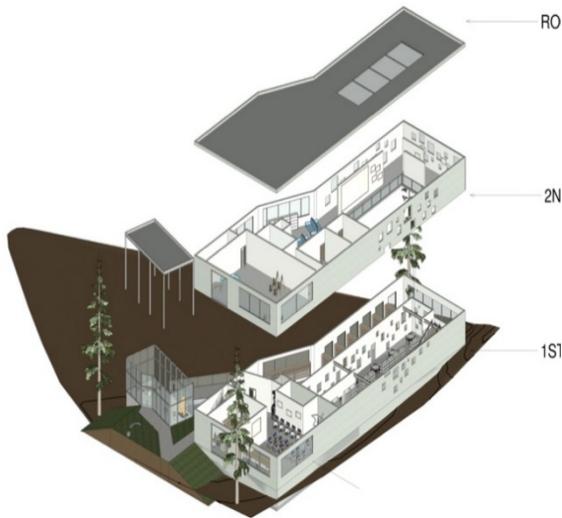


Figure 23 (Left): Art Library creating different characteristics of the display spaces by varying the sizes and separation of openings to control porosity (by Cyrus Hung). Figure 24 (Right): Secondary School Student Library based on a modular unit for self-study room arranged in a circular fan-shape composition. Each unit has its own semi-private outdoor terrace (by Nicole Lai).

OBSERVATIONS

Changes in Author's Own Teaching

Real Projects

Preparation for design studio was definitely different from before as the project needs to

be real to facilitate the involvement of the user/experts. Searching for the correct project took a bit of time but eventually a good site was identified. It also demonstrated that connections with the local community are crucial to the success of the approach. The two Yau-Tsim-Mong District Council Members played an irreplaceable role in helping to organize the key community engagement event: mobilizing the local residents user-experts, identifying an appropriate and convenient venue (especially during such chaotic times during the Occupation), etc. Perhaps this would become the initiator of long-term relationships with the community and its many organizations to foster a win-win situation where both the school and the society benefits.

Focus of Studio

In previous versions of this studio (Bachelor degree, final year, first semester), the focus was on urban design strategies and the architectonic/architectural solutions themselves were the end product. But this time, it was different in that the three weeks spent on strategy generation was more for developing tools (“means”) in preparation for solving social / programmatic / environmental / spatial problems that they have yet to encounter, and not the “end.” The comments given to students on their first pass on developing architectonic strategies (the “genotype”) were more divergent. In the past, guidance to students was mostly to explore certain aspects more than others so they could converge towards a more concrete direction. But this time, there was more encouragement to explore more freely the different possibilities and variations of their initial ideas – to prepare for the diverse desires of the user/experts.

Impact of Community Engagement

The sessions after the community engagement event clearly took a very different emphasis. While the focus of comments in the sessions leading up to the event was mostly around composition of the space-chunks from the tectonic exercise and the distribution of programs, those of the final few weeks were almost entirely about the relationship among

programs and in turn their relationship with the open spaces. The location, proportion and connectivity of the various programs became the focus of the studio because these were the issues the user-experts talked about the most. Although things went out of our control due to the turn of events, it was critical that the community engagement takes place in the first few weeks of the semester. Ideally, it should be scheduled for Week 4-5 when the students had already gained adequate understanding of the background of the project and have at least taken a few attempts at initial schemes. This way, when the students communicate with the user/experts, they are not only speaking in the abstract but with more concrete ideas on the implications of the user-experts' input.

Taking Different Approaches

Working with both first and final year students showed that there could be many different approaches to engaging user/experts, depending on the nature of the project, the level of students, availability of user/experts, and so on. It would be very difficult to expect first year students who were still learning the basic vocabulary of architecture to speak confidently to real users in an organized setting as was done with the final year students. Furthermore, a variety of approaches is needed also to keep **equipment** EQUIPPING? our students and keep them interested in methods to engage user/experts as a main contributor to their design development.

Changes in Faculty and Administration

Changes in Co-tutors in Studio

The two co-tutors in the final year studio were both very excited and had made many constructive suggestions – questionnaires, division of task, etc. The most significant change was that they both had a very different view of the meaning of “site analysis” because the residents, shop-owners and other direct stake-holders had taken over as the key

considerations. Later on in the studio, they no longer referred to the user studies as part of site analysis but as an entirely different category as “user analysis.”

Changes in Other Faculty Members

Other Architecture colleagues were aware of the developments because the Department had announced the news of the Fellowship and were all eager to learn how the studio will be delivered differently this semester. The fellow faculty members who came to the final crit were all impressed by the programming aspects of the students’ designs. Many of them remarked that previously there were not many strong ideas behind the students’ schemes in terms of a strong programming intention. At least two colleagues are already incorporating some form of user/expert engagement in their studios this current semester. One of them is trying to organize a similar engagement event and have contacted the two enthusiastic District Council members through me.

Changes in Administration

The Dean of the School was notified of the events taking place and he seemed to be interested in making the outcome one of the “capstone projects” to be presented in my university’s annual “Discovery Festival,” which showcases the best practices and evidence of the university-wide Discovery Enriched Curriculum (DEC). One of the projects from the studio was also selected to be one of the DEC evidence for the degree program to be presented the government. The administration had taken more interest in this studio after another of the author’s public engagement collaborations with the Hong Kong Housing Authority has won an award from the HK Government. They have been sending me information on various showcase events both inside and outside the university to encourage me to disseminate the process as a “good practice.” The author is also working with the university’s Student Development Services to explore possibilities of setting up a support fund from the university to support community

outreach programs for architecture and other disciplines. Apparently, there are funding schemes available for “special projects” to engagement the community but no funding to support a course to do the same.

CONCLUSION

This chapter started off with the question: How to reinforce architecture as a social art through architecture as a social science - towards an information-enhanced design? Hillier and Hanson (1986, p.2) claimed that, “Architecture is not a ‘social art’ simply because buildings are important visual symbols of society, but also because, through the ways in which buildings, individually and collectively, create and order space, we are able to recognise society: that it exists and has a certain form.” This recognition of society is driven in a large part by the constituents who take part in activities in the spaces architects create, as Pelli (1999, p.183) puts it, “Users are perhaps our most important constituency.” An architect’s job is hence first and foremost to gain a better understanding of the users’ needs.

As educators, one of our most significant tasks is to make an effort to more positively couple teaching our future architects with learning from actual engagement with the user/experts who form this constituency. Lifchez (1987b, p.78) had this observation when working on teaching design for users with disabilities: “The way architecture students are taught about others greatly affects their understanding of what is presented in the studio and their eventual application of lessons to their professional lives. There is no substitute for face-to-face contact in acquiring the necessary knowledge of other people’s needs, desires, and abilities; physical disability and architectural access are heartless abstractions unless taught within the context of human experience.”

It is critical that we guide our students in the design studios to develop proper methods to learn about such human experiences that form the context for design. The most direct way to

do so is to ask the users themselves and approach them as experts – user/experts. After all, they possess a detailed knowledge of the design problem that no designer could possibly imagine. According to Lifchez and Clavan (2005, p.67), to discover this knowledge, “we must first understand the issues directly, ‘on the ground.’ Second, we must recognize that solutions to these problems are, by definition, interdisciplinary.” In the first studio presented above, students were brought “to the ground” by bringing them directly to the project site to come into contact with real stakeholders and residents who will become the future users of the project. In the second studio, students were introduced to a method used by social scientist to analyze social networks for collating interview data collected by different students into an opinion network to gain a holistic perspective of the users’ views. Recognizing the interdisciplinary nature of architectural problems, we must consciously look to social science fields to borrow established methods for understanding user/experts.

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This Chapter was originally titled, "Teaching Social Architecture in a Time of War." The author, then a student teacher in Palestine and a BERKELEY PRIZE Associate Teaching Fellow, faces a series of hurdles in attempting to integrate the precepts of the social art of architecture into a curriculum molded in large part by forces outside the control of the university and faculty. The surprising successes reported in this case study provide inspiration that the goal of a more people-centered architecture is both universal and transcends even armed conflict. It is possible that, in fact, this very unique set of circumstances actually enhances the motivation to create a new paradigm for design. Special emphasis is placed on the results of the student work itself. Rather than lingering on the inexorable problems created by the context of this study, the final chosen title reflects in a small way the hope for a more stable future through the everyday work of academic research.

CHAPTER 7

Re-Imagining the Teaching of Architecture: A Palestinian Perspective

Faiq W. Mari

As an architecture student I often felt disconnected from the context I was living in while having a strong urge to contribute to it. Asking myself of the way, I pondered the role and capabilities of architecture. I saw architecture to be a physical manifestation of ideas, and thus a tool for thinking and for understanding and implementing thoughts.

In the colonized space that is Palestine, I experienced architecture as a tool and subject of violence, colonization, control, and alternatively of resistance, freedom, and livelihood. Yet I found institutional architectural education to be rather indifferent to many of these aspects; with architecture often taught as a pure science/art detached from its context and its particularities, as well as its role in it.

When appointed Teaching and Research Assistant at the Department of Architectural Engineering at Birzeit University, the department from which I had recently graduated, I sought to help bridge the gap between architectural education and its local context. A year earlier I had written an essay titled “A Resilient Past and a Promising Future: Disability in Ramallah” for the 2013 BERKELEY PRIZE competition, a piece that discussed the role and responsibility of architecture and architectural education with regard to disability in the Palestinian context. I

decided for this to be the cornerstone of my efforts, for I saw Universal Design not only as a necessity, but as a paradigm that has the ability to shift architectural pedagogy into a more user-centric realm, thus connecting the school to its context through its most important asset, its people.

In the following pages I will present the initiative of introducing Universal Design (UD) to the Department of Architectural Engineering at Birzeit University, Palestine, in the 2013-2014 academic year. I will recount and review the progress of this endeavour and conclude with the lessons learned. Eventually, I hope that this experience would present a useful case study to anyone interested in pulling architectural education closer to its local community through the adoption of the *social art of architecture*.

Background

As efforts to destroy the cultural and material presence of the Palestinian people continue, Palestinians remain victim of excessive use of military power in addition to harsh living conditions and discrimination that take their toll on Palestinians physically and psychologically, leaving a very large percentage of the population disabled. The British rule, the uprooting of 1948, the war of 1967, the first and second Intifadas, the three recent wars on Gaza, as well as daily life under occupation and in refugee camps all played and still play a major role in this reality.

Naturally, disability is one aspect that is immensely exacerbated under such conditions. For example in the most recent war on Gaza in the summer of 2014 more than two thousand people were killed and ten thousand injured, mostly civilians (UN OCHA, 2014). One thousand children came to suffer from a lifelong disability and currently 373,000 require direct and specialized psychological support (Andersen, 2014). The two previous wars on Gaza presented similarly horrific numbers. Likewise, in the Al-Aqsa Intifada more than four thousand

Palestinians were killed, 21,000 injured and hundreds came to suffer from permanent disabilities (Hammouda, 2009). Moreover, dozens of institutions working in the field of rehabilitation were subject to either destruction or closure (PCHR, 2009).

As for daily life conditions, Palestinian refugees evidently suffer most, both inside the Occupied Palestinian Territories (OPT) and in neighboring countries such as Syria and Lebanon, especially with regard to disability. A similar situation faces the Palestinian minority remaining in the state of Israel, which is subjected to discrimination in health provision, education, and public services in general including the adequacy of the built environment; and thus suffers from significantly higher percentage of disability compared to the Jewish majority. In the OPT—and aside from direct violence—curfews and checkpoints along with turmoil contribute to poor mental health, higher disability rates (El Sarraj and Quota, 2005), and in many cases fatal incidents.



Figure 1: Jerusalem, Palestine, ca. 1989: Sabrina, a 12-year-old amputee wounded by a bullet during the Intifada, waits for her physical therapist in Makassed Hospital in Jerusalem. (Image by Ricki Rosen/CORBIS SABA)

In studying the current situation of disability amongst Palestinians as well as its history one can see positive shifts and notice bright chapters from the past. There were periods when the Palestinian people were able to overcome these dire conditions and through collaborative efforts turn them into solid progress, particularly with regard to disability. (Mari, 2013)

Such a chapter was the First Intifada, where, faced by its huge losses, society experienced an awakening. Watching its youth disabled by the occupation yet still fighting for their rights changed the way society perceived disabled persons, and what once was a disgrace now became a symbol of hope and resilience. The collaborative efforts of the Palestinian community in the OPT defied all constraints and established rehabilitation centers, community-based rehabilitation schemes, and awareness-raising initiatives, among other things. With the establishment of the Palestinian Authority (PA), further progress was made on the legal arena as the PA issued the Disability Act and the Engineers' Association issued a built environment adaptability code. (Mari, 2013)

Yet, much more remains to be done. The grim situation this last decade as well as the particularly atrocious situation in Gaza and Syria demands a strong and effective response; especially that the amount of casualties and destruction has been impossible to cope with under current capacities and the previously established progress.

