DESIGN EDUCATION: EXPLORATIONS AND PROSPECTS FOR A BETTER BUILT ENVIRONMENT

Ashraf M. Salama and Michael J. Crosbie

"To remain silent about the values represented in what we do, either out of mistaken belief that professionals must remain ethically neutral or out of a romantic dismissal of all normative values, is to eliminate one of the main reasons for the profession's very existence."
Thomas R. Fisher (2006) In the Scheme of Things. Alternative Thinking on the Practice of Architecture, University of Minnesota Press, P.30.

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TThis volume marks the conclusion of the fourth year since Archnet-IJAR was established. A considerable effort has been put into this volume, which addresses timely and pressing questions that pertain to design pedagogy in the built environment related fields. This special edition combines the second and third issues of volume 4 and integrates the efforts of more than 45 contributors from 12 countries presented in 32 papers. In response to our call on the web in August 2009 for papers, we have received more than 80 expressions of interest and more than 65 abstracts. The papers included in this edition are those of the accepted abstracts that were developed into full papers and followed the typical review process of the journal. These figures underscore a rising interest in writing

about educating future architects and urban designers. In fact, they manifest a commitment to the field of design education in its broadest sense.

Design education is the cornerstone of design professions. The approach to and the content of it are the backbone of design practices. This suggests that it has to be encountered and to be dealt with as a rich field of pedagogical discourse whose foundations, underlying theories, contents, and methods can be questioned and critically analyzed. Reaching across the boundaries of cultures and regions, the theme of this volume addresses design education in its fullest sense in order to reflect its worldwide status in 2010. Contributions to the volume exemplify worldwide efforts in shaping the future of design pedagogy.

Theorists, academics, researchers, and practitioners have been discussing the role of design education in shaping the built environment since professional education was established two centuries ago. Strikingly, research on design education continues to be marginalized in academia. While the practice

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of design professions has changed dramatically and keeps changing, design education in the built environment-related disciplines reacts in a very slow manner at best, or resists change or adaptation at worst. The work of the contributors in this volume, however, represents honest attempts to introduce change, and to tame and react to the demands placed on design professions by societal, environmental, and cultural needs. It addresses topical concerns that pertain to the goals and objectives, structures and contents, and delivery methods and techniques required for responsive design education, a type of education amenable to graduating designers capable of creating better built environments.

For the purpose of classification, the volume is divided into two main sections. The first represents paradigms and positions on design education, while the second embodies design teaching practices. Due to the archetypal difficulty inherited in any classification process, the reader may see some overlaps between the two sections where positions are typically fostered by practices and practices are normally based on positions, motivations, and drivers. Notably, on the one hand, papers classified under paradigms and positions address shifts and transformations in philosophical foundations, approaches, program contents and structures, curriculum development, teaching processes, models of teaching as adopted and advocated at the institutional level or by professional organizations. Other contributions under the same section explore specific ideologies and doctrines, as reflected in the development of theories (theorizing) on design pedagogy and as adopted by individual educators. On the other hand, papers classified under practices involve contributions that offer new ideas and visions through implemented

and validated frameworks of teaching models undertaken in lecture halls and design studios. This includes alternative learning/teaching methods, underpinned by pedagogical theories or design key issues, and those that concern themselves with community-based design learning, service learning, experiential learning, inquiry-based learning, and outcome-based learning.

There are 17 papers under the positions-paradigms section. These can be looked at from different perspectives based on the context within which they were developed, the institutional setting, the quality and interests of both faculty and students, and many other factors. However, we look at these contributions within the context of this volume in terms of:

• positions on general teaching and curriculum issues,
• positions on process oriented pedagogies,
• research-based positions, and
• philosophical positions.