This calls for collaborative efforts across disciplines, institutions and borders. My belief is that education is of paramount importance in this regard. Architectural education in particular carries a significant responsibility spurring from its role in shaping the minds of future designers, and thus of the built environment itself. Hence is this humble effort which I hope will help others, in Palestine and other similarly suffering peoples - and they are many - in creating a better built environment for all of us.

(See Inset: “The Palestinian Reality” below for more information of the extent of the above-described conditions.)

First Steps

At Birzeit University, the exploration of the local relevance of architecture focused on theory, while practical training remained relatively distant from its context, especially from the notion of architecture as a tool for proactive change on ground. Architecture was seldom treated as a tool for proactively implementing—within the current context and its constraints—the values and utopias preached in theory.

This theoretical focus forms a strong basis for any type of work within architecture; however, the local awareness developed there should be extended to practical design as well, for architecture has very high capacity in this regard and the issues to which we can contribute are immense.

When I was appointed Teaching Assistant I immediately began enacting a plan I had previously formulated to leverage this social focus of the department. I based my efforts on the recent mind-opening exposure that I had through the BERKELEY PRIZE Essay Competition. My end goal was to institute the social art of architecture as a main concept in the Department’s general vision and direction.

I had laid out the major features of my plan with the assistance of the BERKELEY PRIZE Committee, particularly under the guidance of Professor Raymond Lifchez. In it I proposed an ‘incremental growth’ approach both as a pedagogy and a tactic for introducing UD at the department. My assumption was that if I commence by infusing universal design in a single design course that I teach, anticipated success would be reflected in students’ learning outcomes and in subsequent feedback; I would thus be able to convince the department of the importance of UD and a user-centric design approach. As a pedagogy, my plan was to work on

gradually delivering the concept of Universal Design to students, progressing from ice-breaking discussions, to readings and general lectures, to design and user/expert involvement while maintaining throughout the course a user-centric approach to design.

As the academic year was about to begin, I discussed my plan with the head of department and the course instructors I would be working with in my first semester, and together we set up the procedure for the integration of UD in the “Design Studio III” course.

Semester One

In the meeting with the department chair and course instructors we decided to start with a general lecture for the three sections of the course and give students related readings, afterwards each section would deal independently with the concept of UD. As typical of the Department, there were three studio sections of around 45 students; each section had an instructor and a teaching assistant, the students of the three sections would attend a common weekly lecture given by the course coordinator.

Given that I was a teaching assistant, I worked to conciliate the course instructor’s teaching methodology and objectives with mine, and to find a common ground in which the user-centric approach and the concept of Universal Design would act to advance the original course objectives. The course instructor wanted to focus on design as an introspective creative process, I wanted to focus on the social responsibility of design as a basic notion, and the course objectives were to introduce students to dwelling and residential building design and their related socio-economic and environmental parameters. The result was an approach where students were encouraged to base their designs on subjective parameters as well as contextual ones, and seek to translate their ideas to designs that would respect and engage all users of the space.

Thus, the course instructor and I began the course by asking the students to represent

an intimate sensory experience of theirs with an installation or performance. This in-class introductory exercise was intended to strengthen the students' connection and understanding of their senses and their ability to translate this understanding into design production. It was also meant as a challenge, to draw the students out of their comfort zone.

One student made a rotating color disc that represents a childhood drowning experience of hers. Another made an installation of chairs that reflected a childhood memory of a basement playhouse.

As students subsequently started with the first project, a residential building design, we started to gradually introduce them to issues related to disability and to the concept of universal design. First we had a general lecture with Professor Azem Assaf from the Disabled Persons Committee Chairman at Birzeit University, where he discussed his daily experiences in different spaces as a visually impaired person. Then the students were handed readings from the book "Design for Independent Living" by Professor Raymond Lifchez, founder of the BERKELEY PRIZE, and essays from the 2013 BERKELEY PRIZE Essay Competition. At the time I thought it was yet too early to discuss universality in terms of design outcomes, so we took an indirect approach by focusing on inhabitants' needs and discussing disability and the concept of UD in light of the project, the readings and the activities the students have experienced thus far.



Figure 2: Ice-breaking discussion and general lecture by Prof. Azim Assaf (right)

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Figure 3: Students at the discussion with Prof. Azim Assaf

By this time I noticed interest in the concept of Universal Design and enthusiasm from the students to learn more about it. At the beginning there was some skepticism from their part regarding the involvement of user/experts and some were afraid that UD is “an extra constraint that could hinder their creativity in design”. However, the general lecture highly increased students’ empathy towards people of different abilities and after the readings and class

discussions most students showed high enthusiasm. Yet, since the language of the readings given was English, many students had difficulties handling them, and so outcomes varied from one student to another.

The second project was a team project, as is typical at our department, with a choice of an elderly house, a hostel, or a dorm. In this project we tried to expand on universal design applications and from the beginning of the project we demanded that each pair develop their main concept with inclusiveness as a prime constituent. By the time students had set their conceptual designs, we held a session with Muhannad Al-Shaf'i, a wheelchair user and Shorouq Al-Shaf'i, a visually impaired student, where we heard from them about their experience. Each student then explored their design ideas with them.



Figure 4: User/expert session with Muhannad Shaf'i and Shorouq Shaf'i (right-most corner).

From my observations, I found that this session had a positive impact on students, reflected in their designs and their communication of their ideas. Most students took their designs more seriously, they started to refer to Muhannad and Shorouq as users in their designs; Universal Design was not abstract anymore.

Each group progressed differently and had its own approach to UD, to different degrees of success. Sara and Dina, who worked on an elderly house, adopted the user-centric approach of design from the start; their work progressed from their personal interactions with the residents of an elderly house in Ramallah. Their focus on the needs and lifestyle of the elderly produced a space that they deemed naturally accessible and universal. Those needs included the psychological and the social, and therefore the design meant to invite the surrounding community and encourage building relationships between them and the elderly. The basic idea was that the elderly in this house should be an integral and active constituent of the village, just like any family in any other house. In this sense, the design had to be universal. The group was encouraged to continue in this approach; I thought it was an example of UD fitting seamlessly as an integral concept of design. As a matter of fact, with this group I found that the students very quickly exceeded the notion of “accessible design” as an additive feature, and absorbed the notion of UD. In application they often had difficulties trying to find solutions that are true to this concept, but this is a natural part of the learning process, and eventually they had very positive results.

Hind and Rawia, who designed a student dorm, took their inspiration from the “spirit of the site”. To them, the site in its untamed nature reflected “the sublime,” and thus their goal in the design was to reinterpret this sublime in the form of a building. When this group felt puzzled in the seeming conflict between their concept and the social centric notion of UD, we intervened with a question: *How can the “sublimity” of this building be experienced by users of all abilities?* From this point the students responded positively and came to see the universality of their design as an asset directly related to their concept. The challenge was tackled through designing for all five senses, concentrating on material selection. They depended on an unfinished, unstable feel of the building, rough as a construction site. Acoustic, tactile and olfactory design were key for delivering the design concept and ensuring the safety of the building. While in this group UD was adopted later in the formation of the concept, the students

were successful in employing it as a supportive concept. The project did not have a particularly social focus in its concept, but it was socially conscious in translating the concept and the students made significant progress with regard to UD.



Figure 5: “The Sublime” a dormitory designed by Hind Hilal and Rawiya Nazzal. This is a project where students concentrated on the acoustical, tactile and olfactory qualities of the space, to deliver the feeling of the “sublime” to persons of all abilities.

Students from other sections achieved great results as well. In the elderly house they designed, Diala and George made their primary focus the needs of users and their wellbeing. Their “discovery” of UD came as an answer to the approach they took in the project. In their design they sought to create a serene atmosphere, universal and inclusive in nature, with effortless circulation, simplicity in form and level distribution, and a central core as a base platform for the building. The design was meant to let residents feel at home in a personalizable

social space and empower them through an “accessible design that promotes movement and discovery”. Natural landscape and green elements were another facet of comfort in the project. Similar to the first case, this group understood UD in direct relation to their concept and the universality of the design came as a very natural result of the design’s underlying concepts. However It might be true that since these two projects focused on seniors residents UD was more directly related to them that others.

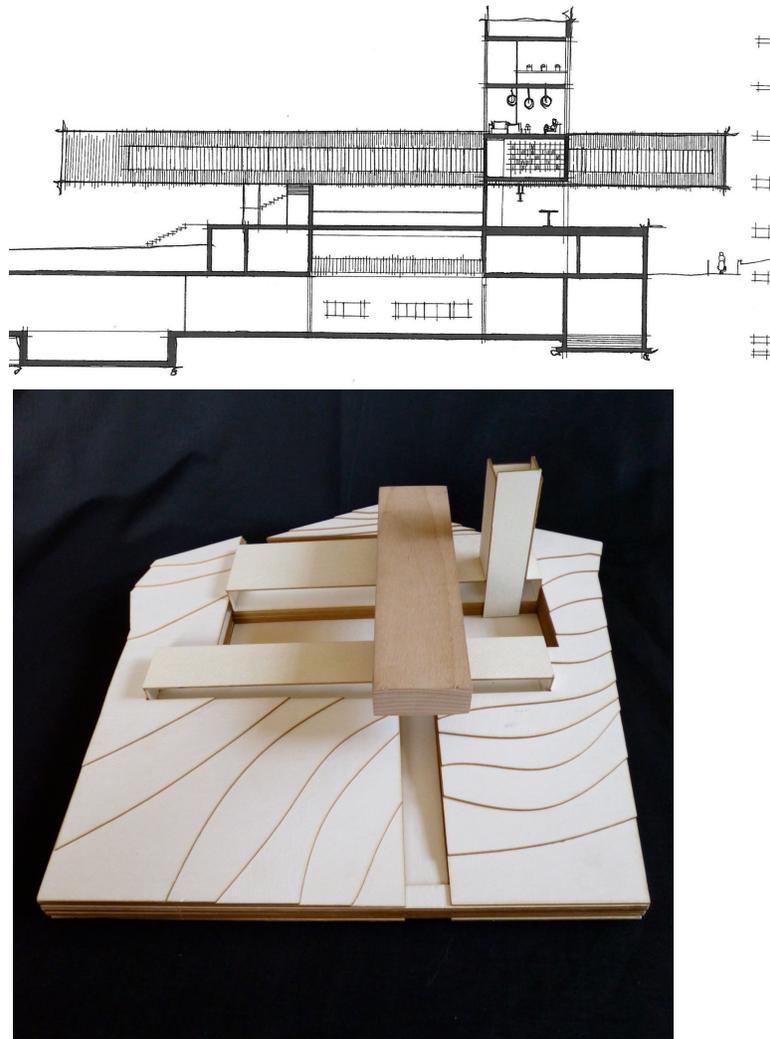


Figure 6: Senior House designed by Diala Andonia and George Murra. This is a senior house, designed to provide maximum comfort and ease of access. Emphasis was also placed such aspects as smell, sound, light, etc.

Naturally, student work displayed varying levels of success. While this work is representative of most groups, some others did not respond very well to the focus on UD. I learned from these students themselves that they were in fact convinced of the importance of the subject and interested in it, but “fell short in execution.”

By the end of the course I thought that students were able to turn in designs that adopted universality to a large extent. This was evident from the way they verbally presented them, especially as they explained the concepts and their translations.

However, the universal attributes of the designs were more evident on the conceptual level rather than in design details. At this phase this was natural and expected as the main goal for this stage was to draw and sustain students’ attention and conviction in UD, and at this point I thought this was achieved.

India, Another Perspective

Immediately after the end of the semester, I had the wonderful opportunity to visit India. I was nominated to represent the BERKELEY PRIZE at the 2014 National Student Design Competition (NSDC) held by the School of Planning and Architecture in Bhopal (SPA Bhopal). The competition, titled “Inclusive Design for Cultural Interface in Pilgrimage Sites,” focused on the application of Universal Design in the Indian context.

I was inspired by the NSDC and SPA Bhopal in different ways. I greatly admired the effort and importance SPA Bhopal had given to architecture as a social tool, evident through the competition and the pedagogy of the school. At the competition, I saw a vast array of creative designs that handled their – social and physical – context exquisitely, and achieved inclusive environments for all users. I also witnessed great determination and belief in socially responsible design, and great knowledge being transferred.

At the school itself I was impressed by the teaching methodologies utilised, particularly

by a set of interactive learning tools, such as the life-scaled bathroom and kitchen models, primarily used by younger students. I was also inspired by the diversity of the Indian culture and the means through which architects and architecture students dealt with the notion of 'universality' in this context. I was constantly reminded of Palestine, and tried to envision similar ways with which to approach universality from our own local perspectives.



Figure 7: Real-size model of kitchen used at SPA Bhopal.

Semester Two

I was back from India with a refreshed mind and many ideas along with the enthusiasm to continue on the same path in the new semester. I was optimistic about the prospects of the new course I was to teach, the "Design IV" course.