The works of Nikos Salingaros and Kenneth Masden, Michael Crosbie, Abdul Rahman, Avi Friedman, and Gregory Marinic offer positions and ideas on general—yet crucial teaching, learning, and curriculum-related issues. Salingaros and Masden present Intelligence-Based Design as a paradigm in which humans are engaged through a complex system of information. They define the theory behind Intelligence-Based Design through the direct neurological evaluations of surface, structure, pattern, texture, and form, through positive neuro-engagement with the physical world at the deepest level common to all people, i.e. "Innate Intelligence." Applications and obstacles of their studio approach are articulated in support their argument of introducing intelligence as a way of

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thinking in design.

Crosbie's article emphasizes the need for clarity in establishing a program mission, and the role it plays in guiding the overall teaching and learning processes. He explains how the mission of a program can be incorporated into the larger institutional context while at the same time serving as a roadmap for curriculum content, teaching approaches, and delivery. In another context, Rahman calls for accelerating change in the mindsets of architects as a whole towards designing for architectural sustainability, while arguing for the need to revamp Malaysian architectural programs and course contents in a manner that addresses sustainability effectively and efficiently.

Friedman argues, and rightly so, that architects are becoming more and more marginalized in the huge home-building industry where other professions are moving in to profit from the need for affordable housing. Architects need to expand the market for their services to include a far greater percentage of new buildings (houses and residential communities). Based on the contention that architectural education must play a key role in redefining what the profession should offer, Friedman calls for a change in education to reflect the needs of the profession by introducing behavioral psychology, demographics, and building economics as important curriculum areas that respond to the needs of the market so that architects are not seen as luxury but their services will be regarded as indispensable by developers and the overall housing industry. Along the same approach of calling for change, Marinic argues for introducing flexible and open learning environments as a reaction to the continuous transformations in and the emerging needs of the built environment. While there is a typical uncertainty in introducing new methodologies, alternative approaches to content delivery, and the utilization of advanced visualization techniques, Marinic believes that they can provide flexible learning environments amenable to addressing the future needs of the profession.

While the papers of Keith McAllister, Hatim Nabih, Ujawala Chakradeo, Stephen Temple, and Sujata Shetty and Andreas Luescher are diverse in terms of the issues they address, they share the placing of high value on teaching/ learning processes. McAllister argues that the consideration of "how" to design in addition to "what" to design presents architectural educators with that most pressing challenge of "how do we best teach the design process?" Based on this question, he presents scenarios for teaching frameworks and outcomes to demonstrate the effectiveness of introducing key strategies in making the design process in the studio more relevant and of greater value to architecture students. Along the same line of thought, yet utilizing different approaches, Hatim Nabih presents a process-based learning approach where lecture based course work is offered in a studio-like setting. Based on his belief that student motivation is increased by establishing a higher level of autonomy in the learning process, Nabih attempts to link theory with applied design work by synthesizing the principles of Constructivist Learning and Problem-Based Learning (PBL) where students are given a greater control over their learning. Ujawala Charadeo goes along these lines and illustrates the notion of the process as a critical element that speaks to the three components of architectural education: knowledge, skill, and design.

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Stephen Temple's paper responds to the question of what beginning design learning experiences best support the remainder of design education. His work manifests a model of a beginning design pedagogy that is based on developmental relationships between concrete and abstract processes of learning as a foundation for transformative creative thinking that enables student self-development that progresses up the curriculum. Aligning with the theories of Piaget on developmental learning theories, a basic component of Temple's approach is that learning at the primary level of direct experience self-initiates brain changes where students form their own structure of learning. Therefore, beginning learning experiences are those that best enable decision-making consistent with the biological interactivity between body and mind, between, respectively, the concrete and the abstract. The paper of Temple is of particular note--especially that many of the students skills, attitudes, behaviors, habits, and routine thinking are developed early in their education and therefore, it is crucial to consider developmental learning aspects early in the students' education.

While analytically describing a process-oriented design experience, the work of Sujata Shetty and Andreas Luescher places emphasis on content-related issues. Arguing that urban design education should be able to respond to the new realities of shrinking cities. Examining a collaborative urban design studio, they conclude with a number of valuable lessons: "1) In a shrinking city, urban designers may need to focus less on designing the solids and more on meeting the challenges of the voids. 2) In spite of urban design's historical bias towards design, students need to be strongly grounded in the planning context, which inter-disciplinary collaboration can help achieve. 3) Now more than ever, even a small urban design project has to be viewed in a larger scale - in the context of the entire city and region. 4) In an era of shrinking resources, the urban design studio can be an important source of ideas for cities facing the physical consequences of shrinkage."

Research-based positions are articulated in the works of Beatriz Maturana, Ashraf Salama and Sherif El-Attar, Elmira Gur, and Ayman Ismail and Mona Soliman. The work of Maturana explores the architectural design studio and how it positions itself as part of the real world and how the real world is positioned in the studio. She examines three parameters that include consultation, need, and client in design briefs and handouts. Spike and the slum dwellers are two types of clients that place such an examination in focus. Maturana's analysis of 145 handouts from three architectural faculties in Australia reveals that the reality of architectural practice does not seem to be well represented and nor play a significant role in design studio teaching. In essence, she concludes that the absence of these parameters devalues their role in both education and practice. Interestingly, she closes her work by posing the crucial question of how reality and which reality is represented in the architectural design studio.

On student perceptions of the architectural design jury, Ashraf Salama and Sherif El-Attar's work arguably fills the informational gap that pertains to knowledge about the jury system within the context of the Middle East. Their work answers the questions of how jury practices are performed in the context of the Arab world and how students perceive the jury system

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and its underlying practices in such a context. Inducting generalities between the Western and Middle Eastern contexts, they offer an analysis of an extensive literature review of the educational value and the communication processes involved. Two empirical studies are carried out with the intention of investigating jury practices and student perceptions within the context of selected cases from Egypt and Saudi Arabia. They propose a number of scenarios to improve the performance of the jury, its acceptability to architecture students, while raising its educational value in terms of process and outcomes.

The work Ayman Ismail and Mona Soliman analytically describes and assesses collaborative learning applied in the context of transforming the traditional single-level design studio into an multi-level combined design studio at King Abdul-Aziz University, Saudi Arabia, where students from different grade levels work collaboratively. Calling for the value of vertical design studios, the results of their survey of students' impressions, the skills acquired, and the assessment of project outcomes stress the importance of interaction to promote deep learning. On the other hand, Elmira Gur examines the impact of the physical setting on the students' learning and satisfaction within the context of Istanbul Technical University. Exploring the spatial use of open environment and cell type environment in the studio, she presents the results of student surveys on the way in which each type of setting supports communication and interaction and the overall learning process.

The last three papers of this section represent a number of philosophical paradigms or positional interpretations. The work of Anna Hooper is derived from the origins of western philosophy

and attempts to explore the acquisition of knowledge, as well as the landscape of language to articulate the architectural. Her work stems from the ideological writings of Plato, Homer, Pan, and Gardener and places emphasis on form and language. However, the work of Iris Aravot attempts to establish an ethical platform for architectural education. She suggests that prior to debating or establishing form and design principles that vary in time and context, an ethical disposition should be nurtured and cultivated in a manner that relates architecture to a larger sense of life. Aravot's work outlines a platform for an ethically oriented architectural disposition, rooted in the triple cornerstone of "I," "The Other," and "Thing" based on the phenomenologist writings of Husserl, Levinas, and Merleau-Ponty. Departing from focusing on one single disposition, Deshpande and Khan suggest that there is a need for a total integration in the design studio. Their work is based on the contention that critical understanding of the importance of tangential knowledge and its integration within the design studio, leading to a comprehensive whole, is a significant aspect to be properly evolved and nourished in the studio.