In this course, with the main project a public library, we approached the notion of universality through focusing on social inclusion. The reason I thought to expand the work on UD from the focus physical ability to other social concepts stems from the fact that I was teaching the same batch of students and therefore wanted to build upon last semester's work. Moreover, since this year was a 'pilot' for teaching UD, I wanted to cover a wider range of

applications of the concept in order to test and demonstrate its potential within the pedagogy of Birzeit University's architecture department. I communicated these plans with the instructors of the two other sections of the course and together we discussed potential course activities and planned for a day-long user/expert workshop for all three sections. Similar to the previous semester, after discussing UD we left it to each instructor to decide their approach in their respective sections; as coordination previously proved challenging and this margin of flexibility was considered to be a potential asset.

Throughout the studios in our section, the course instructor and I focused on the universality of the thinking process and designs, starting with the analysis phase until the final details. Students were always asked and encouraged to discuss their ideas with people whom their proposed project would serve and put themselves in their shoes when imagining the space they are creating.

The first exercise of the course was the design of a small architectural office. In this exercise we focused on universal design in terms of physical ability as a continuation of the work of the previous semester, and used it as a launching pad leading to the main project where we would study UD in its wider scope.

At the beginning of the second and main project each pair of students was asked to focus on the potential users of the library in their preliminary study and analyses, this was to be done through desk research as well as field research including surveys, interviews and other means. At the beginning there was the expected negative reaction from students towards 'extra' work they were not used to doing. However, after discussing the importance of such work and after they started with the study there was a positive shift in their opinions. Each team eventually focused on a certain set of tools; for example one team focused on multiple personal interviews with specific people throughout their work, while another group focused more on questionnaires they handed to a larger number of people.

After the research phase students began to formulate their concepts. Students focused

on different issues according to their respective concepts. Yousef and Mahmoud, for example, aimed for an inclusive library that would be inviting to the people of the city. Located in the centre of the city of Ramallah, their library connected two streets via a path that passes through it, inviting people to have a coffee and read a book in its patios or just sit around in its garden and enjoy the free ebook service. The design was based on equal and unified accessibility of all services to all people of all backgrounds and abilities, and “this was the way it was meant to attract readers.”

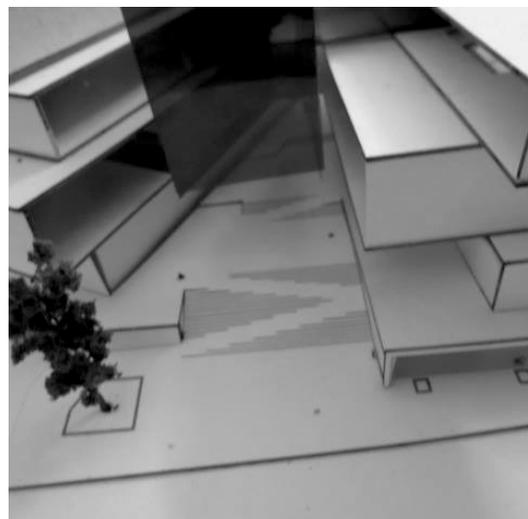
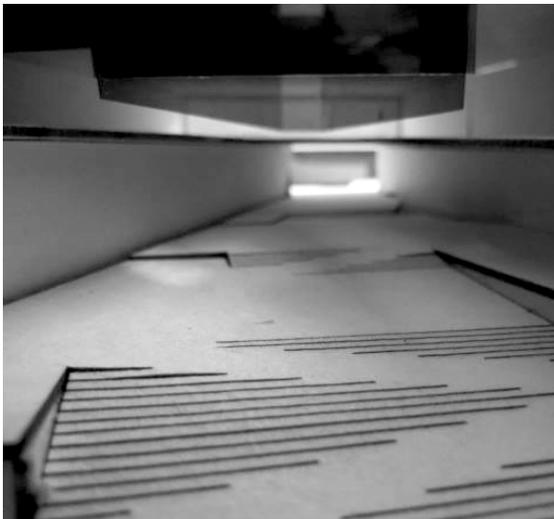


Figure 8: Library project designed by Yousef Morcos and Mahmoud Sarahna. This is a library that links two busy streets via its open corridor, and makes it possible for people with disabilities to go from one to the other. It also focuses on inclusion of different age groups in the activities of the library, such as the elderly.

Another team, Nayef and Abdulmajid, treated the library as a cultural educative center. Subsequently, they aimed to disseminate knowledge through the library to as wide a base of people as possible. Their design was cleverly accessible to people of all physical abilities; moreover, it catered for the interest of different user groups such as senior citizens, children, and students through the different spaces it offered such as study cubicles, a street level café,

audio rooms, etc. At the beginning this team translated their concept rather directly by proposing 'mini library' nodes dispersed in the city center, however, after further consideration this was deemed too expensive. Thus they utilised technology to serve their goal by offering an e-book service and a radio channel that would broadcast audio books to a wide geographic area thus reaching people who are normally incapable of visiting the library such as street vendors, taxi drivers, people in distant villages, and others.



Figure 9: Library by Nayef Zayed and Abdelmajid Hindi.

During the last quarter of the semester we held a workshop with the “Tanween” reading club, an active student group at Birzeit University. During this session students discussed general issues related to reading in the local context as well as their own projects. Students thus received feedback on their designs and ideas and were able to develop them with reference to the user/experts’ opinions.



Figure 10: User/expert session with Tanween Reading Group.

This semester proved to be a challenge, exemplifying some of the difficulties related to working within academic institutions. Here it is important to note that teaching assistants are assigned to their courses and sections late in the course registration process, making it nearly impossible for a TA to plan and coordinate work beforehand. I only knew I was going to teach this course and this batch a week before the start of the semester, and at the time I was preparing to travel to India to attend the NSDC. This made it difficult to coordinate with the instructors of the two other sections. A student strike held at the beginning of the academic year also meant that the semester was dramatically reduced in length, thus altering the academic calendar and giving teachers and students less time to accomplish course objectives. Added to this was an international conference that was being held at the architecture department and consuming a great portion of time and effort from its faculty. This led to weak coordination between sections, as a result of which the user/expert workshop was postponed twice and eventually held for one section only due to logistic difficulties. Since the workshop was held late in the design process it did not allow us the time to hold other follow-up workshops later and its results could only be incorporated to a certain extent in the teaching process.

At the end of the semester I could say that it was a partial success. Overall, the impact

of the course was positive on both the students and the faculty, and this I will discuss in the following section. The semester did not go as planned, and similar to the previous semester, the focus the students put on the universality of their designs was not adequately represented in the final production. Unlike the previous semester, this time students did surpass the conceptual phase in the application of universal design, and overall the universality of their designs was more deeply entrenched within their founding concepts. What I felt was missing was the visual tools to bring attention to the universal attributes of the design, be it data visualisation, diagrams, or architectural details.

As for why graphic representation did not sufficiently express the design's universal values I would state two main reasons. The first is that I myself as a teacher was learning alongside the students and trying different approaches for teaching UD in response to the class developments; I did not have a solid idea on expected design outcomes from the beginning and did not steer the students into placing focus on UD in representation. Second is that the work on UD was an addition to the official course description, not accounted for in terms of its timeframe and required design deliverables, which meant that it was difficult to ask students to produce 'extra' work in a timeframe that did not sufficiently allow for it.

Student and Faculty Reflections

Since student and faculty conviction of UD is a major step on the way to instituting UD in the Department of Architectural Engineering, their feedback is of utmost importance. In this section I will review the opinions and reflections of students and faculty members who were involved in this initiative.

Students

[Figure 11: Headshots of students - Forthcoming]

Hind, a third year student whom I taught in the “Design III” course, confidently stated that she now thinks UD is “very important and should be integral to the design approach in every course and from its very beginning.” While her classmates, Sarah and Dina, had great appreciation of the user-centric approach generally undertaken in studio, and on which they have concentrated in their project: “We were able to connect our design approach to both our subjective interaction with the project and to the community it serves.” About all projects in general they said: “The result in our opinion was projects that were architecturally unique, yet profoundly in contact with their users.” Yousef similarly expressed his admiration of the concept, stating that he truly believes in its importance, especially in the Palestinian context.

The session with Shorouq and Mohannad and the discussion with Prof. Assaf seemed to have a strong impact on the students. Ramzi and Razi stated that it was a mind-opening experience that made them understand “how and why UD is more than abiding to minimum requirements.” While Hind and Rawia mentioned the impact the session had on their design, especially as they listened to Shorouq’s experiences of different spaces and materials.

Yet, students also had their critical remarks. While appreciating the approach of the two courses, most students suggested that more focus should be given to UD and the user-centric approach. Most suggestions focused on increasing the frequency of meetings with user/experts -after all, we were only able to arrange one general discussion and one design session during the course. And while some students, like Sarah thought that what was done during the semester was good enough given the constraints, others suggested that we enrich the approach by putting greater focus on UD from the early start of the course, integrating the concept and the user-centric activities with the course outline, and venturing outside the studio for activities that would allow better connection with the user/experts in the different spaces they use and in a non-academic context. One suggestion was to dedicate a course to UD, in order to

allow a very comprehensive study of the concept and different applications.

Students I taught in the second semester had similar opinions. Mahmoud expressed deep conviction in the approach undertaken, saying: "It is only natural not to separate our learning experience in class from society itself. Our design process should respond to society as a whole, with all its sectors including the disabled." About the experience with Tanween group Mahmoud said that "personally it was very enriching. It was our first chance to interact with potential users of our designs, we were able to understand their own opinions, needs and perspectives. Their feedback was very encouraging as well!"

Yousef, whom I taught in both semesters, agreed with Mahmoud in appreciating the user-centric approach and in his "deep conviction in Universal Design." Of the session with Tanween, he said that it had a strong effect on their design.

In their critique Mahmoud suggested a stronger integration of UD and the user-centric approach in the course description, and connecting with the user/experts regularly throughout the semester. He suggested more focus to be given to one-on-one interactions with the user/experts and even suggested dedicating a room in the department solely for that purpose. And while Yousef indicated that the first semester was more successful in addressing UD, suggesting more frequent user/expert sessions and field trips, both him and Mahmoud showed strong enthusiasm towards continuing with this path in the following semesters saying: "we will shoulder the responsibility of ensuring the success of this approach in the future ... it has benefitted us greatly, and we feel that this is the way to go."

Amongst students I taught in the two semesters there were some who did not show as much enthusiasm towards UD and the approach taken. While most of these students did not give reasons, a couple stated that they were not much interested in a social agenda and wanted to focus more on architecture as "art for art's sake" and would rather concentrate on form generation at this stage. Others however expressed interest and conviction in the concepts and general social direction taken, but admitted to being "academically reluctant."

Faculty Members' Opinions

In discussing faculty opinions and reflections I will distinguish between two groups, faculty who were directly involved in this initiative and faculty who were indirectly exposed to it through a presentation I held at the end of the academic year.

In general, upon delivering the presentation and in the following discussion most faculty expressed enthusiasm and approbation towards the initiative. There was consensus amongst faculty regarding the responsibility of architectural education towards disability and the adequacy of the built environment. Most faculty members mentioned that there is a general direction of commitment to disability issues in design, however, there was a debate over whether the issue was adequately addressed at the department or not. In general, most faculty members indicated that more work could be done in this regard. When discussing the social responsibility of the department, another debate arised between a majority that thought that there should be a clear vision for the social responsibility of the department, and a professor who argued that this should be left to each teacher in his studio. A significant number of faculty members, mostly the younger, thought that the department is not well connected to its societal context and its problems. They stated that the social agenda once instated by the department is not being fulfilled, citing different reasons that include bureaucratic hindrances from within and without university, lack of monitoring mechanisms, and lack of clearly defined methodologies for applying this agenda. However, most perceived high potential in the department, being a well-known platform of liberal thought exchange in Palestine, and having a significant fraction of young highly motivated faculty and a group of the best Palestinian students.

(Figure 12: Faculty meeting presentation – Forthcoming)

Upon discussing Universal Design as a concept, a number of faculty members expressed high regard towards the concept while a number of others seemed to have not fully grasped it. Furthermore, I noticed that despite my efforts the term 'universal' was misinterpreted by a number of faculty members, having been understood to mean 'standardized design'. A number of faculty members stated that they support an adoption of UD as a general concept in the vision of the department, while a number of others argued that UD should be adopted only as part of a wider social agenda involving ecological design and other social issues. A minority stated that UD is already applied in the department, albeit not identified by the same terminology, and that there is no need for more focus on the subject. The concept of user-centered design was more easily accepted and understood and was welcomed by most faculty members.

The idea of involving user/experts in classroom and studio generated most interest upon its demonstration. Most faculty members expressed admiration of the idea and a number of faculty members indicated that they will adopt it in future courses.