Under the practices category, there are 15 papers representing disparate ideas and of wide range of distinct approaches to teaching, strengthened by theoretical foundations and pedagogical theories. Contributions in this section are classified in terms of:

• Practices that address learning styles, stimulating students interest through active engagement
• Practices that address the development of student skills
• Experiments that address design studio

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teaching practices

The work of Elçin Tezel and Hernan Casakin, Ashraf Salama, Tasoulla Hadjiyanni and Stephanie Watson Zollinger, and Magda Mostafa and Hoda Mostafa places emphasis on key issues that pertain to learning styles, collaborative thinking, and active engagement in learning settings. Tezel and Casakin measure and examine design performance within a number of parameters that include form and spatial configuration, structural innovation and ergonomics, and craftsmanship. Their findings draw the attention of design educators that individual differences among students and that the application of experiential learning theory, which is basically a theoretical framework for understanding learning abilities, can contribute to the enhancement of individual skills and abilities under different design situations.

Ashraf Salama advocates the integration of interactive learning mechanisms into theory courses in architecture. Based on articulating a number of misconceptions in the delivery of lecture-based courses, he argues for the need to introduce active and experiential and inquiry-based learning (IBL) into theory courses in architecture. Salama proposes a framework, developed and employed to demonstrate the way in which these types of learning can be incorporated. The development and implementation of a series of in-class and off-campus exercises in two different contexts reveal that structured actions and experiences help students to be in control over their learning while invigorating their understanding of the body of knowledge delivered in a typical lecture format.

Two interior design educators from the University of Minnesota, Tasoulla Hadjiyanni and Stephanie

Watson Zollinger, share techniques, assignments, and pedagogies that respond to important questions that concern themselves with the delivery of history courses in a design program. These questions are: What forms of history teaching capture student interest? How can the lessons of history resonate with youth in ways that tie the past to the present? How can assignments spark excitement in students and engender a passion for the subject? And, where can faculty draw inspiration from in re-envisioning the role that history can play in their program and profession? Going beyond traditional methodologies and discourses around the teaching of history, Hadjiyanni and Zolliner employ a number of techniques such as digital games and free-hand sketching, while challenging students to engage with the material first hand. They conclude that infusing history classes with creative and critical thinking that encompasses and responds to pressing social concerns fosters the meaning of history classes while positioning history as an integral component in the curriculum and students' learning.

Developing an understanding on how architecture students think and learn, rather than operating on assumptions, Magda Mostafa and Hoda Mostafa argue that more responsive and customized modes of learning and teaching in studios can be conceived and implemented. In essence, Mostafa and Mostafa explore effective ways in which spatial thinking skills can be developed. Utilizing empirical research methods in the form of experimentation on control and study groups at the American University in Cairo, the authors reveal a particular correlation between high spatial ability and active learning in the entire group of students and a strong correlation between high spatial ability and

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visual learning--with a higher connection in architecture students, reaching 100% in some classes.

Underlying the category of practices that place emphasis on the development of student skills comes the work of Nabeel Elhady and Raghad Mofeed, Miki Desai, and Khaled Nassar, Magda Mostafa, and Amr Rifki. Similarities can be found in the work of Elhady and Mofeed and Desai articles where the focus is on the development of skills within a traditional built environment context. However, the work of Nassar, Mostafa, and Rifki reacts to current interests in digital technology and visualization skills and the way in which they may contribute to students' learning experiences.

Elhady and Mofeed suggest an approach that focuses on the aesthetic experience of students through the understanding and development of skills by critically and visually exploring elements of traditional architecture. Along the same line of interest, Miki Desai introduces teaching philosophy, content, and method of Basic Design I and II for first-year students of architecture at the Faculty of Architecture, Centre for Environmental Planning and Technology (CEPT) University, Ahmedabad, India. His work, which has evolved over a period of three decades, is framed within the Indian perspective of architectural education from the British colonial times. On the other hand, the work of Nassar, Mostafa, and Rifki argues that architectural problems are unique in their nature, requiring volumetric visualization and problem-solving skills. While many of these skills can be replicated utilizing digital technology, they pose the question of whether digital technology can replace the cognitive development, which occurs through manual problem solving. In response, they present an experiment that could be used to investigate the processing and synthesis of visual information related to the new kinds of free form that characterize most current practices in architecture.