Faculty who were directly involved in the initiative through the first and second terms developed stronger opinions. Most expressed formulating a strong conviction in the concepts of UD and user-centric design, and indicated confidence in the potential of user involvement in the classroom. Two of them mentioned a direct positive impact this initiative had on their subsequent courses and expressed their desire to involve user/experts in following courses. The instructor I assisted in the first semester was not particularly interested in the initiative but supported it, while the instructor I assisted in the second semester, who is also the department chair, expressed strong conviction in both the concepts and application methods undertaken. This conviction was subsequently expressed in his decision to adopt universal design in all applicable design courses starting from the year 2014/2015, and to encourage faculty to adopt a user-centric approach where possible—a promising decision which awaits full application.

Conclusion

At the end of the academic year I was content with the progress made and optimistic about future potential. The experience proved to be very positive, as evident from both student and faculty feedback. Students indeed felt the need for a social agenda behind their designs and in their education, and disability proved to be a subject of interest and commitment. The concept of Universal Design and the user-centric design approach were very well received by the students, and so were the application approaches utilized.

Faculty members' reception of these notions proved more critical, nevertheless similarly positive. Most faculty members expressed their conviction in the need of a social agenda to guide architectural education and bring the department of architecture closer to the local community and its institutions. Likewise, most faculty members expressed interest in the concept of UD and the user-centric design approach, with the latter receiving wider consensus. Subjects of debate among faculty members included the appraisal of current performance of the department, the application techniques of UD and the user-centric design approach, and the terminology itself. User/expert involvement was particularly well received.

The influence this experience had on directly involved teachers and their subsequent courses, as well as the department chair's decision to adopt Universal Design for the year that followed stand as visible successes for this initiative. This also indicates the success of the 'incremental growth' methodology adopted.

It is also valuable to note that the year following this initiative witnessed another initiative by a number of faculty members seeking to address problems facing the Palestinian people, especially after the war on Gaza in 2014. "Architecture of Resistance" was the title of the project that involved coordination between different courses in order to work on projects related to the Palestinian context, on theoretical and practical levels. The initiators of this project stated that

the UD initiative of the previous year constituted a great encouragement that pushed them towards their initiative.

In spite of these accomplishments, a lot of work remains ahead. Faculty has previously admitted to a number of impediments facing such initiatives at the architecture department such as bureaucratic hindrances and lack of monitoring and coordination. Therefore, in order effectively utilise the efforts and potential described in this case study and any other future initiative, those hindrances must be systematically overcome.

I believe a comprehensive workshop should be undertaken in order to extensively discuss and debate the vision of the department, concepts such as UD and user-centric design, and application methodologies in order to formulate a solid curriculum that corresponds to the department's vision. This should be preceded by a workshop on Universal Design in particular, where faculty members would prepare presentations and debate the concept and all possible applications in the particular context of the department and Palestine in general. On the level of the course, learning from this past experience, UD should be integrated in the course description while defining clear corresponding goals and project deliverables. Furthermore, the curriculum should ensure the symbiosis of different courses in terms of UD.

In conclusion, this experience points out to several important issues. First is the general belief amongst both students and faculty members in the social role of architecture. Second is the appeal of both Universal Design and the user-centric design approach as well as application methods and particularly user/expert involvement. Furthermore, introducing UD through an incremental approach proved successful to a large extent and is recommended for future application under similar conditions.

At the end, I hope that this experience at Birzeit University provides not only an inspiration, but also useful practical advice for anyone looking to apply the same or similar social concepts in their departments. Eventually, I am hopeful that such efforts, when repeated and built upon, will be able to change architectural education for the better.

THE PALESTINIAN REALITY

Palestinians in the Occupied Territories

The percentage of people with disabilities amongst the Arab Palestinian population in the state of Israel is considerably higher than that within the Jewish majority, at 29% compared to 17%. The difference rises significantly comparing the percentage of adults with severe disability, at 14% for the Arab Palestinian minority compared to 5% for the Jewish majority. The percentage of younger persons with disabilities below the age of 45 is 51% amongst the Arab Palestinian minority compared to 39% for the Jewish majority. (Al-Manarah)

Moreover, disabled Palestinian Arabs in Israel suffer from composite discrimination. "They are discriminated against on the basis that they are people with disabilities, and also on the basis of their affiliation to a national minority that is discriminated against and excluded by the authorities and by the dominant majority. Examples of this double discrimination exist in all fields of life. The quality of services provided by the state to disabled Arabs is poor, and in some cases the services are not available at all". (Sha'ata and Diab, 2009) cited from (Sandler-Loeff and Shahak, 2006) For example, between 2000 and 2005 sixty-seven women were forced to give birth at checkpoints; leading to the death of 37 babies and 5 mothers. (Visualising Palestine, 2012) (UNFPA, 2007. Checkpoints Compound the Risks of Childbirth for Palestinian Women)

The educational level amongst the Arab Palestinian disabled is

significantly lower than of the Jewish disabled population, as 19% of Arab Palestinians do not complete elementary school, compared to 5% of the Jewish disabled population. Furthermore, only 21% of disabled Arabs are employed in the labor market, compared to 49% of disabled Jewish persons. (Sha'ata and Diab, 2009) cited from (Naon, 2009).

According to The Palestinian Human Rights Information Centre, it is estimated that during the period of the first Intifada (from December 9, 1987, to December 31, 1993), Palestinians suffered 130,472 injuries and 1,282 deaths, of which 332 were deaths of children. Approximately 57,000 Palestinians were arrested, many of whom were subjected to systematic physical and psychological torture. Records indicate that over 481 Palestinians were deported, and 2,532 had their house demolished. Evidence shows that most children living in the Occupied Palestinian Territory (OPT) have either directly experienced, or witnessed, physical or psychological violence. (El Sarraj and Quota, 2005)

Palestinian Refugees

Data shows that refugee camps in the Palestinian Territory suffer the highest percentages of poverty. According to data on consumption patterns among households in the Palestinian Territory, 38.6% of refugee camp households suffer from poverty compared to 29.5% and 29.3% for rural and urban households, respectively. (Palestinian Central Bureau of Statistics, 2008)

According to the findings of the Palestinian Family Health Survey of 2006, 2.6% of Palestinian refugees are disabled compared to 2.4% for non-refugees. The percentage of the physically disabled who are Palestinian refugees is higher than non-refugees, at 50.1% and 45.6%, respectively. Moreover, findings of the Disabled Social and Health Situation Survey, 2005 showed that 2.9% of the Palestinian refugees in

Palestinian refugee camps in Syria are disabled.

Palestinian refugees in Lebanon have higher disability rates (4.4% in 2010) than do the Lebanese population (2.0% in 2004), and the Palestinian population in the occupied Palestinian territory (2.7% in 2011). (Salti, 2013)

References

(Forthcoming)

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How can architects talk more effectively to their clients? How can clients talk more effectively to those helping them to create places to live their lives? The newly re-energized focus on people-centered design presents wide challenges in discussing and describing design issues and solutions. It is clear that the traditional architectural visualization techniques do not and will not work. With this in mind, the author focuses on developing new communication models that are based on the relationships between users; visualizations of sense of place in students' projects; and "inhabiting" the proposed design as a basis for evaluation. Describing the results of two distinctly different design studio projects in Ahmedabad, India, she reflects on these methods and approaches and critically evaluates their contribution in teaching and, ultimately, promoting the social art of architecture to the general public.

CHAPTER 8

Visual Methodologies for People-centered Design

Gauri Bharat

Introduction

While building plans and sections are the mainstay of an architect's repertoire, both architects and architecture students often forget that they are non-real renditions of built environments. Not only do they present particular 'slices' of buildings, they are also unique graphic conventions that are learnt and subsequently internalised by the architectural community as representing spaces. Others may not share this capacity for visualising built environments and building plans and sections are often unintelligible to non-architects. The architect, on the other hand, often assumes the unproblematic universality of plans and sections as communicating spatial ideas and relations, and may not realise that the client does not necessarily share the same imaginary.

What is more troublesome with regards to standard architectural graphic conventions is not only that clients may not understand what architects are saying, but, that architects get naturalized into this particular ways of thinking. Along the way, they may forget that users are not outlines provided by computer drawings tools but living and experiencing beings. Using this as a starting point, I discuss the interconnected nature of visual methods, thinking about people and learning to design in this chapter. Reflecting on the Berkeley Prize Teaching Fellowship

studio processes and outcomes, I highlight how the crux of the problem of people-centered design lies in the visual methods used by undergraduate students to both understand the architectural problem and work on its resolution.

The proposal for the BERKELEY PRIZE Teaching Fellowship studios was not explicitly focused on visual methodologies. Rather, I proposed a studio on public place making and an elective on understanding how places become significant to people. Both these courses aimed to develop methods by which people's engagements with built environments may be studied and become a basis for design responses. The design studio focused on documenting and representing users as the primary basis for designing a library as a healthful public place. The elective workshop on place making, on the other hand, took a broader methodological and theoretical approach to a dialectic relation between people, place and perception in urban contexts. Both courses explored methods of participant observation, behaviour mapping and activity mapping in order to develop designs and intervention in the community. The intention was to underscore the importance of dialogue with users and, thereby, highlight the centrality of people in the design and study of built environments.

In the following sections, I outline the processes of dialogue between students' and user-experts under the conditions of the elective workshop and design studio conducted under the Teaching Fellowship and reflect on the central role played by visual methodologies in the process. I focus particularly on how the courses brought different groups into conversation with each and the modalities of conversation in each case. I critically examine two things - first, the visual methods employed in each case, and second, how, through the process of visualisation, the user-expert engagements turned into transformative experiences for the students.

1. DESIGN OF A LIBRARY AS A PUBLIC PLACE

The studio proposed under the 2014 BERKELEY PRIZE Teaching Fellowship focused on the design of a library in order to make a public place. Studios offered in Year Three in the Faculty of Architecture, CEPT University, Ahmedabad, India typically focus on the design of institutions and are concerned with understanding the scale and making of public places. Within this broad focus, my proposal situated users at the centre of the design process and emphasised the making of a *place* in addition to developing a coherent architectural object. Where students in a typical design studio would be concerned with formal aspects of institutions such as architectural order and relationships between parts and the whole, this studio took a more heuristic and, specifically, sensorial approach to design.

The design of a library was selected as the specific problem for students to work on. We, the students and instructors, collectively identified two sites and a range of possible users that students could consider in their projects. The studio tasks included understanding the sites and users, developing concepts of the library as a place, visualising places within the library, and inhabiting the design in order to develop a 'sense' for the library as a place. We asked simple questions like – what kind of a place would the library be? What will it be like to move through your design? Where would you sit and read a book? What will you see when you look out of the window? In short, we attempted to evoke the poetic dimensions of place in addition to pragmatic aspects such as efficiency of movement and satisfaction of the physical requirements of a library. The challenge lay in the emphasis on experiential aspects of both the user-experts and the students' themselves, which in turn necessitated a reimagining of the tools by which student's engaged with the site and users and visualised their own designs.

The tradition of studios at CEPT University

Before moving to the specific studio conducted under the Fellowship, it is useful to establish the pedagogy and institutional context of CEPT University. From the earliest curriculum in 1963, CEPT intended to produce not just an architect but a multi-faceted individual. The first curriculum laid out three broad orientations of the learning process. The first was “Science, Technology, the Physical World, the Nature of the Universe,” the second “Expressive Synthesis of Total Art and Architecture” and the third was “Man and Environment, Folk/Work/Place, Growth, Structure and Form”. Biology, life process, growth occurring in a framework of structure and form, the social life of humans and its relations to the environment were all found a place within undergraduate architecture pedagogy (Chhaya 2012). The curricula, through the years, have all stressed the ‘interrelationship of man, his institutions and the environment’ and the important germ of idea laid down here was that the architect was not merely a rational, technical problem solver, but a ‘mind that comprehends relationships’ and is ‘methodical and imaginative’.¹¹

Within this background, studios at the Faculty of Architecture have always stressed upon people and their various interrelations to the environment as central to the problem of architectural design. Early studios focus, for instance, on the basics of design in relation to the human body and to key spatial categories such as entry, movement and pause. Subsequent studios examine different types and scales of interrelation between people and their environments through the design of housing and institutions, while later studios focus on more complex problems such as historical urban contexts and large scale building projects. Implicit in each project, and in studio pedagogy more widely, is that each design problem present particular conditions of people’s relationship to their environment. Therefore, within the

¹¹ From 1963 curriculum of School of Architecture as quoted in script of presentation by Prof. Neelkanth Chhaya (former Dean of Faculty of Architecture, CEPT University) in ‘SA50 Seminar: The past 50 years’ held at the Faculty of Architecture, CEPT University, 25-26 July 2012.

institutional context of CEPT University, the idea of people-centered design was not a new one. What needed work, however, was methodology. In explicitly shifting to a pedagogy premised on 'process' and 'people' rather than product, we needed to sharpen the visual tools through which one engaged with people and their relationship the environments. Different studios presently explored different kinds of visual tools – ranging from three-dimensional visualization of designs, collages, to anthropometric studies based on activities of people rather than through standards or abstractions. Drawing from this pedagogic legacy, the Fellowship studio emphasised the centrality of users as the core focus on design rather than as one of many foci, and, underscored the idea of the user-expert as an important presence in the studio process.

Before moving to a discussion of the studio itself, a final note is required to clarify why people – centred design needs articulating if it already exists as an important component within a pedagogic structure. One of the learnings from the Fellowship studio and through discussions with other Fellows was that most architects and institutions recognise the need for people-centred design but assume it to be implicit within our endeavours and therefore already taken care of. Given the many competing demands within architectural pedagogy, this important concern may slip in terms of significance and attention given when compared to other concerns such as formal coherence and technical efficiency, for instance. It was in this regard that the Berkeley Prize Teaching Fellowship studio was significant – it flagged up the need to recognise users as the central concern in architectural design, and in my particular case, highlighted the inadequacy of traditional tools for visualising people-centred design. More specifically, we shifted from considering a faceless, neutral user as the silent beneficiary of our design efforts to engaging with people, recognizing the diversity of needs and affiliations that users have with their built environments, and recognising the agency of user-experts within the design process.

Observing and understanding the public places

To return to the Fellowship studio, I mentioned earlier the design project was the making of a library as a public place. We began the studio by asking students to observe people and the ways in which they occupy and behave in public places. They observed the distribution and patterns of gathering of people in public places around the city. This was intended as an intuitive introduction to how public places emerge, where students developed an understanding through participation and observations. One of the important challenges articulated by students was about documenting the complexity of human behaviour and movements in public places such that they may begin to develop a program for the public places that they were to design. Therefore, two specific documentation tasks were assigned – first, the mapping of density of people and the physical elements that provided anchors for people in public places, and second, sizes of gathering and the surroundings that encouraged such behaviour.

[Image of students' documentation of public places. \(Forthcoming\)](#)

This documentation became the basis for exploring and identifying sites for the project. Students were continuously involved in discussions about where the library could be located such that it could become a potential public place. Two sites were eventually selected – first, a school precinct located on a hill where students planned to design a library for children and second, a heritage precinct, which was the home of Mahatma Gandhi. This site is significant at many levels and the library here was proposed as an addition to the campus that already houses a museum and archive, and a collection of cottage industries producing products such as handmade paper and hand spun cloth. Both sites were recognizable public places in the city of Ahmedabad and the process of sketching and observing people helped the students

understand the nature of the sites as public places and develop an intuition for their own design responses.

It is also worth mentioning here that the involvement of students in the understanding and selection of sites was an important departure from previous studios (where students are typically given a site) and encouraged students to think critically about the situating and making of public places. Students visited and mapped movements of people in and around the sites, observed the distribution of activities, and reflected on their own preferences to places within the two sites. After extensive discussion on each of these factors, we finalised the precise locations within which the proposed libraries were to be located. The point to be noted is that the processes of sketching, mapping people's behaviour in and occupation of public places, and the distribution of activities and other physical features of the site became the basis for site selection, and, as I discuss next, for the development of the program as well.

Developing a program

Unlike typical studios at our faculty where students are given a specific design brief with an area statement specifying sizes of spaces to be designed, students were encouraged to develop a design brief by observing libraries in Ahmedabad. They worked in pairs and mapped the flows of books, staff, visitors and other services in libraries and developed – in discussion with instructors – a program for the library. They also did an anthropometric exercise where they sketched – at a scale of 1:1 – the minimum sizes required for typical functions of the library. These exercises served two purposes. First, students were beginning to think of their designs in terms of the workings of a library rather than as forms or volumes, and second, students were considering dimensions in terms of users' requirements rather than in terms of abstract, pre-determined sizes.

The intention here was to help students develop a nuanced sense of what their design problem was in experiential terms rather than in terms of sizes or requirements alone. We asked them to think of the program as a kit-of-parts to which things may be added or removed in order to create a particular kind of place. They were also encouraged to reflect on the sketches and photographs of public places and other libraries and imagine the kinds of places they were. Through these exercise, students examine spatial triggers for human behaviour. To supplement and give a degree of focus to these efforts, student interacted with different user-experts to understand and get specific inputs about spatial requirements. These two foci together made for a difficult task since it required the synthesis of data and experience on the part of the students. Students worked in two ways – on the one hand, they used fuzzy visualisation techniques such as sketching in soft media, which helped explore qualities of desired spaces while, on the other, flow charts helped understand interrelations between activities in the building without getting prematurely bound by architectural forms. In this way, the studio program was not a precursor to design but emerging through a process of visualising relationships and qualities of sites and users.

(Figure xx: Sketch visualising the qualities of places - Forthcoming)

(Figure xx: Flowchart of library - Forthcoming)

It is useful to iterate here that, during the process of program development, we paid particular attention non-programmatic requirements and understanding sense of place that students desired in their designs. The initial emphasis on exploring people and places led to extensive discussions on what the library could have as additional functional requirements,

which formed a public interface for the library as a public place. Students eventually decided to include playing, story-telling and workshop areas for the children's library, and self study areas (for slum children from the neighbourhood of the heritage precinct) and information/ exhibition areas for visitors. Both these sets of functions were beyond the basic program of the library and were developed on the basis of students' observations of the sites and people's activities on the sites. They led to libraries being characterised and imagined in particular ways. For instance, the children's library was to be designed as a 'playful' or a 'surprising' place while the library in the heritage precinct was imagined as a meditative and introspective environment.

This approach to program formulation and development of initial design ideas was interesting on two counts. First, students were attempting – and struggling – to visualise and project the sense of places of sites as a starting point for their designs. They were struggling because it was often verbal descriptions, rather than visuals, that students presented in class. Second, the struggle with visualising architectural qualities led to more precise tasks in the next few stages, in order to help the students think through drawings rather than through words or photographs alone. This is seen, for instance, in the conceptual design stage where students developed models on the basis of relationships within their proposed designs.

(Figure xx: Shivani's sketches – Forthcoming)

(Figure xx: Shivani's panels of Gandhi Ashram – Forthcoming)

(Figure xx: Milap's map of the CEPT campus – Forthcoming)

Developing concepts

During the stage of conceptual development, students experimented with relationships between different types of spaces i.e. open or the public interface of the library, controlled access of the reading and book stack areas of the library, and closed or service areas of the library. Unlike concept models that are typically made on the basis of massing or volumes that will make up the buildings, in this studio, students made concept models on the basis of these three types of space within the library. Depending upon the library and users they had chosen, students worked with different combinations of open, controlled and closed spaces.

(Figure xx: Concept models in the library – Forthcoming)

As the students themselves admitted, this exercise was a struggle since the models were not building forms but attempts to visualise relationships between various users of the proposed library. This was a departure from their earlier studios and a distinct shift from designing spaces to imagining places. As the students compared notes with other studios within the faculty, they realised that concepts could be developed on the basis of criteria other than volumes or massing. It also drove home the point that the concept model was a reference point that they would return to throughout the design process.

Design development

Once a number of concept models had been made, students selected any one configuration for further design development. The shift from a fuzzy concept to hard-line drawings was difficult - students struggled to constantly remind themselves about users of the library and the kind of place they were trying to make. This is where discussions with various user-experts proved instrumental in helping the students with design development. Two types of user-expert engagements took place. First, with people who were typically involved with the proposed user group and building type i.e. teachers and care takes of children on one hand and staff of the heritage precinct and managers of similar institutions on the other. Discussions with these user-experts helped students' firm up their design programs and the kinds of places, functions and relationships they were imagining. The second type of user-expert interaction was with people who occupied buildings similar to the one that students were designing. They pointed out desirable and undesirable aspects of the buildings' designs that the students could keep in mind while working on their own projects.

Inset 1: VISIT TO KINDERGARTEN SCHOOL

(Forthcoming).

Evaluating designs

A key challenge through the semesters was to integrate inputs from user/experts and observations of people and places into students' own designs. One of the ways in which our studio attempted to deal with this challenge was to encourage students to inhabit their own designs. This was done in two ways. First, students were encouraged to orally describe their design in terms of how different users may move through the place. This process of narration required them to notionally inhabit their own building. Situating their own bodies and senses within their designs helped them think in terms of sequence of activities, relationships between various users and the qualities of places that they were designing. For instance, it helped them articulate what playfulness meant in the design of the children's library or what introspection or meditation meant in relation to the library in the heritage precinct. Second, in the later stages of design, students were required to make large-scale drawings including people, furniture and activities as they imagined taking place within their proposed buildings. This helped them clarify movement, activity and scales within the building. These two methods were intended to help the students think about their designs from inside out i.e. as places to be inhabited by people rather than as forms or elevations to be seen.

Inset 2: CONVERSATION DURING A REVIEW

JD was a reviewer for an interim stage of the studio. JD is an architect and also the mother of two children, one of who is an avid reader. During the review, she sensed that one student was completely unaware of how young children behave and the short attentions spans they have, for instance. This is the conversation that followed:

JD: Let's stop here for a minute.

Stu: OK.

JD: Do you know any young children? Like a younger sibling or relative?

Stu: err... Yes, I have a four year old niece.

JD: Does she sit in one place quietly and read a book like you imagine children in your library?

Stu: Never! She doesn't sit quietly for more than a minute! Like, her mother has to force her to sit and eat her meal.

JD: Ok. Now imagine your cousin taking this child to your library. What will the journey be like?

Stu: err... they will enter the library here [pointing to her drawing].

JD: No, wait. How did they get here? Start with them arriving on the site.

Stu: Ok. They drive into from here [pointing to her drawings again]. They park here and walk towards the library.

JD: Does the child calmly get down and walk with the mother?

Stu: err... I suppose not. She usually gets out of the car and goes towards whatever she finds interesting. So I suppose they will get down and the child will wander off. The Mother will have to call her back and maybe forcefully take her indoors.

JD: Ok. Then?

Stu: They will walk in and go to the information desk. There they will find out what books they want.

JD: If you had a excited child with you, would you prefer to search for what you need before you came to the library, or would you do it in the library when the child tugging at your arm?

Stu: Either ways, its possible.

JD: I usually do whatever preparation I can before leaving home with my kids. It's easier because your attention is divided between keeping an eye on the kids and trying to get something done. You may want to think about this. Not all kids are the same. Ok. What happens next?

Stu: Parents can leave the kids in this quiet zone to read a book or play with a toy, and can go look around for other stuff in the library.

JD: If you think about your niece sitting there, will it remain a quiet zone? Do you think your cousin will be able to walk around and leave the child there?

Stu: errr.... [silence]... I dint think about that... I suppose not...

JD: What do you think might happen if the child was sitting there and parent went off looking for something?

Stu: ... I think the child will start looking for her mom.

JD: Will she shout 'MUMMA'?

Stu: She'll definitely shout for her mother... and will actually keep calling until her mother comes...

JD: So do you think the library will work like you earlier described. Why don't you imagine visiting this library with your niece, and then see what needs to go where?

The final evaluation of the design projects was done keeping in mind the people-centered focus and methods that were emphasised throughout the studio. Reviewers focused on usage and experience of the building to discuss both students' ideas and their presentation. An important and consistent feedback from the reviewers was that students had attempted to engage with questions of users and their experience across the various stages of the design project. What could have been explored further was the materialisation of the ideas in more

precise terms i.e. the projects could have included, for instance, more detailed design development and diagrams illustrating the usage of the building.

(Figure xx: Final drawings and model by a student – Forthcoming)

Reflecting on the studio projects at the end of the semester, my first instinct was that the Fellowship studio was not, after all, very different from other studios at CEPT University, where in each case, students are asked to think about the people they are designing for and are required to visualise their designs in three dimensions. However, students themselves noted that the course of the studio felt different. As one student noted ‘the studio was extremely challenging with a different concept.’ Some were satisfied with the explorations in the studio and pointed out that ‘the series of exercise were interesting’ but also said that ‘by the time we got under the skin of the project, the semester was over!’ Other students found the tasks disconcerting, and noted in their feedback that the tasks seemed ‘strange’ and they were not sure if they sufficiently explored the complexities of the design of the institutional buildings. What the feedback served to highlight was that the students noted a difference in the studio process. While their actual engagement was contingent upon many other factors, it was evident that the emphasis on people-centred design and its attendant methodologies was more unusual than previously imagined.

2. ELECTIVE HUMANITIES WORKSHOP – PLACE MAKING IN URBAN INDIA

The second course offered within the Fellowship was a humanities elective course, where students critically examined the contexts in which architecture is produced, used and transformed. While such courses are not design exercises or studio based courses, they play an important role in creating a space for reflection and engagement with wider processes that shape architecture. Having conducted such courses at CEPT University in the past, I was aware that students' subsequent academic work has often recalled these exercises as encouraging them to be more sensitive to context, architectural program and therefore the process of design itself. It is on account of this feedback loop of such courses into design studios that I proposed one studio and a broader, people-centered methodology course for this Fellowship.