Experiments that address design studio teaching practices presented in eight papers show serious commitment towards shaping the content and process in design pedagogy. These are of May al-Ibrashy and Tammy Gaber on the utilization of senses in design studio teaching; Núbia Bernardi and Doris Kowaltowski on universal design in the teaching process in the design; Azza Kamal, Sedef Doganer, et al. on wayfinding and accessibility in urban design studios; Gabrielle Bendiner-Viani and Elliott Maltby on hybrid ways of teaching and learning; Ozen Eyuce and Ahmet Eyuce on introducing conservation through adaptive re-use of existing buildings in the studio; Buthayna Eilouti on biotecture and sustainable design; Murat Dundar and Sinem Kultur on international studios and learning in a multi-cultural context; and Dicle Aydin and Mehmet Uysal on implementing systematic design procedures in the studio.

While these practices place emphasis on key design issues with different degrees of successful outcomes, two contributions appear to be challenging the limitation of design teaching in their contexts in an effective manner. The work of al-Ibrashy and Gaber re-envisages the design studio and establishes the role of the senses by introducing alternative methods of instruction that stem from phenomenological approaches to the development mechanisms, tools, and procedures that they adopt in their studio to achieve a better utilization of the senses, thereby fostering the acquisition of knowledge and

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enhancing the students learning experience. Bernardi and Kowaltowski, on the other hand, apply the concepts of universal design. With the goal to develop student awareness of users with special needs, they have developed innovative mechanisms and design communication instruments, such as tactile maps, to enable user participation of the visually impaired. It is our view that these two contributions deserve special attention.

By and large, the papers introduced in this issue corroborate that design education and its underlying teaching practices means different things to different educators and that each teaches according to contextual peculiarities and based on his/her own set of ideologies and beliefs and in a manner that is distinct from others. Concomitantly, there is a tremendous diversity of contents, approaches, methods, and even expression and reflection on the same set of ideas. Experiential learning appears to be a common key issue across the board with different interpretations. This goes along the line of thought of several eminent education theorists including Benjamin Bloom, David Kolb, Jean Piaget, John Dewey, and Paulo Freire, who voiced the opinion that experience should be an integral component of any teaching/learning process.

In design pedagogy, one should note the work of Tom Dutton, Necdet Teymur, and Henry Sanoff who introduced a spectrum of techniques that incorporate experiential learning components in studio pedagogy. Their work can be traced back to the famous dictum of Confucius around 450 BCE: "Tell me and I will forget. Show me and I may remember. Involve me and I will understand." Experiential learning refers to learning in which the learner is directly in touch with the realities being studied. It is contrasted with learning in which the learner only reads about, hears about, talks about, writes about these realities but never comes in contact with as part of the learning process. On the other hand, there are a number of common concepts or key issues found in one or more arguments, which relate to experiential learning. These are learning from the environment; learning from practice; critical thinking; the hidden curriculum concept; play and design games; real-life situations; action research; multi-disciplinary research; and cultural diversity.

The deliberations presented in the papers of those committed scholars and educators emphasize that the mission of a school of architecture or a design program should foster an environment that nurtures exploration and critical thinking. Today, inquiry and investigation are viewed as activities central to design education. A considerable number of papers advocate the integration of research into teaching by arguing for the exposure of students to primary source materials that enable them to get as close as possible to the realities being studied. While some colleagues might say that the concerns generated in this edition of Archnet-IJAR are not new, we argue that the level of concern is intensive and the flood of emerging positions, issues, ideas, and outcomes is crested at an alarmingly high level, which in a way expresses dissatisfaction with mainstream teaching practices. Most important is not the quantity but the focus of this round of discourse; an emphasis on issues central to our own role as design educators that simply involves the development of design skills and critical thinking abilities through active engagement within the learning setting and off campus. These papers present new explorations, prospects, and opportunities for us as design educators to

strengthen design pedagogy, to enhance our role in shaping teaching and learning processes, and to improve the quality of the future built environment.

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