The course itself was designed in a workshop format and focused on the study of roadside shrines in the city of Ahmedabad in India as a lens through which to understand how urban public places are appropriated and become meaningful to people. Such shrines are a common site in most parts of India and have increased substantially in number and frequency in the past twenty years. Located at street corners, on busy streets, on important roads, and abutting buildings, these shrines of various lesser – and often unknown - gods and goddesses vary considerably in size, numbers of worshippers and therefore significance within the urban landscape. What is particularly interesting is that these structures are illegal. They typically do not have legal sanction to appropriate and occupy parts of streets or pavements, as they presently do. Once established, however, the sacred nature of the shrines provides social sanction and no one – neither the urban municipal authorities nor other people – seriously attempt to remove the shrine. In some cases, such shrines have been razed to the ground only to rise up again on account of the worshippers' persistence.

The shrine, then, is not merely a small religious structure or an illegal entity alone, but a complex metaphor for the relationship between public places, communities, religion and politics

in India. What makes these shrines particularly relevant for a people-centric approach is that they are nearly never remarkable architectural objects but are powerful and significant place in the minds of the local communities or the people who worshipped there. They are definite anchors within the streetscape and both shaped and are shaped by the nature and density of activities that swirled around it. Consequently, it also provided a rich and layered phenomenon through which students were introduced to notions such as the making or appropriation of public place, the relationships between people and places, and more broadly, to the nature of Indian urbanity.

(Figure xx: Image of road side shrines – Forthcoming)

About Humanities courses

Before moving on to a discussion of the course itself, it is useful to position the humanities courses within undergraduate architecture pedagogy. The architect in people-centred design approaches is imagined as an empathetic individual and undergraduate architecture pedagogy must aim to inculcate the same within students. Humanities courses, such as the one discussed here, are a step in this direction. The relevance of this approach is highlighted by Donald Schon (*The reflective practitioner* 1983), who offers some key insights into the nature of architectural practice today, and by extension, into the demands on architectural education today. There has been a fundamental shift in the nature of the design practitioner in the past few decades, which Schon suggests is a shift from ‘the “triumphant professions” of the 1960s to the skepticism and unease of the 1970s and early 1980s’ (Schon 1983, 19). Design practice today is characterized by “complexity, uncertainty, instability, uniqueness and value conflict’ (Schon 1983, 18), and consequently ‘... professionals have been

disturbed to find that they cannot account for processes they have come to see as central to professional competence.

It is difficult for them to imagine how to describe and teach what might be meant by making sense of uncertainty, performing artistically, setting problems and choosing among competing professional paradigms, when these processes seem mysterious in the light of prevailing models of professional knowledge' (Schon 1983, 19-20). Given then that the architect as a professional must navigate contingencies in the course of a design project and cannot operate through technical knowledge alone, Schon suggests that successful practitioners typically 'reflect in action', which is to draw from 'a repertoire of examples, images, understanding and actions' from past experience and knowledge (Schon 1983, 138). This is in direct contrast to the 'technical problem solver' who has a more definite stance towards enquiry, which is characterized by terms such as 'objectivity' (Schon 1983, 133). Through the humanities course that focuses on providing opportunities for experience and making sense of the experiences, it is intended that the students' capacities for reflection-in-action will be enabled.

My own approach to Humanities exercises - as exemplified in the Fellowship course - focuses on the direct immersion and engagement of students with urban phenomena as the medium through which theoretical connections are made and understood. Implicit in this is the priority given to experience and sensing rather than distant theorizing. There are two reasons for this- first, experience and images of phenomena are likely to have greater recall later; students may not necessarily remember precise theoretical connections, but the experience of following a cow around for a whole day or conducting a heritage walk are likely to remember in greater detail. Secondly, it opens up the students mind to completely different ways of looking and making sense of daily life around them. The immediacy of larger concepts such as public place, religiosity and caste structures in our everyday lives becomes apparent, and, in the student, there is a heightened sense of self and of being within these different webs of interaction.

It is also important to note here the usefulness of considering the city and everyday life as a laboratory for such explorations. This is because designers typically draw from repositories of images and experiences that they have accumulated in order to design, and the richer the memory of experience, the better equipped the designer is. In other words, how we engage with and 'know' built environments becomes the basis of our architectural repertoire, and that 'knowing' is a continuous process that occurs through exchanges between ourselves, people and the world at large.¹² Constraints of architectural curricula mean that the various courses primarily deal with buildings rather than the processes by which built environments are shaped and transformed. The proposed course offered students an opportunity to understand how places are appropriated and made meaningful by people, and more broadly, engage with the social, political and legislative realities that shape our urban environments. Theories and methods from the social sciences and the liberal arts are framed and made relevant through the concreteness of students' engagements with their everyday environments. Where ideas such as urban development or religious politics may remain incomprehensible terms, the actual mapping and documentation of people, shrines and its surrounding areas drove home the point of the interconnectedness of urban life in a much more definitive manner. And indeed, as we will see later on, students have developed extremely complex alternative narratives of the city through the process of documenting and visualising people's associations with roadside shrines.

Understanding roadside shrines as public places

The starting point for the course was the recognition and documentation of roadside shrines by the students. We selected a stretch of road running nearly from the centre of the city towards a slowly urbanising but distinctly rural periphery. The intention was to be able to

¹² Trevor H.J. Marchand, "Making knowledge: explorations of the dissoluble relation between minds, bodies, and environment," *Journal of the Royal Anthropological Institute* 16 (2012): S1-S21.

compare shrines in different urban conditions – from the dense urban environment with a fragmented commuter population to much more localised shrines and communities of worshippers. While these discussions were introduced in the beginning of the course, it was important for students to see the shrines and identify how and why it was significant to people. On the first visit to the selected site, students drove around in groups and noted down the shrines they encountered along the way. In the next discussion, students expressed surprise at the number and types of shrines they had noted. As one student put it – “I drive past that road everyday and had never seen noticed the shrines. Today I realised there are so many of them. And there are gods and goddesses that I had never heard of.” This was a satisfying beginning because the students’ attentions had been drawn to elements and life on the sides of the street. From an earlier experience of teaching such a course, I was aware that once students started paying attention to such things, they carried these memories and continued to do so in other situations as well.

Having noticed the shrines, it was important to develop a framework for systematically documenting the shrines and the structures of significance around the shrines. To this end, we divided the numbers of shrines among the students. They worked in groups and documented the shrines in terms of the deity, daily and other periodic rituals, myths surrounding the deity, miracles associated with the deity and the shrine, the distribution of worshippers and the activities that take place around the shrine. Students prepared a map marking the location of the shrines and panels with the ethnographic information about each shrine. This allowed each student to become familiar with the shrines and the stories around it. It also made the students realise that the shrines were not simply small structures built along the roadside, but had stories, rituals and communities attached to them.

(Figure xx: GIS map of selected road showing land use and shrines – Forthcoming)

(Figure xx: Students' preliminary documentation of shrine – Forthcoming)

Documenting and visualising people's associations

Having moved ahead with identifying shrines and noting some stories and ritual practices around these shrines, the next step was to systematically explore the equation between shrines as places of significance for communities. While the previous task was largely exploratory and anecdotal, the next stage directed the students' attentions towards analytical categories such as size and deity in shrines, demography of worshippers, patterns of signification, and correlation between shrines and land use in surrounding areas. This stage of the course comprised two parts – first, through input lectures and discussion and students developing visuals about the relationship between people and the shrines.

The input lectures were intended as theoretical and conceptual frames for the students' own engagements with the shrines and communities of worshippers. They were broadly concerned with two aspects – the nature of urban development in Ahmedabad as the context of the shrines, and the deities and the various traditions and geographies that they belonged to. For instance, the discussions on the nature of urban development in Ahmedabad aimed to highlight some of the key features observed along the road selected as the site. We eventually discerned that the urban development along this road maybe classified into three categories – dense urban development with primarily commercial complexes along the road in the centre of the city, mixed medium density development between the centre and the periphery, and a slowly urbanising periphery, which still had pockets of rural settlements in the periphery. These

categories served to frame students' other findings such as the nature of people's associations with shrines under different community and urban conditions.

The next lecture focused on the deities and their social and geographic backgrounds because, as I mentioned earlier, the gods and goddesses worshipped in these shrines are often not very well known and may be worshipped by particular communities or ethnic groups only. It was important to track how and why these deities travelled with their worshippers, who, for instance, may have migrated from different parts of India. The processes that brought the people to Ahmedabad brought the deities as well. The stories or the iconography of the deities often gave clues about its geographic or social origins, which in turn provided some insights into how these shrines came to exist at particular locations within the city.

Understanding the socio-religious genesis and development of the shrines was important for two reasons. First, it established the shrines as having particular histories, rituals and associations for specific groups of people. The passing of time and the exigencies of urban development often meant that the original worshippers were replaced by other people who lived or worked in the vicinity of the shrine and had begun to worship there. A shift in the community of worshippers at a particular shrine entailed a shift in association of people, and the shrine in such cases, transformed from playing a local votive or protector role to becoming a more widely accepted sacred place. While this was an interesting anthropological finding, it was also an important architectural realization about the shrines as being unique, arguably subaltern archives of Indian cities.

Second, the shrines established religiosity as an important shaper of Indian public places. That particular groups of people appropriated and occupied public places and cause inconvenience to other people by obstructing traffic or occupying footpaths never seemed to matter. The sacred nature of the place overruled any other consideration, including the law, and shrine, once established, was nearly impossible to dislodge from its location. This phenomenon was not a simple one of a group of people occupying a place and others tolerating it. What was

evident was that the shrines have tacit social and legal sanction on account of the present-day political climate, nature of Indian society with regards to religion, and the tolerances of Indian public places. While the students only developed some insights into these complex relationships, it was enough to drive home the realization that places are not physical entities or aesthetic forms alone and that there are other systems that shape public places.

Inset 3: MYTHS ASSOCIATED WITH ROADSIDE SHRINES

1. Pragat Hanuman, Drive In Road

The Pragat Hanuman Mandir (temple of Hanuman who appeared/ became visible) was built when Hanuman appeared in the dream of Khimdas asking him to find a stone and to start worshipping it. Khimdas mentioned the dream to his father and together they found the stone as Hanuman had revealed in the dream. Khimdas' father built a shrine to the stone and the family has continued to worship the shrine since. As the city grew, the shrine found itself in the middle of a road, where the municipal authorities demolished it. Khimdas' family rebuilt it by the side of the road where it stands today. The priest's family believes that praying to Pragat Hanumanji can help people secure jobs as has happened in the past. Once someone threw a stone at the shrine in a state of drunkenness and found himself sick and hospitalized the very next day. The man realized his mistake and became a *bhakta* (devotee) after that. Interestingly, the priest also felt the same man stole money that was being offered in the *danpeti* (donation box) of the shrine, where they usually collect between Rs. 100-150 everyday.

2. Story of Hiredada Maharaj

(Forthcoming)

3. Story of Jogani Mata

One of the many shrines dedicated to Jogani Ma, this shrine had an old woman caretaker who was not very forthcoming with information about the shrine. The story of Jogani Ma is that together with her consorts Jaya and Vijaya, she fought a battle with *asuras*, but Jaya and Vijaya were still hungry for blood. To satisfy them, Jogani Ma cuts off her head and feeds them and herself with her blood. The image of Jogani Ma in this shrine is a generic, popular image of a female goddess similar to Shakti or Amba from the Hindu pantheon. Jogani Mata is often associated with *tantric vidya* (black magic) and maybe that is why the old woman did not want to talk about the shrine.

The visualisation of the relationship between people and shrines was inevitably a complex task. Traditional architectural graphic conventions such as plan or sectional views were insufficient to express the idea of significance. Photographs were more evocative but only when accompanied by the stories that the students narrated alongside. In any case, the photographs by themselves did not embed any analytical possibilities beyond providing a static view of a particular shrine. Textual narratives too, were insufficient. The stories of the deities or the miracles of the shrines were not just tales, but were intertwined with the physical location of the shrines. The very significance of the shrines was evoked through the ritual processes that took place around it. Given that the mythic imagination, social significance and practice, and the physical location of the shrines were conceptually inseparable, how was one to visualise these relationships?

While the students struggled to document the shrines as places of significance, it was worth asking why these relationships must be visualised in the first place. In the Fellowship studio discussed earlier, students observed and sketched people's behaviour and occupation of

public places with a view to understanding triggers for human spatial behaviour. These observations and understandings were to fuel their own imaginations while designing. In the case of the shrines, however, the imperative to visualise was largely a methodological one. As I mentioned earlier, this course was not a design studio but a humanities course and was, therefore, concerned broadly with the contexts in which architecture is produced, used and made meaningful. It was expected that through this course, students develop tools for thinking about these relationships. Visual methodologies are not an outcome but active agents in this thinking process. In other words, attempting to visualise these relationships was intrinsically a process of *understanding* some aspects of the relationship as well.

While the first task of ethnographic documentation was structured more closely, the second task of visualising associations was more open-ended. This was because the nature of association (such as religious belief or faith in miracles) cannot be a pragmatically measured entity but, rather, required a degree of creative interpretation and visualization. Rather than physically documenting the shrines and textually documenting narratives such as myths and miracles associated with the deity, we focused on exploring how the two may be brought together through different visual media. An additional frame of reference was the idea of taking the visuals back to the communities of worshippers to discuss what they thought of the students' rendition of the shrines and its significance. This communicative aspect gave clearer direction to the students' explorations.

The class comprised of students from all stages of the undergraduate program. At this stage of visualisation, it quickly became apparent that the younger and older students were engaging with the given task at different levels of complexity. This was discussed in class and we decided that the younger students', i.e., in year one and two of study, would mainly document stories and practices through artwork that was to be eventually displayed at the shrine itself. The process of constructing stories, of selecting appropriating visual styles, and noting specific details in and around particular shrines was appropriate for the younger students

to engage with the idea of physical markers of a social and religious phenomenon. As I discuss later, the feedback from the communities further helped them understand if they had represented the shrine and its context in an appropriate manner. For the senior students, it was agreed that their visualisation must critically engage with the question of the relationships between people and places. They too had to design a component of community engagement i.e. take their work to the concerned groups of people and get some feedback on how the people saw and evaluated the representation of their own environments.

One of the challenges faced by the Year One and Two students in the preparation of their art work was about drawing styles. Students initially proposed to prepare drawings inspired of different traditional arts practices in India but soon realised that learning the graphic conventions and narrative structure of any art form and then employing it to illustrate a different story was a complex task. We circumvented this problem by suggesting that the students first prepare a draft storyboard of the narrative they were attempting to visualise. This was to help them focus on iconography and the degree of detail they were aiming for. This was also intended to help them think and sketch in a medium and style that they were already familiar with rather than attempt to mimic something that was alien to their thought process. The key advantage of this exercise, in hindsight, was that students paid attention to and made evocative drawings that showed not only the shrines as buildings, but incorporated practices and myths into the narrative. This, as I discussed earlier, was an inherently complex task. Further, taking this artwork back to the shrines and getting feedback and appreciation about their efforts to represent places of local significance gave the students a renewed confidence that they had done something meaningful.

(Figure xx: Artwork panel telling the story of Haridada Maharaj – Forthcoming)

(Figure xx: Artwork panel showing day and night activities around the shrine – Forthcoming)

(Figure xx: Showing artwork to communities – Forthcoming)

One groups of Year Two students produced an unusual piece of artwork. They adapted a *kavad* box, which is a story telling device from the state of Rajasthan in India. These students visited a neighbouring museum to find samples of such boxes, and developed a story that could be told from within the panels and shutters of the box. After considerable discussion on how the story was to be illustrated, they settled on the idea of a collage made from figures and objects cut out from photocopies of Rajasthani miniature paintings in one case and black and white sketches on a painted background in the other. The result was two beautiful boxes that vividly evoked the stories the deities and the shrines. The sublime qualities of the boxes became evident when they took the boxes back to the shrine and, as I discuss later, the communities were delighted with the object.

(Figure xx: Image of *kavad* boxes – Forthcoming)

Two groups of senior students chose more complex themes for visualisation – one group decided to make a film to reflect the variations in people’s associations to three different shrines of the same deity, and the other group attempt to document people’s projections for the future of the shrines they worshipped at. The group doing the film visited the shrines repeatedly, develop some key ideas for their narrative, conducted interviews and video and then edited the film. The final product was a simple, but interesting rendition of the faith reposed by people on the shrines. The last group of students decided to focus on conjecturing the future of the shrines, particularly, by engaging with worshipper’s imaginations of what the future may be. They

particularly addressed the issue of urban transformation that resulted in shifting contexts for the shrines themselves. Based on the three stages of urban development identified earlier i.e. the dense city centre, the gradually urbanising zone, and the rural-urban periphery, students used each stage as a projected future for the next stage. So the conditions of the dense city centre became the basis for projecting the future of the gradually urbanising zone, which may see similar land use patterns, building densities and demographic changes in population. The students attempted to understand what the affiliation between people and the shrines were in each case, and projected how these affiliations changed in the course of urban development.

Inset 4: CONJECTURING THE FUTURE OF SHRINES

(Forthcoming)

Community engagement exercise

While all groups had to take their visualisation back to the communities related to the shrine they had studied, two processes of community engagement stood out. First, the group projecting the future of the shrine was different because they developed a recursive method of dealing with their theme. They began with an understanding of the shrine, demography of worshippers and nature of urban development and used this to develop some visuals – in the form of collages - about how some shrines may transform in the future. They used these visuals as triggers for conversation about the future of the shrines. Their findings were finally incorporated into a poster that presented a critical analysis of the relationship between

communities, places and urban development. The most important realisation here was that the framework of comparing urban conditions formed an important context within which people's reactions to the shrines and their imaginations for the future could be gauged. This pertains to a point I made earlier about the conceptual intertwining of the social and spatial aspects of built environments and that they must necessarily be studied together.

The other instance of community engagement that presented a unique moment for the course was the reception of the *kavad* boxes by the community. The students took the boxes to the shrines, and people gathered around to see the object. Students opened up each panel and outlined the story of the deity that they had illustrated. By the time they finished their narrative, people began to reach out and touch the box with reverence, generally reserved for sacred objects. The box had become the shrine! The students were touched and surprised that their artwork evoked a certain religiosity among the worshippers, who were enthused that somebody else recognised the power and significance of their deity. A similar incident took place with the second box at the other shrine as well. What was evident from this powerful encounter was that, in attempting to visualise people's affiliations to the shrine, the students had creatively, sensitively, and maybe unintentionally, produced a object that evoked similar sentiments among the worshippers. That students' work could have such an impact on communities was a moment of revelation for the entire class.

3. METHODS AND APPROACHES FOR PEOPLE-CENTRED DESIGN

The two courses discussed above present two completely different instances of engagement between students, people and built environments. Though the intent and content varied, there are some points of similarity. For instance, both courses encouraged students to reflect on their own sensing selves as a way of understanding users and this was intended to translate into appropriate visuals that captured students' own senses and experiences. In short,

we expected them to intuitively respond to what they were seeing or doing. This intuitive understanding and expression is an important part of the design process, which is largely imagined as an act of synthesis. To preface it with analytical studies is to undermine the wealth of sensorial inputs that designers may bring to their work. This also builds toward the idea of empathy, that I highlighted earlier as important for people-centered design.

What these courses also revealed was that the process of dialogue between students and user/experts was not a simple communication of ideas, and, that much may typically get lost in translation. As one student put it – “After speaking to the user/experts (kindergarten teachers and parents of young children, in this case) I know exactly the kinds of things my design for the children’s library will have, but the moment I sit down to draw, I go blank.’ What the student was saying was that her mind was full of impressions and nuances of users in library buildings that she had gained from her interactions with a user-expert, but she struggled to translate them into architectural plans and sections.

In the other course, the group of students attempting to project the future of the shrines made visualisations of urban transformation of a locality, only to find that the user/experts completely dismissed the visuals as being improbable. The students had merged a view of the locality under study with the skyline of New York to suggest high-density development in the area in the future. “The people living there simply said that Ahmedabad will never look like this (referring to the collage), so there was no point looking at the image” was the students’ report. They returned to class, quite disappointed, but having realized that not everybody sees future urban development in the form of high-rise development and mass rapid transit systems.¹³ In short, in both cases, students’ struggled to translate user-expert engagements into visuals – by way of understanding the needs and aspirations of users and in terms of developing designs based on people’s behaviour and requirements.

¹³ Tim Bunnell – Keynote at IASTE, Kuala Lumpur

One cannot, in conclusion, prescribe a set of visual methods that necessarily encourage people-centred design. What is clear, however, is that certain visual tools and process allow students to think about users more concretely as compared to the process of drawings spaces and adding furniture in the form using templates. These tools include sketching, abstractions based on relationships rather than form and learning to inhabit one's own design. I would also argue that not all preparation can be carried out prior to a specific studio project. Other components of undergraduate architectural design pedagogy must equally attention to people and their engagements with built environments.

Courses such as humanities and history must not be concerned with buildings, aesthetics or theories alone. They must, more fully, engage students' senses and build critical abilities on the basis of empirical engagement with their environments. It must also be remembered that even with such approaches, one is not assured of success – however that may be defined. At the very least, we will have students who may have learnt to pay attention to people around them. We may hope that, somewhere, someday, this will coalesce into their design practices.

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NOTES ON CONTRIBUTORS

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Gauri Bharat is Assistant Professor at the Faculty of Architecture, CEPT University, Ahmedabad, India where she is particularly interested in exploring design and research methodologies that prioritise user's engagements with built environments. In the past six years, she has conducted courses on architectural design, humanities and research methods, and experiments with immersing students in the complexity of urban environments in order to understand the contexts in which architecture is produced, used and transformed. Drawing from these experiences, she is presently developing postgraduate courses on architectural history and theory with a distinct emphasis on 'how' rather than 'what' architectural discourses develop.

Gauri's teaching efforts are supported by her doctoral research on indigenous perceptions of built environments. Over a two-year fieldwork period in indigenous villages in eastern India she carried out architectural documentation, ethnographies, and participatory visual research. Through processes of dialogue with the case study communities, she is attempting to develop a participatory and inter-subjective indigenous architectural history.

Gauri is also interested in folktales, cultures of food, and popular visual culture such as calendar or truck art, and hopes to have an archive of such material sometime in the future. She has also become actively interested in feminist academic discourses given her own attempts at work-life balance as a mother of two young children.

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- Postgraduate Certificate in Urban Shelter Design & Development, Lund University
- Postgraduate Certificate in Conservation & Management of Historic Buildings, Lund University
- Master of Philosophy in Architecture, School of Architecture, Planning & Landscape, University of Newcastle Upon Tyne

- Master of Education in Fine Arts/Design Education, Makerere University
- Postgraduate Diploma in Art/Design Education (PGDE), Makerere University
- Bachelor of Arts (Fine Arts), Makerere University

DR. RUZICA BOZOVIC-STAMENOVIC

Ruzica Bozovic-Stamenovic, a registered architect, is concurrently teaching at both the University of Belgrade, Belgrade, Serbia (first semester) where she is an Associate Professor, and at the National University of Singapore, Singapore (second semester) where she is an Assistant Professor. Dr. Stamenovic is also a Faculty Fellow at the Center for Health Systems and Design, Texas A&M University, College Station, U.S.A.

Her research interest is in Human Ecology-space and health, healthful architecture for mega-mature societies and health-restoring design processes. She has published two books: *On Spaces of Healing: Day Care Centers*; and *Family Housing in Denmark*. She has also written a number of book chapters and peer reviewed journal articles and conference papers. She is frequent speaker at scientific conferences and delivered invited guest lectures worldwide (USA, Australia, France, Germany, Denmark, Greece, Singapore, Malaysia, Korea, etc).

For her design work Dr. Bozovic-Stamenovic won major national architectural awards: October Salon (1998), Salon of Architecture (1998, 1991, 1991), Borba (1992), and a number of national and international competition prizes including the prestigious Aldo Rossi's Selection for the 2nd Biennale of Architecture Venice, Italy in 1985 and the national selection for the 8th Biennale of Venice Exhibition NEXT- Destruction & Construction in 2002.

Education:

- Doctor of Science, Faculty of Architecture, University of Belgrade, Belgrade, Serbia

- Master of Science, University of Belgrade
- Specialist in Housing, University of Belgrade
- Specialization in Danish Housing, School of Architecture, Royal Danish Academy of Fine Arts, Copenhagen, Denmark
- Diploma, Engineer of Architecture, University of Belgrade

DR. BENJAMIN CLAVAN, AIA

Dr. Clavan was one of the founding members of the BERKELEY PRIZE and is responsible of the day-to-day operations of the PRIZE, including website design and editing. He practiced architecture in West Hollywood and Los Angeles, U.S.A. for 32 years as Principal of his own firm, Benjamin Clavan, Architect, AIA. The highly personal, one-on-one, residential and commercial projects of his firm have been showcased in design magazine and featured on television. He is also an architectural critic and his commentary has appeared in professional journals. Dr. Clavan is active in civic affairs and over the years has served as an appointed Member of the West Hollywood Planning Commission, the West Hollywood Public Facilities Commission, and as an elected member of his Los Angeles neighborhood's Community Council and Chair of its Land Use Planning Committee. In recent years, he has begun lecturing at various architectural forums, including the International Association for Universal Design (IAUD), the International Union of Architects' Public Health Group (UIA-PHG), and at various universities, including the City University of Hong Kong and Savannah College of Art and Design on the topic around which his entire professional and academic career has focused: the *social art of architecture*. He is now resident in Valencia, Spain.

Education:

- Ph.D. in Architecture, University of California, Berkeley, Berkeley, U.S.A.
- Master of Architecture, University of California, Berkeley
- Bachelor of Architecture, University of Virginia, Charlottesville, U.S.A.
- Non-degree student, Diploma in Architecture program, University College London, London, United Kingdom

DR. EVE EDELSTEIN, ASSOC. AIA

At the time of the BERKELEY PRIZE Teaching Fellowship, Dr. Edelstein was Associate Professor at the School of Architecture, College of Architecture and Landscape Architecture, University of Arizona, Tucson, U.S.A. She is currently a Contributing Faculty Member in Graduate Architecture at the New School of Architecture + Design, San Diego, U.S.A. where she teaches human-centered and neuro-architectural lectures and design studios. Dr. Eve Edelstein has a unique background that combines Neuro-Architectural design with clinical practice and research expertise that leverage her degrees in Neuroscience, Architecture and Anthropology. Eve has created and applied innovative technologies in real-world and award-winning projects (American Institute of Architects; AAH) that address user and client needs.

Her research-based design approach begins with review of existing clinical studies often overlooked by traditional psycho-social evidence-based approaches. Dr. Edelstein works with the NSAD Collaboratory for Healthy Environments, and directs the Design Health CoLab of consulting experts who utilize clinical bio-sensors and wearable environmental trackers to predict and demonstrate the interaction between place and people. As president of Innovative

Design Science, Eve provides research-based design services to international firms applying observation, sensed, acoustic & visual CAVE simulations to demonstrate the influence of design on human performance (cognition, error, intelligibility, wayfinding, health and well-being, etc.).

Dr. Edelstein's speaking engagements include TEDx and international conferences. Her work as Principal Investigator for the AIA College of Fellows Latrobe Prize, demonstrated how circadian light influences heart rate and offered design guidelines. She developed and applied new acoustic applications for the SoniCAVE and new real-time CAVECAD software for immersive digital representations with the UCSD Calit2 / Qi team. Dr. Edelstein is a Fellow of the American Academy of Audiology, and consulted to NASA and the Naval Medical Command on noise-induced hearing loss. For the Department of Health Services, State of California, Eve contributed to the development of policy for world's largest newborn and infant hearing screening program in the world. Edelstein's background in clinical service and research was conducted at top research hospitals in the US and UK (National Hospital Neurology & Neurosurgery, US Naval Medical Center, Harvard/MIT Hearing Lab).

Education:

- Ph.D. in Clinical Neurophysiology, University College, London, United Kingdom
- Master in Architecture, NewSchool of Architecture & Design, San Diego, U.S.A.
- Master in Science (Sensory Neuroscience), (?)
- Bachelor of Arts (Anthropology), University of California, Berkeley, Berkeley, U.S.A.

DR. AJAY KHARE

Professor, Founding Director and Head, School of Planning & Architecture Bhopal, Bhopal, India, 2009 to 2014. Director (Conservation) and Member, Governing Council. (Honorary Position) DRONAH a National NGO working in the field of Architectural Heritage, April 2004 till date. Director of self-owned Architectural and Conservation consultancy firm, KHAM, Jaipur, India, 1994-1998. Conservation Consultant for Jaisalmer Administration Jaisalmer District Administration, Rajasthan June, 1992-94.....

Education:

- Ph.D. in Architecture, De Montfort University, Leicester, United Kingdom
- Masters in Conservation Studies, Urban Conservation Institute of Advanced Architectural Studies, University of York, United Kingdom
- Master of Architecture, Architectural Conservation, Urban Design School of Planning and Architecture, Deemed University, Delhi, India
- Bachelor of Architecture, Lucknow University, Lucknow, India

DR. RACHNA KHARE

Professor, Associate Dean of Faculty Development and Doctoral Programme & Coordinator, Center for Human Centric Research, School of Planning and Architecture, Bhopal November 2012 till date.....

Education:

- Ph.D. in Architecture , Birla Institute of Technology, Mesra, India/Fulbright Scholar at Georgia Institute of Technology (Georgia Tech), Atlanta, U.S.A.
- Post Graduate Diploma in Electrical Engineering (PGDEE), Indian Institute of Ecology and Environment (IIEE), Delhi, India.
- Bachelor of Architecture, Government College of Architecture, Lucknow University, Lucknow, India

RAYMOND LIFCHEZ

Raymond Lifchez, founder of the BERKELEY PRIZE, is Professor of Architecture and City & Regional Planning at the University of California, Berkeley, Berkeley, U.S.A. where he has taught since 1968 (?). He is the author of *The Dervish Lodge: Architecture, Art, and Sufism in Ottoman Turkey*, and numerous additional publications on accessible design, the social history of architecture, and architectural design pedagogy. He received a Community Service Citation from the (San Francisco) Bay Area Book Reviewers Association for *Rethinking Architecture: Design Students and Physically Disabled People*; and an American Book Award nomination for *Design for Independent Living: The Environment and Physically Disabled People (co-authored with Barbara Winslow)*. In 1976 he received the University's Distinguished Teaching Award; in 2002, the Association of Collegiate Schools of Architecture (ACSC) Distinguished Professor Award; and in 2008, the Berkeley Citation, awarded by the University to individuals whose "contributions to U.C. Berkeley go beyond the call of duty and whose achievements exceed the standards of excellence in their fields." His current research interest focuses on Jewish communities in the American South circa 1900. In addition to the

BERKELEY PRIZE, he sponsors several other student and academic prizes and fellowships at U.C. Berkeley and Columbia University.

Education:

- Master of City Planning, University of California, Berkeley, Berkeley, U.S.A.
- Master of Science in Architecture, Columbia University, New York, U.S.A.
- Master of Arts in Art History, Columbia University, New York
- Bachelor of Architecture, University of Florida, Gainesville, U.S.A.

ALEX MACLAREN, RIBA, FRSA

Alex MacLaren is both a practising architect and a teacher. She is a Partner in the firm of Wyatt MacLaren LLP, Architects, Edinburgh, Scotland. While a PRIZE Teaching Fellow, she was teaching in Design Studio at ESALA at the University of Edinburgh, and at Brighton University. She is now Assistant Professor in Architectural Design at Heriot-Watt University, Edinburgh. Her research interests are in built-environment cross-disciplinary collaboration, and training the future industry. The position between practice and academia means Alex is ideally placed to trial pedagogic initiatives which aim to bridge the recognised gap between construction education and training, and industry practice.

Alex co-chairs the construction training initiative, *TEAMBUILD*, now as Director of Education for the charity. As part of this role she is pioneering programmes for higher education syllabi across the UK, working between construction subjects and with professionals outside of the university. She believes that smart education and training for students, honing trans-

disciplinary communication and social skills, is essential to effectively implement the technical evolution of the construction industry.

Alex was awarded the inaugural “Constructing Excellence G4C Champion” Award in 2009, awarded for outstanding achievement by a young professional in the industry. When studying, she spent 2 years as co-chair of the national architectural student society, then called *archaos*. Through these roles and others she seeks to improve the quality of architectural education and promote collaboration and integration across the construction industry. She has taught English in Vietnam and worked with schoolchildren in Guyana. “I get a buzz from working with people and making buildings for them. I love the battered grittiness of post-industrial landscapes and the power and comfort of simple churches, mosques or community halls. I love community and monumentality, and am baffled by inhumane complexity, illegibility and ‘wow’.”

Education:

- Diploma in Architecture, London Metropolitan University, London, United Kingdom
- Bachelor of Arts, Cambridge University, Cambridge, United Kingdom

FAIQ MARI

Faiq Mari, 2013 BERKELEY PRIZE 2nd Place Essay winner, is at the start of his life in architecture and teaching. Mari, awarded an Associate Teaching Fellowship in 2013, participated in the activities of the other PRIZE Fellows during his first year of teaching as a Teaching and Research Assistant at the Department of Architecture, Faculty of Engineering, Birzeit University, Palestine. During that and the following year, he was particularly active in helping to broaden his school's understanding of the goals and potentials of teaching the *social*

art of architecture. The PRIZE also funded Faiq's participation as a representative to the presentation and awards meeting for the 2014 Indian National Student Design Competition: "Inclusive Design for Cultural Interface in Pilgrimage Sites." In 2015, Mari was awarded a Fulbright scholarship to attend the University of Michigan's A. Alfred Taubman College of Architecture and Urban Planning. He is currently studying there for his Master in Architecture degree.

Education:

- Bachelor of Architecture, Birzeit University, Birzeit, Palestine

ELAINE OSTROFF, HON. AIA

Elaine Ostroff co-founded Adaptive Environments (now known as the Institute for Human Centered Design - IHCD) in 1978, as an outgrowth of the Arts and Human Services Project, a multi-disciplinary graduate program supported by the Massachusetts Department of Mental Health at the Massachusetts College of Art in Boston, U.S.A. The graduate program emphasized the leadership role of artists and designers in creating community-based programs for people with disabilities. In 1989 she developed the Universal Design Education Project (UDEP) at Adaptive Environments, a national project with design educators that has become an international model for infusing universal design in professional curriculum.

She coined the term "user/expert" in 1995 to identify the individuals whose personal experiences give them unique critical capacity to evaluate environments. In 1998, she convened the Global Universal Design Education Network and its Online Newsletter. She stepped down as Executive Director in 1998 and worked as a consultant with the Institute for Human Centered Design/Adaptive Environments. Until 2014, she directed the Access to Design Professions

Project, with funding from the National Endowment for the Arts. Access to Design Professions encourages people with disabilities to enter the design professions as a way to improve the practice of universal design. She has been active in the town of Westport, MA as an elected member of the Planning Board, co-chaired the Master Plan Update Committee, chaired the Commission on Disability, and is Vice-chair of the Affordable Housing Trust.

The Association on Higher Education and Disability (AHEAD), and the Environmental Design Research Association (EDRA) both honored her with their 2007 Achievement awards; the AIA awarded her an Honorary Member designation in 2006. She is the 2004 recipient of the Misha Black Medal for Distinguished Services in Design Education – the first woman and the first American to receive that British award. Ostroff was the Senior Editor of the Universal Design Handbook published by McGraw-Hill in 2001. Ms. Ostroff spent two years as a Radcliffe Institute Fellow in 1970-72. Her lifetime archives have recently been acquired by the Smithsonian Institution, Washington, D.C., U.S.A. as part of their permanent collection of documents with historic importance for the United States. She served the BERKELEY PRIZE as Coordinator of the Teaching Fellowships during its two-year history from 2013-2015.

Education:

- Master of Education, Harvard University, Cambridge, U.S.A.
- Bachelor of Science, Brandeis University, Waltham, U.S.A.

JOSH SAFDIE, ASSOC. AIA

Josh Safdie has been studying, teaching, and practicing architecture for over twenty years, beginning with his first survey course at Brown University in the fall of 1991. Over this time he has worked as an architectural historian, a junior draftsman, a solo practitioner, a full-time professor, and as the Director of the Studio at the Institute for Human Centered Design (IHCD) in Boston, U.S.A. While a PRIZE Teaching Fellow, he was an Adjunct Faculty Member at the Massachusetts College of Art + Design (MassArt), Boston. He is currently Associate Principal at Kessler McGuinness & Associates, LLC, Architects, Boston.

Mr. Safdie spent seven years at Boston Architectural College (BAC), the last five as a full-time Professor and Director of Foundation Studios in which capacity he was responsible for the development of the first- and second-year studio curricula. His own teaching at the BAC included both graduate and undergraduate courses, from foundation studios through degree projects, and included the rare opportunity in 2005-2006 to teach students in Havana, Cuba. In 2008, he was named the annual Scholar-in-Residence at Taliesin, the Frank Lloyd Wright School of Architecture, where he ran a parallel studio between both programs during his last semester teaching at the BAC. Through the New England ADA Center, he has also spent several years working with local schools to develop stand-alone curricula focusing on accessibility and Universal Design.

Education:

- Master of Architecture, Rhode Island School of Design, Providence, U.S.A.
- Bachelor of Arts in Architectural Studies, Brown University, Providence, U.S.A.

DR. JOSEPH FRANCIS WONG

Dr Joseph Francis Wong is an Assistant Professor at the City University of Hong Kong, where he has taught architectural design and theory for the past 16 years. He is currently the Assistant Head (Architectural Studies Major) in the Department of Architecture and Civil Engineering and the Major Programme Leader for both the Bachelor of Science (Honours) and Associate of Science in Architectural Studies.

He became a full member of the Hong Kong Institute of Architects (HKIA) in 1996 and is active in a number of HKIA committees and boards, including the Board of Internal Affairs, Board of Educational Affairs, Planning and Lands Committee, and the Environment and Sustainable Design Committee, of which he was Chairman 2007-08. Dr Wong's research interests are in open building and spatial/visual field analysis. His writings have been presented and published in many conferences and refereed journals, including the journals *Design Studies*, *Habitat International*, *Journal of Architecture and Environment* and *Planning B*.

Education:

- Doctor of Education, University of Leicester, Leicester, United Kingdom
- Master of Architecture, Massachusetts Institute of Technology M.I.T., Cambridge, U.S.A.
- Bachelor of Arts in Architecture, University of California, Berkeley, Berkeley, U.S.A.